# CHAPTER I

# **BASIS OF PROPOSALS**

#### 1.1 GENERAL

- 1.1.1 Till recent past, forests were managed, mainly, for timber and firewood. The prescriptions in previous working plans used to aim at maximizing revenue from forests. Times and perceptions have changed. Now prescriptions in working plans focus on regeneration and preservation of forests.
- 1.1.2 Forests have multifunctional role, ecological as well as economic. Soil, water, and air are the three components of biosphere that form the basis of life on earth. Forests have a profound influence on these vital resources which also form the bedrock of all economic activity. In mountainous regions like Jammu and Kashmir, the perennial supply of water including groundwater recharge, and health of soils, primarily depend upon the extent and quality of forest cover. In addition, people of the State lean heavily on forests for their firewood, fodder, food and small timber requirements. Therefore, forests are integral to the sustainability of primary sectors like agriculture, horticulture and animal husbandry, particularly in hilly regions. In this context, the famous Kashmiri saint, Sheikh Noor-ud-din Wali (1377-1440 CE) has aptly stated, "Ann poshi teli, yeli wann poshi, i.e., food will last as long as forests last." Since regular flow of water in the rivers and control of soil erosion have a direct bearing on hydroelectric power generation, a healthy forest cover in catchments is essential for long term operation of hydroelectric projects. In addition, forests provide raw material for different industries and in the process, influence other sectors of the economy as well. The State of Jammu and Kashmir is endowed with breathtaking scenic beauty in the form of snow capped mountains, sparkling streams and rivers, picturesque lakes, and lush green forests and meadows. Therefore, there is immense potential for tourism in the State, and forests play a pivotal role in making the State a preferred tourist destination. Besides, forests provide environmental services like carbon sequestration, pollution abatement, and amelioration of climate, in-situ conservation of biodiversity and maintenance of ecological balance. In nutshell, the economy of the State, environmental security and livelihood opportunities are intimately linked to the tangible and intangible benefits that flow from forests.
- 1.1.3 The State Policy of Jammu & Kashmir, 2011 has also laid down the objectives of forest management. The objectives have been framed with the view to ensure environmental stability and maintain biodiversity values and ecological balance including atmospheric equilibrium, which is vital for

sustenance of all life forms. There is a paradigm shift from use-oriented management to conservation orientation and this shift has given a totally different perspective to the principles of forest management. Though forests have been recognized as global resource in terms of ecological values and biodiversity, dependence of communities on forests for their sustenance has led to the recognition of their undisputed role in conservation. Therefore their participation has been recognized as an integral part of forest management.

- 1.1.4 It is thus of great importance that forests are managed for achieving optimum productivity on a sustainable basis. For scientific and intensive management of existing natural forests and plantations these principles have been adopted in the present working plan.
- 1.1.5 The State Forest Policy, 2011 suggests certain guidelines for future management of forests. Emphasis is more on conservation aspect than on revenue generation. The objectives of management which have been laid down are here as under:-

1. Conservation of biodiversity and natural habitat through preservation of natural forests with the vast variety of flora and fauna.

2. Rehabilitation of degraded forests so as to optimize their productivity and restore their potential to provide ecosystem goods and services on sustainable basis.

3. Poverty alleviation by meeting livelihood needs of forest dependent communities through sustainable supply of forest produce by improving productivity of existing forests, and through forestry activities, schemes and programmes.

4. Extending tree cover outside forests to reduce pressure on natural forests for supply of forest produce.

5. Checking denudation and soil erosion in catchments through integrated watershed management techniques and practices.

6. Maintenance of the health of forest vegetation and forest soils for augmenting water supplies through recharge of underground aquifers and regulation of surface water flows, sediment levels and water quality.

7. Optimally utilizing the mitigation and adaptation potential of forests in the context of climate change.

8. Reducing pressure on forests through appropriate interventions including development of forest fringe belt into high production tree strips.

9. Utilization of natural resources using best management practices including development of non-timber forest produce and institutionalization and operationalization of concepts of eco-tourism and nature tourism.

10. Creating a sustained people's movement for achieving the aforementioned objectives, so that environmental security is ensured

Keeping above guidelines into consideration, following objectives will be adopted for future management of forests in PirPanjal Forest Division.

#### 1.2 OBJECTIVES OF MANAGEMENT

- 1. To conserve the bio-diversity of forests, protect and improve the natural forests and wildlife habitats by arresting the causes of degradation and restore to their original ecological status.
- 2. To protect the forests from biotic factors and abiotic factors especially from timber smugglers, encroachers and excessive grazers.
- 3. To increase the revenue and meet the local and *bonafide* needs of people by extraction of dry, diseased, snow and wind fallen and other silviculturally available trees from forests.
- 4. To preserve and improve the existing vegetal covers of steep and precipitous hill slopes for efficient soil and water conservation.
- 5. To protect and conserve the watershed areas of Dudhganga, Shaliganga, Sukhnag and Romshi nallas to minimize soil erosion, floods, silting etc.
- 6. To maximize production potential of plantations by intensive scientific management and regulate harvesting of NWFPs on sustainable basis.
- 7. To introduce participatory approach in the management of fringe forests adjoining human habitations integrating with rural development.

#### 1.3 METHOD OF TREATMENT TO BE ADOPTED

In order to accomplish the objectives, following strategies are proposed.

- 1. Management of forests where as far as possible no green fellings will be prescribed. All high lying forests situated on steep and precipitous slopes will be given protection in order to maintain the ecological balance and soil and water conservation. The low lying, degraded forests which have come under huge biotic pressure in the recent past will be given protection from such interferences and their rehabilitations will be aided by closing and reforesting with native species.
- 2. Adoption of measures that will counter the threats that result into damage to forests. Timber smuggling is a big threat to forests of Kashmir. Huge encroachment has also taken place at certain places in the past. Lopping, pole cutting and grazing are other factors that have inflicted huge damages to forests. Therefore management of forests in coming decades should be as such which will counter these threats and forests can be preserved for posterity.
- 3. Identification of causes of degradation in ecologically vulnerable areas and mitigation of these causes. Soil and moisture conservation on watershed basis for improvement of soil and water regimes. Fire being the most important degrading factor, precise plans for fire management to be taken up on priority basis.
- 4. Rehabilitation of degraded areas keeping in view the biodiversity status, stage of ecological succession and requirements of communities. Improvement in growing stock, soil and moisture conservation measures, utilization of produce like NWFP, medicinal plants, Eco-tourism etc. without adversely affecting the forests to be attempted. Participation of communities will be ensured wherever feasible.
- 5. Plantation forestry sector has seen many advances in recent years in terms of technology and genetic improvement of plantation species. Adoption of locally suitable advanced technology with genetically superior native planting stock will be the thrust area for attaining high productivity in the management of forest plantations.
- 6. In order to ensure effective and supportive participation of the communities and reduce their dependence on forests, welfare measures are to be taken to the extent possible. Management of NWFP requires strengthening by way of training communities on scientific harvesting,

minimizing wastage, value-addition and ensuring credible marketing systems. Awareness about the need of sustainability is essential for ensuring constructive involvement of communities.

7. Considering the guiding factors that form the basis of proposals and the objectives of management, corresponding attitudinal change in the forest establishment is very essential. Human resource development is the key area for efficiency in any organization. It is essential that the office as well field staff be exposed to the new concepts in forest management, as they are to deal closely with forestry matters. In order to raise the motivation levels of the staff, suitable human resource management principles related to the infrastructure, clear duties and functions, incentives in form of recognition of better performance and above all, adequate training inputs need to be ensured. Sensitization of the field staff to work in participatory management and introduction to the techniques of PRA etc. are essential for effective implementation of schemes in association with the communities.

### 1.4 HON'BLE SUPREME COURT JUDGEMENT (12.12.1996)

Hon'ble Supreme Court in its landmark judgment on 12.12.1996 issued certain directions with respect to tree felling. Among general directions included suspension of felling operations in all forests in all states except in accordance with the Working Plans of the state governments, as approved by the Central Government. Among specific directions, the Hon'ble Supreme Court of India issued certain directions with respect to state of Jammu and Kashmir. The directions read as:-

- 1. There will be no felling of trees permitted in any "forest", public or private. This ban will not affect felling in any private plantations comprising of trees planted by private persons or the Social Forestry Department of the state of Jammu & Kashmir and in such plantations, fellings will be strictly in accordance with law.
- 2. In forests, the state government may either departmentally or through the State Forest Corporation remove fallen trees or fell and remove diseased or dry standing timber, and that only from areas other than those notified under the Jammu & Kashmir WildLife Protection Act, 1978 or any other law banning such felling or removal of trees.
- 3. For this purpose, the state government will constitute an Expert Committee comprising of a representative being an IFS officer posted in the state of Jammu & Kashmir, a representative of the state government, and two private experts of eminence and Managing Director of the State Forest Corporation (as Member Secretary) who will fix the qualitative and quantitative norms for the felling of fallen trees, diseased and dry

standing trees. The state shall ensure that the trees so felled and removed by it are strictly in accordance with these norms.

- 4. Any felling of trees in forest or otherwise or any clearance of land for execution of projects shall be in strict compliance with the Jammu & Kashmir Forest Conservation Act, 1990 and any other laws applying thereto. However, any trees so felled, and the disposal of such trees shall be done exclusively by the State Forest Corporation and no private agency will be permitted to deal with this aspect. This direction will cover the submerged areas of the Thein Dam.
- 5. All timber obtained, as aforesaid or otherwise, shall be utilized within the State, preferably to meet the timber and fuelwood requirements of the local people, the Government and other local institutions.

# 1.5 CONSTITUTION OF WORKING CIRCLES

In order to achieve the above objectives, the forests of the division are divided into the following working circles for the purpose of management.

- 1. The Fir Selection Working Circle
- 2. The Bio-Aesthetic Working Circle
- 3. The Rehabilitation Working Circle
- 4. The Eco-Conservation Working Circle
- 5. The Plantation (Overlapping) Working Circle
- 6. The Eco-tourism Management (Overlapping) Working Circle
- 7. The Non Wood Forest Produce (Overlapping) Working Circle
- 8. The Joint Forest Management (Overlapping)Working Circle
- 9. The Wildlife Management (Overlapping) Working Circle
- 10. The Forest Protection(Overlapping) Working Circle

# 1.6 DETAILS OF WORKING CIRCLES

The table below gives the details of working circles constituted along with area of each working circle constituted, their distribution in Pirpanjal Forest Division and reasons for their constitution.

Working Circle	Area (ha)	Distribution	Reasons
Fir Selection W.C	18459.0	All Fir forests of division	To conserve, protect and increase the Fir stock and to facilitate extraction of dry, diseased and fallen trees in a judicious manner.
Rehabilitation W.C	4732.65	All degraded forests of division	To check further degradation of forests by taking up measures in order to restore the normal stocking and productivity.
Alpine Protection W.C	24819.0	All high lying areas above 10,000 ft. altitude	To protect the high-lying alpine forests against the prevailing threat factors for the eco restoration and to conserve soil and moisture
Plantation (Overlapping) W.C	8446.15	All existing and established plantations and all blanks, barren patches and degraded chunks of forests where artificial plantation is possible.	To refill blanks or barren patches of forests caused due to deforestation by taking up plantations and to manage existing plantations in order to restore the normal stocking and productivity.
Eco-tourism (Overlapping) W.C	19713.85	The forest areas which have potential for eco- tourism.	To open the forest areas for ecotourism purpose without deviating from doctrine of conservation.
NWFP (Overlapping) W.C	48010.65	The entire forest of the Division	To conserve and to improve NWFP and other natural resources for promoting its sustainable management.
JFM (Overlapping0 W.C	20953.65	The entire forests of Division excluding uncommercial alpine area	To involve the public in the protection of Forests and to facilitate eco-tourism & implementation of FDA.
Wildlife (Overlapping) W.C	48010.65	The entire forests of Division	To protect the diversity of wildlife in the division by special habitat improvement activities.
Protection (Overlapping) W.C	48010.65	The entire forests of Division	To protect the forests of division against the biotic interferences.

Table 54: Details of Working Circles constituted in the present working plan

# 1.6 PERIOD OF THE PLAN

The Plan covers a period of 10 years from 2014–15 to 2023–24. The revision of this Plan should begin in 2022. The previous plan which was expiring in the year 1997-98 shall be deemed to be extended up to 2014-15. No immediate revision will be necessary. However the progress of first five years may determine whether any change is required.

Mid-term review of the working plan shall be carried out by the Conservator of Forests to account for any unavoidable deviations especially with regard to felling programmes. It shall be necessary to account for dead dry felling which now constitute a significant part of volume.

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### **CHAPTER II**

# FIR SELECTION WORKING CIRCLE

#### 2.1 GENERAL CONSTITUTION

This working circle shall comprise of well-stocked, low-lying, accessible, productive and commercially exploitable areas of this division with predominantly fir crop. These forests occupy slopes extending up to about 3500mts altitude.

Range	Blocks	Compartments	Total area
			(ha)
Doodganga			
	Nilnag	N4, N5	393
	Surasyar	D6,D7	481
	Padshatar	D8,D9	690.5
	Jabbad	D14a, D15,	622
	Negoo	D16, D17, D18a, D19a	1436.75
	5 blocks	12 comptts	3623.25
Raithan	Kachwari	D20b, D21, D22, D23, D24, D25	1856
	Palmaidan	D26, D28b, D29	5179.5
	Gurweith	D32, D33a	332.75
	Raiyar	S1b, S2	559.75
	4 blocks	13 Comptts	7928.00
Sukhnag	Khalket	S6	385
	Ringzabal	S7	562.5
	Zugoo	S14, S15,	429
	Sutharan	S19	200.5
	Drung	S21, S22, S23, S24	1352
Subtotal	5 blocks	12	2929.00
Total	14 blocks	34 compartments	14480.25

 Table 55: Statement of Blocks & Compartments constituted into Fir Selection W.C.

Note: *Ri-23a & Ri-23b carved out form P.P Forest Div. during re*organisation and handed over to Shopian Forest Div. S-25 to S-32 & entire Gulmarg Range carved out P.P Forest Div to newly created Special Div. Tangmarg. N-3, S-1a, S-9, S-12, S-16, S-17 Shifted to Rehabilitation Working *Circle. D-30 shifted to Eco-Conservation Working Circle.* 

### 2.2 GENERAL CHARACTER OF VEGETATION

- 2.2.1 These are high quality fir forests. Fir constitutes more or less pure stands with sprinkling of Spruce. The main associate of fir in this working circle is Kail. Well defined patches of Kail are seen on exposed slopes or wherever the succession retrogression on account of fire, over-grazing or landslides have taken place. Deodar is also found scattered at lower altitudes but at very few places. A few trees of Yew are also seen scattered here and there in these forests. It is confined to shaddy and moist depressions. Broad-leaved species are found scattered in small patches in moist depressions particularly along the nalla beds and on too heavy and moist soils.
- 2.2.2 The crop is young to middle aged in the areas which have been exploited in the past while it is middle-aged to mature and over mature in the areas which have not been still exploited. The regeneration in the form of advance growth is available almost throughout these mature forests but it is often inadequate.
- 2.2.3 The inadequacy of natural regeneration is due to high incidence of grazing especially during summer months when cattle population move to these areas and presence of thick layer of un-decomposed humus. The regeneration is comparatively better on sites with light raw humus deposition and lesser biotic interference.

Diameter-class (cm)	10-20	20-30	30-40	40-50	50-60	60-70	>70
Normal Distribution (%)	41	25	15	9	5	3	2
Actual Distribution (%)	8.62	12.46	17.42	19.15	21.92	13.66	6.74

 Table 56: Normal and Actual distribution of stems over Diameter classes.

# 2.3 BLOCKS & COMPARTMENTS

The name of blocks as well as the serial number of the compartments remains the same as defined in the previous working plan. All compartments and sub-compartment boundaries have been delineated on the ground by means of compartment boards bearing compartment numbers engraved on them, and coal tar rings on trees along the entire boundary lines.

### 2.4 SPECIAL OBJECTIVES OF MANAGEMENT

The special objects of the constitution of this working circle are :-

- 1. To conserve and maintain the existing conifer crop.
- 2. To bring the forests to normalcy by applying treatments which conform the silvicultural requirements of the crop.
- 3. To regenerate the forests naturally.
- 4. To meet the local demands and bonafide requirements of the people.

### 2.5 AREA STATEMENT

The Range-wise distribution of the area under different species (in hectare) of this working circle is presented in the table below as under:-

Range		Stockin	g (ha)		Encroa	Blanks	Total
					chmen	(ha)	(ha)
					t (ha)		
	Kail	Fir	B/L	Total			
Dudhganga	180.25	2709	0	2889.25	20.25	713.5	3623.25
Raithan	227	2983.5	20.75	3231.25	54.75	4642	7928.00
Sukhnag	11	1900.25	3	1914.25	137.5	877.25	2929.00
Total	418.25	7592.75	23.75	8034.75	212.5	6232.75	14480.25

Table 57: Area statement of Fir Selection Working Circle

### 2.6 SILVICULTURE SYSTEM

2.6.1 The Fir forests are generally situated on rough terrain in the catchment areas of various streams of this division. These Fir forests therefore, perform vital function of soil and water conservation. These constitute the catchments of water regime of the tract and are of great significance in soil conservation. The vital role played by these forests necessitates their management under suitable silvicultural system without disturbing their structure. The system should also eliminate the creation of big openings and meet the requirements of accessory functions of these forests. In the past upto mid-forties these forests were managed under uniform system. But it was observed that in the heavy openings created under concentrated fellings undesirable flora came up instead of the main species i.e. Fir. This was because of the fact that Fir is shade-bearing species and could not regenerate in the much exposed conditions developed due to heavy openings.

- 2.6.2 For the last forty years or so these forests are worked under the "Indian Selection System". Keeping in view the above experience, it is the only suitable system as long as artificial regeneration techniques are not perfected. Under this system, the mature crop above the fixed diameter shall be removed only in those areas which are well regenerated. In the areas where advance growth is absent or deficient, only improvement fellings will be carried out. All other species of the working circle will also receive the same treatment.
- 2.6.3 Under this system the exploitable diameter is fixed and trees above it are exploited according to their silvicultural availability. The scattered single mature trees are selected all over the area and felled to enable regeneration to replace them. In the selection system, following categories of trees are usually removed:
  - (a) Dead, dying, diseased, mis-shapen or otherwise defective trees interfering with the growth of better trees:
  - (b) Trees of undesirable species:
  - (c) Immature trees which can be removed in judicious thinning carried out in different age-classes so as to maintain or attain, in due course, correct balanced proportion of different age(or size) classes on each unit of area; and
  - (d) Mature trees (above the exploitation diameter), which will leave gaps for regeneration to come in.

### 2.7 EXPLOTATABLE DIAMETER

The M.A.I of Fir culminates at an age of 160 years corresponding to the diameter at breast height of 62.5 cms. Similarly, the M.A.I of Kail culminates at an age of 130 years corresponding to the diameter at breast height of 64.2 cms. Technically, it is the exploitable diameter of Fir and Kail, but keeping in view the critical location as well as poor regeneration status of these forests, a higher exploitable diameter is the need of the hour. Taking the above facts into consideration and also to reduce the yield to half as per the guidelines issued by the Government of India with a view to conserve the Forests, the J & K Forest Department vide CCF Forests order no. 2716-2852-Msc-10 dated 4-02-1984 has increased the exploitable diameter of Fir from 70 cms (dbh) to 80 cms (dbh). Similarly in case of Kail it has been increased from 60 cms (dbh.ob) to 70 cms(db.ob). Hence an exploitable diameter of 80 cms (dbh) for Fir and 70 cms (dbh) for Kail is fixed in this working circle.

#### 2.8 ROTATION

Corresponding to 80 cms(dbh), a rotation of 240 years is adopted for Fir. Similarly corresponding to 70 cms(dbh), a rotation of 145 years is adopted for Kail. Spruce will be treated on similar lines as Fir.

# 2.9 FELLING CYCLE

Keeping the silvicultural requirements of the principal species (Fir) in view, a convenient sub-multiple of its rotation i.e. 20 years, have been adopted as the felling cycle. It will ensure the presently desired intensity of cut besides facilitating the proper supervision.

### 2.10 FELLING SERIES & CUTTING SECTIONS

The entire working circle will constitute one felling series. The sequence of felling will be determined by territorial Divisional Forest officer keeping in view the administrative, economic and other aspects. He will also ensure that coupe is spread evenly throughout the Working Circle.

# 2.11 ANALYSIS AND VALUATION OF THE CROP

The method of point sampling was adopted for the assessment of growing stock. The details have already been presented in chapter-6. The results obtained were put to various statistical tests for variables of no. of trees and volume. The table below shows the species-wise growing stock for the stocked area of the entire working circle.

1	Table 58(a) Statement showing species and diameter(cm) class wise tree count of Fir Selection         Working Circle										
	Tree count per hectare (Mean Value)										
											Grand
Spp.	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100	100 <	Total
Deo.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Kail	0.00	0.00	0.98	1.73	1.83	0.77	0.43	0.04	0.00	0.00	5.78
Fir	5.08	14.37	22.31	24.64	31.08	20.73	5.82	3.41	0.88	0.32	128.64
B.L.	0.64	0.50	0.60	0.58	0.42	0.00	0.05	0.00	0.00	0.00	2.79
Total	5.72	14.87	23.89	26.95	33.33	21.50	6.30	3.45	0.88	0.32	137.21

	Total tree count over the entire commercial area of Fir Selection Working Circle											
	(Area = 8034.75 hectares)											
									90-	100	Grand	
Spp.	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	100	<	Total	
Deo.	0.00	0	0	0	0	0	0	0	0	0	0	
Kail	0.00	0	7874	13900	14704	6187	3455	321	0	0	46441	
Fir	11536.68	115459	179255	197976	249720	166560	46762	27398	7071	2571	1004310	
B.L.	1453.44	4017	4821	4660	3375	0	402	0	0	0	18728	
Total	12990.12	119477	191950	216537	267798	172747	50619	27720	7071	2571	1069479	

Tab	Table 58 (b) Statement showing species and diameter(cm) class wise volume(m³) of Conifers in FirSelection Working Circle											
	Volume of conifers per hectare (Mean Value)											
											Grand	
Spp.	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100	100 <	Total	
Deo.			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Kail			0.74	2.36	4.14	2.58	1.91	0.20	0.00	0.00	11.93	
Fir			18.74	38.45	92.05	101.60	39.85	28.30	8.26	3.24	330.49	
Total			19.48	40.81	96.19	104.18	41.76	28.50	8.26	3.24	342.42	

	Total volume of conifers over the entire commercial area of Fir Selection Working Circle											
	(Area = 8034.75 hectares)											
											Grand	
Spp.			30-40	40-50	50-60	60-70	70-80	80-90	90-100	100 <	Total	
Deo.			0	0	0	0	0	0	0	0	0	
Kail			5946	18962	33264	20730	15346	1607	0	0	95855	
Fir			150571	308936	739599	816331	320185	227383	66367	26033	2655405	
Total			156517	327898	772863	837060	335531	228990	66367	26033	2751259	

Tab	Table 58 (c) Distribution of stems and volume (m <sup>3</sup> ) in Fir Selection working circle computed at lower         confidence interval.											
	Total tree count of commercial area (8034.75 ha) at lower interval for Fir Selection Working Circle											
	Lower limit 89%											
										100	Grand	
Spp.	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100	<	Total	
Deo.		0	0	0	0	0	0	0	0	0	0	
Kail		0	7008	12371	13086	5506	3075	286	0	0	41332	
Fir	10268	102759	159537	176199	222251	148239	41618	24385	6293	2288	893836	

1	2	5
_	_	-

B.L.	1294	3575	4291	4148	3003	0	358	0	0	0	16668
Total	11561.21	106334	170836	192717	238340	153745	45051	24671	6293	2288	951837

Tot	Total volume of conifers over the entire commercial area (8034.75 ha) at lower interval for Fir Selection											
	Working Circle											
	Lower Limit 90%											
											Grand	
Spp.			30-40	40-50	50-60	60-70	70-80	80-90	90-100	100 <	Total	
Deo.			0	0	0	0	0	0	0	0	0	
Kail			5351	17066	29937	18657	13812	1446	0	0	86269	
Fir			135514	278043	665639	734698	288166	204645	59730	23429	2389864	
Total			140865	295108	695576	753354	301978	206091	59730	23429	2476133	

### 2.12 CALCULATION OF YIELD

The yield is calculated in terms of number of trees and volume, which in turn is subjected to area check. Modified Brandis Diameter-class method and Von Mantel's formula have been applied for calculation of the yield. Before the calculation of the yield, following assumptions have been made.

- 1. Only commercial area and its growing stock have been taken into account for the purpose of yield calculation.
- The growing stock over commercial area of this working circle is classified within 10 cm diameter classes indicated by Symbols I, II, III, IV, V and VI. Class I stands for trees above the exploitable diameter and the other successively below it to the youngest.
- 3. The number of trees in all those classes being considered for the purpose of yield calculation has been computed at lower limit of confidence interval.
- 4. On an average it takes 239 years for Fir to reach exploitable d.b.h (o.b.) of 80cm and it takes 142 years for trees of kail to attain exploitable diameter of 70cm d.b.h. (o.b.)
- 5. For Fir, the transition period from class-II/approach class (70-80cm) to class-I (80cm d.b.h & above) is 42 years, whereas for Kail, it takes 20 years to reach from approach class (60-70cm) to reach 70cm d.b.h (o.b.) and above.
- 6. The following survival coefficient percentages based on the All India Volume Tables in respect of deodar, kail and Fir have been used.

Diameter class d.b.h (cm)	Survival percentage of species		
	Deodar	Kail	Fir

Table 50.	Suminal	co_officient	norcontago	ofvarious	classes	of Deodar K	ail and Fir
Table 39:	Survivai	co-ejjiciem	percentage	oj various	cusses (	oj Deouar, K	uu ana r ir

30	62%	45%	20%
40	75%	60%	40%
50	86%	80%	50%
60	95%	90%	60%
70		95%	85%
80			95%

7. In view of preponderance of mature and over-mature growing stock and their vulnerability to heart rot, the yield finally arrived at shall be reduced by 15%.

Based on these assumptions, the number of total potentially available trees over the commercial area of Fir selection working circle calculated at lower confidence limit of mean value after due deduction on account of mortality is tabulated in table below.

 Table 60: Species and diameter class wise potential availability of trees from the commercial area of Fir Selection Working circle

(I) Kail							
Class	VI	V	IV	III	II	Ι	Total
Diameter class	Below 30	30-40	40-50	50-60	60-70	Above 70	
Total No. of trees assessed at mean value	0	7874	13900	14704	6187	3776	46441
Total No. of trees assessed at lower limit of confidence interval	0	7008	12371	13086	5506	3361	41332
Age of entry in the class		71	87	104	122	142	
Years in class transition period	71	16	17	18	20		
Survival coefficient of the class	0.3	0.45	0.6	0.8	0.9	0.95	

No. of potentia	lly 0	315	4 74	23 1	0469	4955	3193	29194
(II) Fir								
Class	VII	VI	V	IV	III	II	Ι	Total
Diameter class	Below 30	30-40	40-50	50-60	60-70	70-80	Above 80	
Total No. of trees assessed at mean value	126996	179255	197976	249720	166560	0 46762	2 37040	1004309
Total No. of trees assessed at lower limit of confidence interval	113026	159537	176199	222251	148239	9 41618	3 32966	893836
Age of entry in the class		67	85	110	149	197	239	
Years in class transition period	67	17	25	39	48	42		
Survival coefficient of the class	0.2	0.2	0.4	0.5	0.6	0.85	0.95	
No. of potentially available trees	22605	31907	70480	111126	88943	35375	5 <b>31318</b>	391754

### 2.13 YIELD REGULATION

Modified Brandis Diameter Class Method and Von Mantel's Formula have been applied for calculating the yield. The stepwise yield calculations for one felling cycle on the basis of Modified Brandis Diameter-class method are tabulated as below:-

# Table 61: Yield calculation of Fir Selection Working Circle using Brandis Diameter class Method

		Felling cycle=20 years		
		KAIL	FIR	
A)	Total number of trees in class I	3193	31318	
B)	Total number of trees likely to pass on to			
	Class I in the first felling cycle from			
	Class II	4955	35375 *(20/42)=	
			16845	
	Class III	0	0	
C)	Total recruitment in class I from	4955	16845	
	Class II and III during first felling			

	cycle		
D)	Annual recruitment from Class II and III	248	842
	during the first felling cycle (C/20)		
E)	Stock required to be kept as reserve i.e.	2476	8423
	half of the total recruitment in $-C\phi$		
	above.		
F)	Surplus stock of class I (A-E)	717	22895
G)	Total possibility of yield in first felling	5672	39740
	cycle if all surplus stock in (F) above is		
	removed (C+F)		
H)	Annual yield (g/20) for one felling cycle	284	1987
I)	Total possibility of yield if all surplus	5314	28293
	stocks in (F) above is removed in two		
	felling cycles (C + F/2)		
J)	Annual yield (I/20) for two felling	266	1415
	cycles		
K)	Weighted average volume of trees above	3.34	6.85
	exploitable diameter as per Kulu		
	Volume Tables in Cubic meters		
L)	Total annual Volume Yield (m <sup>3</sup> ) (One	949	13611
	felling Cycle) (H*K)		
M)	Total annual Volume Yield (m <sup>3</sup> ) (Two	888	9693
	felling cycle) (J*K)		
N)	Deduct 15% from (L) above to account	806	11569
	for mortality (One felling cycle)		
O)	Deduct 15% from (M) above to account	755	8239
	for mortality (Two felling cycle)		
P)	Annual yield (n) rounded off to lower	800	11500
	multiple of hundred (one felling cycle)		
<b>Q</b> )	Annual yield (n) rounded off to lower	700	8200
	multiple of hundred (two felling cycle)		

Final Annual Yield (Kail + Fir) for One Felling Cycle= 12300 m<sup>3</sup>

Final Annual Yield (Kail + Fir) for Two felling Cycle= 8900 m<sup>3</sup>

	Kail (m <sup>3</sup> )	Fir (m <sup>3</sup> )	Total (m <sup>3</sup> )
Total commercial volume	95855	2655405	2751260
available on Mean Value			

Table 62: Yield calculation based on Von Mantel's Formula

Total Commercial Volume	86269	2389864	2476133
available on Minimum			
availability			
Yield= 2GS/R	1190	19916	21106
(Rotation Kail=145			
Fir=240)			

The comparative statement of Annual Yield obtained using both the methods is given below:-

 Table 63: Comparative statement of Annual yields obtained using two different methods

Methodology	Kail	Fir	Total
Von Mantel method	1190	19916	21106
(m <sup>3</sup> )			
Modified Brandis	800	11500	12300
Diameter Class			
method (one felling			
cycle) (m <sup>3</sup> )			
Modified Brandis	700	8200	8900
Diameter Class			
method (two felling			
cycle) $(m^3)$			

In case of Fir, the yield calculated by the Brandis Dia Class method in two felling cycle is less than the annual yield estimated through Von Mantel's method. Therefore with the view to extract the lesser volume, the Yield calculated by the Brandis Dia class method is recommended to be implemented as a conservative measure for Fir.

Accordingly, the annual yield estimation of the working circle is as follows:-

Kail =  $700 \text{ m}^3$ Fir =  $8200 \text{ m}^3$ 

Total =  $8900 \text{ m}^3$ 

The intensity of cut on the basis of this volume (8900  $m^3$ ) over the commercial area of 8034.75ha works out to 0.902  $m^3$  per hectare.

#### 2.14 SIZE OF THE ANNUAL COUPE

The yield calculated on volume basis is further controlled by an area check. The size of the annual coupe is calculated as under:

Annual coupe (ha) = Total commercial area of working circle Felling cycle

> 8034.75 = ----- = 401.74 ha 20

#### 2.15 ALLOWABLE CUT

It is determined by dividing the annual volume yield by the size of annual coupe. It works out as under:-

Table 64: Allowable cut

Annual cut prescribed (Vol. in m <sup>3</sup> )	Annual Coupe (ha)	Annual cut per ha
8900 m <sup>3</sup>	401.74	22.15 m <sup>3</sup>

Comparing it with the mean minimum available growing stock per ha i.e.  $305 \text{ m}^3$  for the entire working circle, the percentage of allowable cut works out to be 6.72%. As per Govt. order No. FST/MEP-4/73 dated 07-07-1974, a cut up to 33% of the volume of trees over 30 cms dbh is permissible.

#### 2.16 REALIZATION OF YIELD

The yield prescribed shall include the volume of all trees 30 cm d.b.h and above marked for whatever purpose including concession marking, illicit damage etc. Felling in the next 10 years shall be subject to the limit of yield prescribed (8900 m<sup>3</sup>) and area check (401.74 ha), whichever is arrived at earlier. The annual yield prescribed should be strictly adhered to. Deviations in annual yield to the extent of 20 percent are permissible for certain administrative or technical reasons. Deviations beyond above limits shall require prior sanction of the Chief Conservator of Forests. However, cumulative deviation over the entire working plan period should not exceed the prescribed yield.

#### 2.17 SEQUENCE OF FELLINGS

The size of the annual coupe has already been determined. It is left to the discretion of territorial DFO to select the suitable annual coupe for working after considering the intensity of work in each drainage. He will ensure that coupes are distributed uniformly throughout the division, subject to the technical and administrative limitations.

#### 2.18 METHOD OF EXECUTING THE FELLINGS

- 2.18.1 No particular sequence of fellings is prescribed. The selection of annual felling coupes is left to the choice of Divisional Forest Officer. The working area should however be distributed in all drainages. The intensity of fellings will be governed by the regeneration status and gradient of the terrain.
- 2.18.2 The fellings should be aimed at careful opening of the canopy in accordance with the requirements of regeneration. In the areas with advance growth all the over-wood standing over the regeneration must be removed in order to free it from shade and suppression. In areas with no regeneration very light openings should be made in order to induce regeneration. The creation of wide gaps should always be avoided because such gaps are immediately invaded by weeds, thereby keeping away the regeneration of the main species i.e. Fir. Wherever, possible attempts should centre round creation of uniform groups rather than true selection forests. This is because there is very little sacrifice of immature crop and such uniform groups are easy to tackle technically. So for as the distribution of sizes in a unit of management (compartment) is concerned there is practically no difference whether the different sizes are present in groups or in an intimate mixture.

### 2.19 SUGGESTIONS FOR MARKING OFFICER

The marking should not be conducted by an officer below the rank of a D.D.R. Ranger and atleast 25% marking should be checked by Divisional Forest Officer. The following suggestions are laid down for the marking officer:-

1. The marking Officer shall acquaint himself thoroughly with the topography and the condition of the crop in the compartment before conducting the markings. He should always keep in mind that he is conducting markings in the hilly terrain which is of vital importance in the environmental, water and soil conservation.

- 2. The boundaries of the compartment should be ascertained properly before commencing markings. If the compartment is to be worked in sections over a period of years, the marking must proceed from the farthest and of compartment and run across the contours.
- 3. No healthy tree below the exploitable size should be marked.
- 4. The trees of and above exploitable size of 80cms DBH in case of Fir and 70cms in case of deodar and Kail standing over the advance growth should be marked.
- 5. In view of scarce fir regeneration, the openings of the canopy are to be varied according to the extent of crop cover and slope of terrain. In case of trees of and above exploitable size, the spacing of 8-10 mts will be suitable provided that there is adequate crop cover.
- 6. All the dead, dying, diseased and malformed trees should be marked.
- 7. Among the trees of exploitable size, the older trees should be removed in preference to comparatively younger and healthier.
- 8. In localities suitable for kail growth, the kail trees should be preferably retained as for as possible. However, in the moist conditions the openings should not be widen in vain hope of creating dry conditions favourable for kail, such openings will be invaded by weeds.
- 9. Exploitable kail trees suppressing the fir advance growth as well as exploitable fir trees suppressing the kail regeneration should be marked without any hesitation.
- 10. No green, healthy trees of any size should be marked in a belt of 25 m around or adjoining blanks and pasture lands. Similarly no green, healthy tree of any size should be marked in a belt of 25m along the demarcation line.
- 11. No green, healthy tree should be marked within the protection belts.
- 12. Recruit and fodder trees must be retained to serve as a food for wildlife.
- 13. In lower belt of fir zone, where if the crop is mixed the preference in retaining should be given to deodar and kail subject to suitability of habitat.

#### 2.20 SUPPLIMENTARY MARKINGS

These markings will be conducted after the major fellings. The trees and poles which got badly damaged, uprooted or dried up during the major fellings are marked under this fellings.

#### 2.21 SUBSIDIARY SILVICULTURAL OPERATIONS

- 1. The fir forests being situated on higher reaches are generally away from habitation. In these forests, the slash disposal in vacated coupes requires great attention. The slash accumulation besides its other disadvantages is also inimical to regeneration. The felling refuse should therefore be collected in heaps in blanks and along nalla banks and burnt under proper care and supervision.
- 2. The debris should be burnt in the spring season just after melting of snow so that the forest floor is moist enough to prevent the fire from spreading in the adjoining areas.

### 2.22 REGENERATION PROGRAMME

In order to assist the natural regeneration the gone over compartments should be immediately closed to grazing and other biotic interference. It is suggested that every year an area equivalent in extent to an annual coupe should be closed. The closure should remain effective till the regeneration gets established and is beyond the stage of browsing by cattle. In these areas uprooting of shrubs and racking of soil should be carried out in order to induce natural regeneration. In case of areas extremely deficient or totally lacking in regeneration, artificial regeneration should be resorted to. In such refractory areas 3 and a half year old nursery plants preferably those raised in polythene bags should be planted up. In order to raise the fir seedlings a sufficient number of high altitude nurseries should be established. In addition to annual coupes, other areas such as natural regeneration deficient areas, gaps created on account of damage, area susceptible to encroachment should also be closed for artificial regeneration for improvement of growing stock. The table below gives the list of compartments where such kind of treatment is immediately required.

Table 65: Treatment plan for compartments constituted in F.S.W.C forimprovement of forests

Compt	Total	ANR (ha)	AR (ha)	SMCW	Remarks
	Area(Ha)				

Ri-25	260	20	20	50 cu.mtrs	
Ri-26	245	40	30	180 cu.mtrs	
Ri-27	240	30	20	150 cu. mtrs	
Ri-28	325	30	30	150 cu.mtrs	
Ri-29	405.25	30	30	No Scope	Mostly un-commercial
Ri-30	286	20	20	150 cu.mtrs	Mostly un-commercial
Ri-31	169.75	30	20	150 cu.mtrs	
N-4	228	60	40	180 cu.mtrs	
N-5	165	65	50	150 cu.mtrs	
D-2	268.75	30	30	130 cu.mtrs	
D-3	240	25	30	160 cu.mtrs	
D-5	251	30	30	No Scope	Mostly un-commercial
D-6	230	40	30	170 cu.mtrs	
D-7	251	30	25	170 cu. mtrs	
D-8	253.5	20	20	No Scope	Mostly un-commercial
D-9	437	40	30	No Scope	Mostly un-commercial
D-14a	468	60	50	No Scope	Mostly un-commercial
D-15	154	30	30	150 cu.mtrs	
D-16	346.25	100	50	No Scope	Mostly un-commercial
D-17	692.25	100	100	No Scope	Mostly un-commercial
D-18a	215.25	50	100	120 cu.mtrs	Mostly un-commercial
D-19a	183	50	40	150 cu.mtrs	
			Raithan	1	
D-20b	126.75	40	30	50 cu.mtrs	
D-21	235.25	40	40	No Scope	
D-22	211.75	No Scope	No Scope	No Scope	
D-23	312	No Scope	No Scope	No Scope	
D-24	194.5	No Scope	No Scope	No Scope	
D-25	775.75	No Scope	No Scope	No Scope	
D-26	412.75	No Scope	No Scope	No Scope	
D-28b	207.75	50	No Scope	No Scope	
D-29	4559	60	No Scope	No Scope	ANR along the Nallah
D-31	396	No Scope	No Scope	No Scope	
D-32	179.25	No Scope	No Scope	No Scope	
D-33a	153.5	50	30	No Scope	
S-1b	266.5	50	20	No Scope	
S-2	293.25	No Scope	No Scope	No Scope	
		Su	khnag		
S-6	385	No Scope	No Scope	No Scope	Mostly un-commercial
S-7	562.5	No Scope	No Scope	No Scope	Mostly un-commercial
S-9	285	No Scope	No Scope	No Scope	Mostly un-commercial
S-10	320.5	No Scope	No Scope	No Scope	Mostly un-commercial

S-14	172	20	20	150 cu.mtrs	
S-15	257	10	10	130 cu.mtrs	
S-19	200.5	20	20	170 cu.mtrs	
S-20	286.5	10	10	100 cu.mtrs	Army Occupied
S-21	220.5	10	10	110 cu.mtrs	
S-22	279	10	10	100 cu.mtrs	
S-23	437.5	15	15	130 cu.mtrs	
S-24	415	15	15	125	

Abb: ANR: Aided Natural Regeneration, AR: Artificial Regeneration, SMCW: Soil & Moisture Conservation Works, S & D: Survey & Demarcation

#### 2.23 MISCELLANOUS REGULATIONS

1. All these forests should be protected against the occurrence of fire.

2. As already discussed should be immediately closed to grazing and other biotic interference.

3. No green fit trees should be marked in the protection belts which have been marked where ever needed.

The table below shows the possibility of management operations that can be undertaken in compartments constituted in Fir Selection Working Circle for improvement of growing stock.

#### \*\*\*\*\*\*

# <u>CHAPTER???</u> Bio-Aesthetic Working Circle

#### General Construction of working Circle.

90.0: This working circle includes the forests at and around the tourist spots like Yousmarg, Gulmarg and also those forests following enrouts Tangmarg to Gul;marg. The constitution of this working circle is same as that in the previous plan of Mr. Zadoo with few additions. The additions are of those compartments which are lving at and around Yousmarg.

#### General character of vegetation.

- 91.0: This working circle includes important sub-alpine pasture lands (Margs) like Yousmarg and Gulmarg. These pasture lands are surrounded by well stoked and high quality forests.
- 2. The crop comprises mainly of Fir and Kail with a slight sprinkling of spruce at some places. Deodar is restricted to a negligible number of trees in compartment RI 24a and compartment 48 Gulmarg.
- Fir is generally middle aged to mature with regeneration restricted to small 3. patches here and there. Kail is found on hotter aspects and is generally voung to middle aged.
- The broad leaved species are restricted to nallas and moist depressions. 4.

#### Special Objects of management.

92.0 The main objects of the constitution of this working circle is to maintain and preserve the sylvan beauty of Yousmarg and Gulmarg-Tangmarg areas because all these places are leading sources of the tourist attraction and public recreation in the valley. Besides being a summer resort, Gulmarg also forms one of the best places for winter sports. The attractive picturesque back drop of these health resorts owes their grandeur to the richness of surrounding forest flora.

#### Area statement.

93.0 The detailed area statement of the compartments and sub-compartments allotted ton this working circle is given in appendix lb, however, the Range wise distribution of area under different species is enclosed.

#### Analysis and evaluation of growing stocks.

The method of Moint Sampling+use adopted for their assessment of 94.0 growing stocks. Details of the procedure adopted are given in paras 56.0 to 56.4. The results obtained were put to various statistical tests for variables of basal area, No. of trees and volume. The same values for this stratum have been tabulated under para 56.5.

The enclosed table shows species wise growing stocks for stocked area 94.1 of the entire working circle.

#### Method of treatment prescribed.

As already discussed these forests will be managed to maintain and 95.0 preserve the sylvan beauty of the area keeping in view the above object of management every efforts will be aimed at the conservation and improvement of the forest cover so that a balanced eco-system is maintained. Any factor tending to destroy this balanced-eco-system will be eliminated. No particular silviculture system is prescribed; however, prescriptions are laid for providing of more recreational amenities for promotion of wildlifecs and for afforestation of blanks/gaps in these areas. No commercial fallings are prescribed in this working circle. Only dead and fallen trees shall be removed to preserve the hygiene of the forests.

#### Afforestation measures prescribed.

98.0 All the blanks and gaps shall be planted with the suitable species. Conifer shall be given preference while planting blanks and gaps of closed proximity. Ornamental plants shall be raised along the roads and around the recreational parks and look outn points. This will include species like Aescules, Cupresus and other evergreen and flowering plants. Much in the interior fruit and fodder trees shall be raised.

Methods of sale/supply of timber and firewood.

99.0 No commercial felling have been prescribed in this working circle. As already discussed only some dead and fallen trees will be removed in order to improve the hygiene of the crop. The timber requirements of the locals shall be fulfilled through the forest depots. The timber and fire wood for these sale depots shall be brought from the adjacent commercial forests.

T	Table 58(a) Statement showing species and diameter(cm) class wise tree count of Bio-Aesthetic												
	Working Circle												
	Tree count per hectare (Mean Value)												
											Grand		
Spp.	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100	100 <	Total		
Deo.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Kail	0.00	3.17	1.97	1.09	0.77	0.80	0.00	0.14	0.00	0.00	7.94		
Fir	15.69	26.20	35.31	40.06	34.51	18.09	4.40	2.17	1.26	0.43	178.12		
B.L.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Total	15.69	29.37	37.28	41.15	35.28	18.89	4.40	2.31	1.26	0.43	186.06		

	Total tree count over the entire commercial area of Bio-Aesthetic Working Circle													
	(Area = 2429.5 hectares)													
									90-	100	Grand			
Spp.	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	100	<	Total			
Deo.	0.00	0	0	0	0	0	0	0	0	0	0			
Kail	Kail         0.00         7702         4786         2648         1871         1944         0         340         0         0         19290													

Fir	35631.99	63653	85786	97326	83842	43950	10690	5272	3061	1045	430256
B.L.	0	0	0	0	0	0	0	0	0	0	0
Total	35631.99	71355	90572	99974	85713	45894	10690	5612	3061	1045	449546

Tabl	le 58 (b)	Statemen	t showin	g species Ad	and diai esthetic V	meter(cm Vorking (	e) class w Circle	ise volun	ne(m <sup>3</sup> ) of (	Conifers	in Bio-		
Volume of conifers per hectare (Mean Value)													
	Grand												
Spp.	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100	100 <	Total		
Deo.			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Kail			1.50	1.48	1.75	2.67	0.00	0.76	0.00	0.00	8.16		
Fir			29.66	62.49	102.51	88.62	30.14	18.02	11.82	4.37	347.63		
Total	Total         31.16         63.97         104.26         91.29         30.14         18.78         11.82         4.37         355.79												

	Total volume of conifers over the entire commercial area of <i>Bio-Aesthetic</i> Working Circle												
					(Ar	ea = 2429.5	hectares)						
											Grand		
Spp.			30-40	40-50	50-60	60-70	70-80	80-90	90-100	100 <	Total		
Deo.			0	0	0	0	0	0	0	0	0		
Kail			3644	3596	4252	6487	0	1846	0	0	19825		
Fir	Kan         3044         3390         4232         0487         0         1846         0         0         19825           Fir         72059         151819         249048         215302         73225         43780         28717         10617         844567												
Total	Total         75703         155415         253300         221789         73225         45626         28717         10617         864392												

Tabl	Table 58 (c) Distribution of stems and volume (m <sup>3</sup> ) in Bio-Aesthetic working circle computed at lower													
	confidence interval.													
	Total tree count of commercial area (2429.5 ha) at lower interval for Fir Selection Working Circle													
	Lower limit 80%													
										100	Grand			
Spp.	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100	<	Total			
Deo.		0	0	0	0	0	0	0	0	0	0			
Kail		6161	3829	2119	1497	1555	0	272	0	0	15433			
Fir	0	50922	68629	77861	67074	35160	8552	4218	2449	836	315701			
B.L.	0	0	0	0	0	0	0	0	0	0	0			
Total	0	57083	72458	79980	68571	36715	8552	4490	2449	836	331134			

Tot	Total volume of conifers over the entire commercial area (2429.5 ha) at lower interval for Bio-Aesthetic												
	Working Circle												
	Lower Limit 84%												
	Grand												
Spp.	Spp.         30-40         40-50         50-60         60-70         70-80         80-90         90-100         100 <         Total												

Deo.		0	0	0	0	0	0	0	0	0
Kail		3061	3020	3571	5449	0	1551	0	0	16652
Fir		60530	127528	209200	180854	61509	36775	24122	8918	709436
Total		63591	130548	212771	186303	61509	38326	24122	8918	726088

Table 5??: Statement of Blocks & Compartments constituted into Bio-Aesthetic W.C.

Range	Blocks	Compartments	Total area
			(ha)
Doodhganga	Yousmarg	Ri25, Ri26, Ri27, Ri28, Ri29, Ri30	1761.25
	Kanidhagan	Ri31	169.75
	Surasyar	D2,D3	508.75
	3 blocks	9 comptts	2439.75
Raithan	Gurwaith	D31	396
	1 blocks	1 Comptt.	396
Total	4 blocks	10 compartments	2835.75

Note: Ri-24a carved out to Shopian Div. Ri-32 shifted to Rehabilitation Working circle and D-31 added from Protection Working Circle.

Table 5??: Normal and Actual distribution of stems over Diameter classes.

Diameter-class (cm)	10-20	20-30	30-40	40-50	50-60	60-70	>70
Normal Distribution (%)	41	25	15	9	5	3	2
Actual Distribution (%)	8.62	12.46	17.42	19.15	21.92	13.66	6.74

Range		Stocking	(ha)		Encroac	Blanks	Total
				hment	(ha)	(ha)	
					(ha)		
	Kail	Fir	B/L	Total			
Dudhganga	287.35	1964.15	0	2251.5	4.5	183.75	2439.75
Raithan	0	178	0	178	0	218	396

Table 57: Area statement of Bio-Aesthetic Working Circle

Sukhnag	0	0	0	0	0	0	0
Total	287.35	2142.15	0	2429.5	4.5	401.75	2835.75

# CHAPTER III

# **REHABILITATION WORKING CIRCLE**

#### 3.1 GENERAL CONSTITUTION

- 3.1.1 It includes all those forest areas which are poorly stocked and are not fit for regular working. This working circle shall include all such low-lying degraded fir forests which have been rendered unfit for regular working by biotic excesses. These are usually situated in close proximity of human habitations. They have become unproductive over the period of time by way of incessant lopping, illegal damage, grazing and encroachment.
- 3.1.2 This working circle also includes some of the areas which were under regular working in recent past and turned degraded due to biotic influences and lack of proper rehabilitative measures. The average stocking of these forests is very low.

Range	Blocks	Compartments	Total area
			(ha)
Doodganga	Kanidhagan	Ri-32, N1b, N2a	531.75
	Chararshrief	N1a, N2b	412
	Nilnag	N3, N6	667.25
	Surasyar	D1	417
	Jabbad	D14b	62.25
	Negoo	D18b, D19b	227.75
		11 compartments	2318.0
Raithan	Kachwari	D20a, D20c	260.3
	Palmaidan	D27, D28a	287.75
	Gurweith	D33b, D33c, D33d	132.6
	Raiyar	D34a, D34b, S1a	702.75
		10 compartments	1383.4
Sukhnag	Ringzabal	S9,S11	470
	Zugoo	S12, S13	264.25
	Sutharan	S16, S17, S18,S20	868.5
Subtotal		8 compartments	1602.75
Total	13 blocks	29 compartments	5304.15

 Table 66: Statement of Blocks & Compartments constituted into Rehabilitation W.C.

Note: Ri-32 added from Aesthetic Working Circle, N-3, S-1a, S-9, S-12, S-16, & S-17 added from Fir Section Working circle

# 3.2 GENERAL CHARACTER OF VEGETATION

- 3.2.1 The crop is either Kail or Fir or mixture of both. Towards the higher elevation of these forests, Fir is found either in mixture with Deodar-Kail or in a pure form along nalla's and in depressions. The crop is generally young to middle aged with scattered mature trees. It is often stunted, malformed and multi-branched. Regeneration is seen either in patches or is totally absent. The natural regeneration is no problem, if biotic interferences are not allowed to intervene.
- 3.2.2 These Forests are subject to heavy biotic interferences due to proximity to habitation, easy slopes and easy accessibility. The evil effects of biotic interference (excessive grazing, lopping, illicit felling, and encroachments) of such Forests is quite evident in almost all these compartments / Subcompartments. The crop is usually lopped up to top, malformed and stunted. These areas have suffered in the past due to over exploitation on account of being easily accessible. In these Forests the broad leaved species are generally absent due to persistent and excessive grazing. The vegetative cover in some of the compartments / sub-compartments of this Working Circle is so much deficient that it cannot check the excessive run off. As a result soil-erosion has already set-in, in various areas of this Working Circle.

# 3.3 OBJECTIVES OF MANAGEMENT

The general objective of management of this working circle is to stock these degraded forests adequately by effective closure and by raising plantation of suitable species besides taking adequate measures for soil and water conservation.

The special objectives of management includes:-

- 1. To conserve and maintain the existing conifer crop.
- 2. To conduct the work of demarcation to save the forests from encroachment.
- 3. To regenerate the forests naturally as well as artificially in order to fill in the blanks created on account of illicit damage.
- 4. To check further degradation of forests by taking up measures in order to restore the normal stocking and productivity.

# 3.4 AREA STATEMENT

The area statement of this working circle is presented in the table below:-

Range			Stocking		Encroach	Blanks	Total	
				ment				
	Deo.	Kail	Fir	BL	Total			
Dudhganga	0	1280.6	560	0	1840.6	430.15	47.25	2318
Raithan	0	365.5	630	0	995.5	312.4	75.5	1383.4
Sukhnag	4.5	153.85	770.75	9	938.1	188.75	475.9	1602.75
Total	4.5	1799.95	1960.75	9	3774.2	931.3	598.65	5304.15

 Table 67: Area statement of Rehabilitation Working Circle

#### 3.5. ANALYSIS AND EVALUATION OF GROWING STOCK

The method of point sampling was adopted for the assessment of growing stock. The details have already been presented in chapter-7. The results obtained were put to various statistical tests for variables of no. of trees and volume. The table below shows the species-wise growing stock for the stocked area of the entire working circle.

Ta	Table 68 (a) Statement showing species and diameter(cm) class wise tree count of RehabilitationWorking Circle											
	Tree count per hectare (Mean Value)											
										100	Grand	
Spp.	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100	<	Total	
Deo.	0.00	0.00	0.00	0.00	0.32	0.00	0.00	0.00	0.00	0.00	0.32	
Kail	5.53	10.04	4.49	2.81	8.08	5.45	3.04	1.21	0.23	0.00	40.88	
Fir	5.25	1.16	4.59	5.00	7.04	4.11	1.61	0.64	0.05	0.04	29.49	
B.L.	13.04	11.15	6.41	4.99	2.11	0.00	0.00	0.00	0.00	0.00	37.7	
Total	23.82	22.35	15.49	12.8	17.55	9.56	4.65	1.85	0.28	0.04	108.39	

	Total tree	e count ov	er the en	tire comm	nercial ar	ea of Reh	abilitatio	n Workiı	ng Circle				
	(Area = 3774.2 hectares)												
										100	Grand		
Spp.	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100	<	Total		
Deo.	0.00	0	0	0	1208	0	0	0	0	0	1208		
Kail	12558.63	37893	16946	10606	30496	20569	11474	4567	868	0	145977.63		
Fir	11922.75	4378	17324	18871	26570	15512	6076	2415	189	151	103408.75		
B.L.	29613.84	42082	24193	18833	7964	0	0	0	0	0	122685.84		
Total	54095.22	84353	58463	48310	66238	36081	17550	6982	1057	151	373280.22		

Tab	Table 68 (b) Statement showing species and diameter(cm) class wise volume( $m^3$ ) of Conifers in											
Rehabilitation Working Circle												
Volume of conifers per hectare (Mean Value).												
										Grand		
Spp.		30-40	40-50	50-60	60-70	70-80	80-90	90-100	100 <	Total		
Deo.		0.00	0.00	0.67	0.00	0.00	0.00	0.00	0.00	0.67		
Kail		3.47	3.84	18.34	18.21	13.44	6.49	1.39	0.00	65.18		
Fir		3.85	7.80	20.92	20.12	11.05	5.31	0.50	0.41	69.96		
Total		7.32	11.64	39.93	38.33	24.49	11.8	1.89	0.41	135.81		

	Total volume of conifers over the entire commercial area of Rehabilitation Working Circle (Area = 3774.2 hectares)												
				-						Grand			
Spp.		30-40	40-50	50-60	60-70	70-80	80-90	90-100	100 <	Total			
Deo.		0	0	2529	0	0	0	0	0	2529			
Kail		13096	14493	69219	68728	50725	24495	5246	0	246002			
Fir		14531	29439	78956	75937	41705	20041	1887	1547	264043			
Total		27627	43932	150704	144665	92430	44536	7133	1547	512574			

Table	Table 68 (c): Distribution of stems and volume (m <sup>3</sup> ) in Rehabilitation working circle computed at         lower confidence interval.												
	ř												
Total tree count of commercial area (3774.2 ha) at lower interval for Rehabilitation Working Circle													
	Lower limit 73 %												
	10-									100	Grand		
Spp.	20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100	<	Total		
Deo.		0	0	0	882	0	0	0	0	0	882		
Kail		27662	12371	7742	22262	15016	8376	3334	634	0	97397		
Fir		3196	12646	13776	19396	11324	4436	1763	138	110	66785		
B.L.		30720	17661	13748	5813	0	0	0	0	0	67942		
Total	0.00	61578	42678	35266	48353	26340	12812	5097	772	110	233006		

Total	Total volume of conifers over the entire commercial area (3774.2 ha) at lower interval for Rehabilitation												
Working Circle													
	Lower limit 74 %												
									100	Grand			
Spp.		30-40	40-50	50-60	60-70	70-80	80-90	90-100	<	Total			
Deo.		0	0	1871	0	0	0	0	0	1871			
Kail		9691	10725	51222	50859	37537	18126	3882	0	182042			
Fir		10753	21785	58428	56193	30862	14830	1396	1145	195392			
Total		20444	32510	111521	107052	68399	32956	5278	1145	379305			

#### 3.6 METHOD OF TREATMENT

To achieve the above objectives, it is essential to protect them from further deteriotion. Following treatments are suggested during this plan period.

- 1. Closing the area with fencing followed by sowing and planting of suitable species in a phased manner. The open and blank areas shall have to be restocked artificially. The whole area is prescribed to be taken up during this plan period.
- 2. The forest area will be given complete rest in order to improve natural stocking and site quality.
- 3. Plantations will be raised in these areas to meet the local demands of fuel, fodder and small timber and to reduce the pressure on natural forests.
- 4. The demarcation pillars will be erected where ever missing in order to save forests from encroachment. All encroachments will be removed in this plan period.
- 5. In the areas having crop cover, the sowing and under-planting of deodar and kail is suggested with preference to be given to kail on exposed sites and southern aspects and to deodar on well-drained sites having fair degree of side shade. Along the areas towards habitation, strip planting of Robinia, Ailanthus, Ash, Aesculus, Juglans etc will be suitable.

### 3.7 METHOD OF EXECUTING THE FELLING

No yield is to be realized from this working circle. Only improvement and hygienic markings are to be conducted.

### 3.7.1 Suggestions for Marking officer

1. Only dead, dying and diseased trees are to be marked.

2. The malformed trees can be removed in case their removal does not create wide gaps or when there is sufficient established regeneration under them.

3. No green fit trees are to be marked for any reason from this working circle.

### 3.8 SCOPE OF INTERVENTIONS/OPERATIONS

The table below shows the possibility of management operations that can be undertaken in compartments constituted in Rehabilitation Working Circle for improvement of growing stock.

	improvement	1 05 501 0513			
Compt	Total Area (Hac)	ANR (ha)	AR (ha)	SMCW	Remarks
			Doodhgai	nga	
Ri-32	267.75	120	40	150 cu.mtrs	
N-1a	126	-	-	-	Encroached almost all
					comptt
N-1b	149	No Scope	100	No Scope	
N-2a	115	10	40	No Scope	
N-2b	286	30	20	No Scope	
N-3	267.75	25	30	100 cu.mtrs	
N-6	399.5	60	50	100 cu.mtrs	
D-1	417	20	20	100 cu.mtrs	
D-14b	62.25	15	15	No Scope	
D-18b	132.75	30	25	100 cu.mtrs	
D-19b	95	20	20	120 cu.mtrs	
			Raitha	n	
D-20a	233	50	20	100 cu.mtrs	
D-20c	27.3	15	10	No Scope	
D-27	198.5	50	50	400 cu.mtrs	E-bags under SMCW
D-28a	89.25	30	No Scope	No Scope	
D-33b	96.5	40	20	No Scope	
D-33c	24	No Scope	No Scope	No Scope	
D-33d	12.1	No Scope	No Scope	No Scope	Encroached entirely
D-34a	276.5	70	30	No Scope	
D-34b	42.5	30	20	No Scope	
S-1a	383.75	100	50	No Scope	
	·		Sukhna	g	·
S-11	185	15	15	150 cu.mtrs	
S-12	124	20	20	120 cu.mtrs	
S-13 140.25 15 15		130 cu.mtrs			
S-16 290.5 15 15		135 cu.mtrs			
S-17 191 20 20		120 cu.mtrs			
S-18         100.5         15         1		15	160 cu.mtrs		

 Table 69: Treatment plan for compartments constituted in R.W.C for improvement of forests

Abb: ANR: Aided Natural Regeneration, AR: Artificial Regeneration, SMCW: Soil & Moisture Conservation Works, S & D: Survey & Demarcation

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## **CHAPTER IV**

# **ECO-CONSERVATION WORKING CIRCLE**

## 4.1 GENERAL CONSTITUTION

- 4.1.1 The Working Circle comprises of poorly stocked and open forest areas occurring on high steep and precipitous slopes. These are generally inaccessible high level Fir Forests especially situated at the source of main streams and Nalla's. Vast alpine pastures were also included in this Working Circle. The areas included in this Working Circle are very much prone to avalanches. The Forests of this Working Circle are unsuitable for regular working because of their critical crop condition. The constitution of this working circle is same as that in the plans under revision, save minor alterations.
- 4.1.2 This working circle shall comprise of all high lying areas above 10,000 ft. altitude which have steep to precipitous slopes and rugged topography. It includes high-lying Fir-Kail forests and alpine pastures. These forests are commercially un-exploitable and shall be retained as protection belt.

Range	Blocks	Compartments	Total
			Area (ha)
Doodganga	Padshatar,	D-4,D-5,D-10,D-11,D-12	4729
	Jabad	D-13	2862
Raithan	Palmaidan,	D-30,	3565
	Raiyar	S-3,	1239
Sukhnag	Khalkat	S-4,S-5,S-8a,S-8b,S-10	12995.5
	5 blocks	13 Comptts	
TOTAL			25390.5

Table 70: Statement of Blocks & Compartments constituted in Alpine Protection W.C

Note: D-30 added from Fir Selection Working Circle & D-31 shifted to Bio-Aesthetic Working Circle.

## 4.2 GENERAL CHARACTER OF VEGETATION

4.2.1 The fir constitutes the main crop of the working circle, though Kail is also present in mixture with fir at exposed sites. The forests are generally under stocked. They are poor both qualitatively and quantitatively. The crop consists of mature to over mature trees with regeneration almost absent, but is present in such blanks where Kail has colonized. Towards higher elevations, these Fir Forests fade out and ultimately merge with alpine vegetation. The alpine pasture support luxuriant ground flora with

occasional woody form bushes like Betula, high level Rhododendron and Junipers. The Forests are open having stunted growth. The crop loses its

height and becomes stunt and bushy. Beyond these scrub forest, there are large pasture lands which form the summer grazing grounds of Gujjars and Bakerwals. The areas included in this working circle being inaccessible and to a large extent free from human interference harbor a rich variety of wildlife.

4.2.2 The broad leaved associates like Ash, Maple, Bird cherry and Walnut are confined to Nalla bank, depressions and cooler aspects. Some solitary Birch trees are found scattered above the upper limit of Fir zone. The herbaceous flora forms source of variety of important medicinal plants like Sussurea lappa (Kuth), Dioscoria, Aconitum heterophullum (Patris), A. chresentum (mohri), Podophyllum spp., (Bankhakhri) and Jusinea macrophylla (Dhoop) etc.

Table 71: Normal and Actual distribution of stems over Diameter classes Diameter-class (cm) 10-20 20-30 30-40 40-50 50-60 60-70 >70 Normal Distribution (%) 41 25 15 9 5 3 2

13.37

13.09 20.28 27.34 13.63

7.33

4.96

#### 4.3 SPECIAL OBJECTIVES OF MANAGEMENT

Actual Distribution (%)

- The areas included in this working circle form the catchment areas of 4.3.1 various streams and nallas flowing down in the valley. Thus any disturbance in the eco-system of this area will cause havoc in the form of heavy floods down in the valley. The special objects of managements of these areas are, therefore, to ensure adequate vegetal cover of efficacious soil and water conservation. Their management will be thus aimed at soil conservation on hill slopes and water conservation in catchment areas besides protection and promotion of wild life.
- 4.3.2 The special objectives of management shall be as follows:-
  - 1. To conserve and maintain the existing conifer crop.
  - 2. To preserve all life forms so that soil and water regime is not affected.
  - 3. To retain all existing crop in order to prevent erosion, landslips and avalanches.
  - 4. To preserve forests for soil and moisture conservation.
  - 5. To check degradation of forests by taking up measures in order to restore the normal stocking and productivity.
  - 6. To protect forests from excessive grazing, forest fires and illicit damage.

## 4.4 AREA STATEMENT

The area statement of this working circle is presented in the table below:-

Range		Sto	ocking	Blanks	Total	
	Kail	Fir	B/L	Total		
Dudhganga	71.25	1289.75	25	1386	6205	7591
Raithan	28.5	613.5	58.5	700.5	4103.5	4804
Sukhnag	0	1091	19.25	1110.25	11885.25	12995.5
Total	99.75	2994.25	102.75	3196.75	22193.75	25390.5

Table 72: Area statement of Eco-Conservation Working Circle

## 4.5 ANALYSIS AND EVALUATION OF GROWING STOCK

The method of point sampling was adopted for the assessment of growing stock. The details have already been presented in chapter-6. The results obtained were put to various statistical tests for variables viz No. of trees and volume. The table below shows the species-wise growing stock for the stocked area of the entire working circle.

Table	Table 73(a) Statement showing species and diameter(cm) class wise tree count of Eco-Conservation         Working Circle										
	Tree count per hectare (Mean Value)										
Spp.	10-	20-30	30-40	40-50	50-60	60-70	70-	80-	90-	100 <	Grand
	20						80	90	100		Total
Deo.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Kail	6.88	2.29	0.49	1.94	1.78	1.27	0.39	0.22	0.00	0.06	15.32
Fir	14.18	12.43	14.63	22.82	32.73	16.20	5.02	2.53	0.43	0.29	121.26
B.L.	0.00	4.04	1.33	0.41	0.00	0.00	0.00	0.00	0.00	0.00	5.78
Total	21.06	18.76	16.45	25.17	34.51	17.47	5.41	2.75	0.43	0.35	142.36

	Total tree count over the entire commercial area of <i>Eco-Conservation</i> Working Circle										
				(A	rea = 319	6.75 hecta	ares)				
Spp.	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-	100 <	Grand
									100		Total
Deo.	0.00	0	0	0	0	0	0	0	0	0	0
Kail	15624.48	7321	1566	6202	5690	4060	1247	703	0	192	42605
Fir	32202.78	39736	46768	72950	104630	51787	16048	8088	1375	927	374511
B.L.	0.00	12915	4252	1311	0	0	0	0	0	0	18477
Total	47827.26	59972	52586	80463	110320	55847	17295	8791	1375	1119	435593

Table	Table 73(b) Statement showing species and diameter(cm) class wise volume(m²) of Conifers in Eco-         Conservation Working Circle										
	Volume of conifers per hectare (Mean Value)										
Spp.		30-40	40-50	50-60	60-70	70-80	80-90	90-	100 <	Grand	
								100		Total	
Deo.		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Kail		0.37	2.64	4.05	4.26	1.73	1.15	0.00	0.40	14.60	
Fir		12.29	35.60	97.19	79.36	34.38	20.99	3.32	3.00	286.13	
Total		12.66	38.24	101.24	83.62	36.11	22.14	3.32	3.4	300.73	

T	fotal volume	of conife	rs over the	entire cor	nmercial a	rea of <i>Eco</i>	o-Consei	vation W	orking Ci	rcle
	(Area = 3196.75 hectares)									
Spp.		30-40	40-50	50-60	60-70	70-80	80-90	90-100	100 <	Grand Total
Deo.		0	0	0	0	0	0	0	0	0
Kail		1183	8439	12947	13618	5530	3676	0	1279	46673
Fir		39288	113804	310692	253694	109904	67100	10613	9590	914686
Total		40471	122243	323639	267312	115434	70776	10613	10869	961359

Т	Table 73 (C): Distribution of stems and volume (m <sup>3</sup> ) in Eco-Conservation working circle         computed at lower confidence interval										
Total t	Fotal tree count of commercial area (3196.75 ha) at lower interval for <i>Eco-Conservation</i> Working Circle										
										Lower	limit 70%
Spp.	10-	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100	100	Grand
	20									<	Total
Deo.		0	0	0	0	0	0	0	0	0	0
Kail		5124	1096	4341	3983	2842	873	492	0	134	18885
Fir		27815	32738	51065	73241	36251	11233	5661	962	649	239615
B.L.		9040	2976	917	0	0	0	0	0	0	12933
Total		41979	36810	56323	77224	39093	12106	6153	962	783	271433

То	Total volume of conifers over the entire commercial area (3196.75 ha) at lower interval for Eco-									
			Con	servation	Working	Circle				
									Lower 1	limit 82%
Spp.		30-40	40-50	50-60	60-70	70-80	80-90	90-100	100	Grand
									<	Total
Deo.		0	0	0	0	0	0	0	0	0
Kail		970	6920	10616	11167	4535	3015	0	1049	38272
Fir		32216	93320	254768	208029	90121	55022	8703	7864	750043
Total		33186	100240	265384	219196	94656	58037	8703	8913	788315

#### 4.6 METHOD OF TREATMENT PRESCRIBED

- 1. These areas should be protected efficiently against fires, illicit fellings, uncontrolled/excessive grazing and other such biotic influence.
- 2. No fellings of what so-ever nature are allowed in this working circle.
- 3. The denuded area and the avalanche affected the localities should be reclothed with the vegetation. The choice of species is left to the discretion of the territorial DFO. While selecting the species he should take into account the altitude, aspect, edaphic and climatic factors of that locality .Preference should be given to soil binding and fodder species.
- 4. As the area included in this working circle is rich in wildlife, hence detailed regulations for the management of wildlife given under the heading 'Wildlife Management' in the succeeding chapter should be followed.

- 5. The grazing should be allowed on rotational basis by closing a part of area over a period of time to recuperate it and minimize the incipient sheet erosion which later on leads to formation of rills and gullies.
- 6. The dry stone masonry works should be executed at sore spots to plug the gullies and stop their further deepening.
- 7. The blanks within the cropped zone should be stocked artificially by Kail and Fir sowing and H.C. nut dibbling.
- 8. The patch sowing of grasses should be done on sheet erosion affected blank areas in pasture lands in autumn months.

## 4.7 SCOPE OF MANAGEMENT INTERVENTIONS

The table below shows the possibility of management operations that can be undertaken in compartments constituted in Alpine Protection Working Circle for improvement of growing stock.

Compt	Total	ANR (ha)	AR (ha)	SMCW	Remarks
-	Area(Hac.)				
		Doodh	ganga		
D-4	270	No Scope	No Scope	No Scope	Mostly un-commercial
D-10	725	No Scope	No Scope	No Scope	Mostly un-commercial
D-11	1787	No Scope	No Scope	No Scope	Mostly un-commercial
D-12	1696	No Scope	No Scope	No Scope	Mostly un-commercial
D-13	2862	No Scope	No Scope	No Scope	Mostly un-commercial
		Rait	han		
D-30	3565	No Scope	No Scope	No Scope	Mostly un-commercial
S-3	1239	No Scope	No Scope	No Scope	Mostly un-commercial
		Sukh	nag		
S-4	185	15	15	150	
				cu.mtrs	
S-5	124	20	20	120	
				cu.mtrs	
S-8a	140.25	15	15	130	
				cu.mtrs	
S-8b	290.5	15	15	135	
				cu.mtrs	

Table 74: Treatment plan for compartments constituted in A.P. W.C for improvement of forests.

Abb: ANR: Aided Natural Regeneration, AR: Artificial Regeneration, SMCW: Soil & Moisture Conservation Works, SP: Silvipasture

## 4.8 PASTURE LAND DEVELOPMENT

One of the most important features of the Pirpanjal Forest Division are its extensive pasture lands or "margs". The "marg" are famous for their natural beauty, at the same time constitute a source of feed, and fodder for quite a sizeable livestock population during the summer months. On the basis of their location, the grasslands of this division can be broadly classified into Alpine, Sub-Alpine and other grazing area (Lower hills etc.)

## 4.8.1 CLASSIFICATION OF PASTURES

## (A) ALPINE PASTURES

These grasslands are characteristic of steep slopes and alpine meadows above 3200m (above m.s.l) altitude. The climate is too cold, thus devoid of tree growth. Most of the precipitation is in the form of snow which cover the ground for more than five to six months in a year, resulting in a very short growing season. Nomadic Bakerwals and Chopans with their herds of sheep and goats visit these areas during summer. The various grasses grow in these areas are;

#### 1. Phleum – Alpine type

This type occupies the undulating well-terraced slopes and flat meadows with deep soil and plenty of moisture. Common grasses are *Phleum alpinum*, *Agrospyron semicostatum*, *Poa alpina*, *Poa annua*, *Festuca ovinna*, *Festuca kashmiriana*. *Phleum alpinum* and *Agrospyron* are palatable and animals graze them hard. Degraded stages with unpalatable species are common. In such places most of the cover is of unpalatable weeds like *Plantago*, etc.

#### 2. Agrostis – Poa community

The main species are Agrostis manroana, Agrostis canina, Poa pratense, Calam–agrostis emdemsis, Puccinellia kashmiriana and Trisetum spicatum. The main community is on open slopes. It is replaced by Poa puccinallia type on overgrazed degraded sites.

The dominance of herbs like *Geum elatum* and *Siboaldia cunneata* have been observed in almost all those spots where intensive grazing have been carried out. The exposed rocks and slopes being dry and precipitous carry only a composition of various herbs such as species of *Androsace*, *Aconitum*, *Garanium*, *Corydalis*. The shrubs of *Juniperus recurva*, *Salix* etc cover large areas of these grasslands.

#### (B) SUB ALPINE PASTURES

These grasslands are mostly located in Kail and Fir forests with deep soil and good water holding capacity.

1. The succession of high –altitude meadow starts with species *Poa* where under protected conditions *D. glomerata* forms climax species. Associated with it are species of *Poa pratense, Festuca Ovine, Agrostis gigantea, Agrostis stolenifera*. The much valuable forage herb *T. repense* is an important component in the protected conditions with other associated herbs like *Achillea millifolium, Alchimella velguri, Polygonum alpinum*.

2. The Agrostis stolinfera associated with Poa pratense is the most common cover in the grazing areas of the sub – alpine zone. This shows the moderate pressure of grazing in these areas. The other grasses growing in admixture are Alopecurus myosuroides, Degitaria cruciata, Fastuca gigantea, Poa annua. The Polygonum alpinum, Rumax dentatus, Sibaldia cunneata, Taraxacum officinals, Plantago are found to be most common herb associates. Senecia chrysanthemoides, Poa annua, Malva neglecta are common association found in over grazed moist conditions.

3. Chrysopogon echinulatus, a perenial herb is most dominant under protected conditions in lower altitude grassland of subalpine region. The thick sods of this grass are highly resistant to grazing and have good soil binding capacity. Associated with species of grass are *Poa pratense, Agrostis alba, Koeleria cristata,* etc. the other herb components are *Ranuncula senecia, Rumax, Plantago, Trifolium etc.* 

In the over-grazed open spaces, the invasion of un-edible species of *Sambucus wightiana*, and *Cardus natans* is ever on increase posing a great threat to these areas. Similarly in little higher reaches the *Euphorbia walich* and *Conicus jalconeri* are spreading at alarming rate consuming most of these areas. *Oryzopsis acquiglumis,* a poisonous grass species have already consumed a lot of grazing slopes which once were covered with edible species.

#### (C) LOWER HILL PASTURES

The foothills of Pir Panjal have small blanks which are used as grazing areas by village live stock.

- i. The protected reserves have fair distribution of grasses, legumes and other herbs. Among the grasses *D. glommerata, Agrostis alba, Poa pratense* and among legume *Trifolium pratense, T. repense, Medicago luplina, Lotus corniculatus, Melilotus alba* and among other herbs *Capsella bursa, Polygonum alpinum, Taraxcum officinals, Fragaria vasica* are the most common.
- ii. In dry open slopes the climax species is *Themada anathera* which possess a bulk forage and has soil binding capacity as well. *Chrysopogon echinulatus, Bothriochloa pertusa, Bromus japanicus,* etc are other associates.
- iii. Bothriochloa pertusa is the dominant grass in moderate protected area where in Festuca gigantea, Phalaris anundinacea, Bromus japanicus, etc are associate grasses. The other herbs of Malwa neglecte, Fragaria vasica, Capsilla bursa form the most common associates.
- iv. Bothriachloa, Cynodon dactylon is the most common grass cover in constantly grazed areas. In the eroded areas the species of Indigofera hetrantha, Plectranthus rugosus, Vibernum foetens, Rosa are spreading and thus reducing the content of forage available for livestock.

## 4.8.2 DISTRIBUTION OF PASTURES

(i) The compartment-wise distribution of area under pastureland, rocky stony waste land, glaciers and other blanks has been indicated in area statement of the respective working circle. However, the range-wise abstract of the area under the three main types of grass lands as discussed above is given as under:-

Range	Alpine Blanks	Sub-alpine Blanks	Lower-hill Blanks	Total
Doodganga	6616	338.25	195.25	7149.5
Raithan	8181.5	643	214.5	9039
Sukhnag	12259.25	100.25	878.9	13238.4
Total	27056.75	1081.5	1288.65	29426.9

 Table 75: Statement showing Alpine, Subalpine and Lower-hill Blanks of

 Pirpanjal Forest Division

As the blanks shown above include the areas under rocky out crops and glaciers also, therefore the total area of these blanks is reduced by 15% to account for unculturable areas. The total culturable areas, therefore works out as 25012.87.

(ii) The names of some important alpine, sub-alpine and lower hill pasture lands (Behaks) is given as under:-

Range	Alpine pasture	Sub-alpine	Lower-hill pasture
	land	Pasture land	land
Dudhganga	Bargamaidan,	Yusmarg,	Nagbal,
	Kharmarg,	Dragtolan,	Sonabanjar
	Zandkawal,	Kandikhal,	
	Luddermarg	Frasnag	
Raithan	Chhanz,	Dudhpathri,	Palmaidan,
	Kharibal,	Rashnar,	Kralpathri,
	Danidar	Sochayaari	Parhasbehal,
			Raiyar forest
Sukhnag	Toshmaidan,	Kadalbal,	Zogu,
	Duren	Nagni,	Sutharan,
		Bona Toshmaidan,	Drang,
		Kanzal pathri,	
		Laribal	

Table 76: Important Behaks of Pirpanjal Forest Division

#### 4.8.3 CARRYING CAPACITY

Experiments conducted by Indian Grass Land and Forage Research Institute Station, Manasbal, in various prominent pastures in Kashmir have revealed that on an average our grasslands produce about 125 kg/ha of forage(ovendry matter) annually. Granted that on an average a single sheep require 3% of its body weight as forage per day and about six sheep would weigh 100 Kg (on an average) a 120 Kg forage would last for 4 months for two sheep, say from June to September, which is the period for which these animals graze in these pastures. Thus the carrying capacity of these pastures is 2 sheep/ha.

#### 4.8.4 INCIDENCE OF GRAZING

The livestock population of the division as per the 2011-12 census is 6,61,351. It includes cattle, Buffaloes, Horses, Ponnies, Goats and Sheep. Besides the local livestock a good number of flocks of migratory Bakerwals move through this division every year. They take their cattle mostly to alpine pastures. As calculated above if carrying capacity of these areas is 2 sheep/ha then there areas can sustain 25012.87 x 2= 50025.74 sheep heads against a population of 6,61,351 animal heads, including bigger animals as cows, buffaloes, Ponnies etc actually grazing. This gives a clear picture of over grazing in these areas.

## 4.8.5 EFFECTS OF OVER GRAZING

As a result of over grazing these pasture lands are getting depleted of palatable grasses. The spread of various unpalatable grasses/weeds as discussed earlier is the result of over grazing in these areas. The excessive grazing in these areas is removing the grass cover in these areas which is resulting in the erosion of the surface soil, and thus the areas under rocks and stones are on increase.

## 4.8.6 METHOD OF TREATMENT

The grazing is the complicated problem. It is a socio-economic, sociopolitical problem and cannot be solved with just some quick administrative decisions. It calls for extensive study on scientific lines and coordinated effort on behalf of Forest, Animal and Sheep Husbandry, Agriculture (Agrostology), Forage development and biological sciences (University) departments, together with representatives of graziers. However, the following method of treatment is suggested for these areas.

- 1. A detailed survey of these grass lands which should be conducted to know their present condition, trend and future potential. The proper grading of these areas should be done so that every site receives the best scientific treatment, it needs.
- 2. Research-cum-demonstration should be introduced on rotational closures and regulated grazing.
- 3. Carrying capacity of these areas should be increased by adding fertilizers and introducing leguminous species. Selection of leguminous species and addition of chemical fertilizers should be done in research-cum demonstration plots. In these plots deweeding uprooting or by application of weedicides should also be done on experimental basis.
- 4. Castration of useless and scrub cattle and introduction of useful varieties be done. Heavy grazing taxes be imposed to discourage the practice of keeping large but uneconomic herds.
- 5. Method of stall feeding be introduced and popularized among the locals using forage and other concentrates from other sources.

- 6. Local people should be motivated for raising grasses and fodder yielding tree species on their private lands in order to reduce the burden of excessive grazing on the forests.
- 7. The pasture lands at present require much intensive management on scientific lines. There being deficiency in technical know-how, it is thus suggested that forest officers should be sent to undergo trainings and higher studies in the field of range management and fodder production.

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## CHAPTER- V

## PLANTATION (OVERLAPPING) WORKING CIRCLE

## 5.1 GENERAL CONSTITUTION

- 5.1.1 It includes all those forest areas where plantations have been carried out in the past or where artificial regeneration is required to be carried out to improve the stocking. This working circle shall include huge chunks of forests spread all over the terrain where in the past plantations have been carried out and which have established. It will also include all such low-lying degraded conifer forests which have been rendered tree less by biotic excesses because of being situated in close proximity of human habitations which have become unproductive over the period of time by way of incessant lopping, illegal damage, grazing and encroachment.
- 5.1.2 This working circle shall also include some of the areas which are under regular working but under biotic influences where immediate and proper rehabilitative measures are required.

Range	Blocks	Compartments	Existing	Area available for plantation	Total area (ha)
			(ha)	(ha)	ureu (iiu)
Budgam	City forest	City-A, City-B	9.0	0	9
Soil Range					
Doodganga	Yousmarg	Ri25, Ri26, Ri27,			
	Kannidhagan				
	Chararshrief				
	Nilnag				
	Surasyar				
	Jabbad				
	Negoo				
Raithan	Kachwari	D20a, D20c			
	Palmaidan	D27, D28a			
	Gurweith	D33b, D33c, D33d			
	Raiyar	D34a, D34b, S1a			

Table 77: Statement of Blocks & Compartments constituted in Plantation W.C.

Sukhnag Subtotal	Ringzabal Zugoo Sutharan	S11, S12, S13 S16, S17, S18		
Total				

## 5.2 GENERAL CHARACTER OF VEGETATION

- 5.2.1 The crop is mostly broadleaved where plantations have been raised in the past. In City forest Budgam, it is mixture of Robinia, Apricot, Ailanthus and Cupresses. In Sochalnari N2, the deodar is established crop where it is naturally regenerating also.
- 5.2.1 In degraded forest area, the crop is either Kail or Fir or mixture of both. Towards the higher elevation of these forests, Fir is found either in mixture with Deodar-Kail or in a pure form along nalla's and in depressions. The crop is generally young to middle aged with scattered mature trees. It is often stunted, malformed and multi-branched.
- 5.2.2 These Forests are subject to heavy biotic interferences due to proximity to habitation, easy slopes and easy accessibility. The evil effects of biotic interference (excessive grazing, lopping, illicit felling, and encroachments) of such Forests is quite evident in almost all these compartments / Subcompartments. The crop is usually lopped up to top, malformed and stunted. These areas have suffered in the past due to over exploitation on account of being easily accessible. In these Forests, the broad leaved species are generally absent due to persistent and excessive grazing. The vegetative cover in some of the compartments / sub-compartments of this Working Circle is so much deficient that it cannot check the excessive run off. As a result soil-erosion has already set-in, in various areas of this Working Circle.

## 5.3 OBJECTIVES OF MANAGEMENT

The general objective of management of this working circle is to stock these degraded forests adequately by effective closure and by raising plantation of suitable species besides taking adequate measures for soil and water conservation.

The special objectives of management includes:-

- 1. To rehabilitate the degraded forests.
- 2. To fulfill the demands of local people by providing them forage, twigs and firewood from existing plantations.
- 2. To execute survey & demarcation to protect the forests from encroachment.

- 3. To regenerate the forests naturally as well as artificially in order to fill in the blanks created on account of illicit damage.
- 4. To check further degradation of forests by taking up measures in order to restore the normal stocking and productivity.

## 5.4 ANALYSIS & EVALUATION OF CROP

No evaluation of growing stock has been conducted for existing or established plantations. The species-wise growing stock for the stocked areas have been already presented in previous working circles which stand good for this working circle also.

## 5.5 METHOD OF TREATMENT

- 5.5.1 The emphasis will be laid on the complete treatment of a particular plantation according to the silvicultural requirements and its land capabality. Conifer stock will be preserved which will conform to the prescriptions of principle working circles. No fellings will be carried out in areas allotted to Rehabilitation and Alpine working Circles. In these areas only dead, dry and fallen trees will be removed. Felling of Kikar, Ulmus, Poplar, Ailanthus, Willow etc will be executed, replacing it with conifers. Felling in areas will be taken up one year in advance before planting.
- 5.5.2 The various treatments during three years period are explained as below.

#### a) Operations during zero year-Treatment-0 (T0)

Operations to be carried out during the zero year i.e. treatment (T 0) shall be as under:-

1. The marking of silviculturally available trees should be done as per rules prescribed.

2. Marking and handing over the list of trees to State Forest Corporation should ordinarily be completed by the end of September. If Forest Corporation is unable to fell all the trees then departmentally trees should be removed. All felling operations including slash disposal should complete before September.

3. Divisional Forest Officer shall prepare planting programme for the area and get it approved from the Chief Conservator of Forests. While preparing this plan, he shall consider all the factors like soil, configuration of the area, nature of drainage, intensity of grazing and other locality factors.

#### b) Operations during Ist year-Treatment-I (T1)

1. The area should be correctly demarcated and encroachments, if any should be removed.

2. After the approval of the plan, the advance work in shape of site clearance & earth work should be completed.

3. Necessary steps to raise nursery stock at proper sites must be under taken in time.

4. It should be ensured that irrigation is made available before starting plantation work.

5. Barbed wire fencing should be erected before planting for protection against grazing where ever necessary.

#### c) Operations during 2nd year- Treatment No. II (T-2)

1. Just before the commencement of spring season the reopening of pits will be done where ever it is required.

2. The plantation work should be taken up immediately in February & completed as early as possible so that full advantage of the rains is taken.

3. At least two weedings & hoeings should be done. The first wedding and hoeing should be done one month after planting & second in the month of July. In case the area is infested with heavy weeds, more than two weedings may be required and be done.

4. Chemical fertilizers should be applied after the 1st weeding of the plants where ever necessary.

5. Watering should be done as per requirement of the plants during dry months.

6. Replacement of casualties should be done simultaneously along with the planting operations.

#### d) Operations during second year- Treatment No.III (T-3)

1. Watering shall be done during the summer months as per requirement.

2. Failures should be beated up with the on-set of spring season.

3. One or two weeding and hoeing should be carried out during the year depending upon the extent of weed growth in the area.

4. Fencing should be kept constantly repaired to ensure proper protection against grazing.

5. The grass should be removed through Village Forest Committees and given to them as usufruct benefit.

#### e) Operations during third year- Treatment No.IV (T-4)

1. Watering shall be done during the summer months as per requirement.

2. Failures should be beated up with the on-set of spring season.

3. Fencing should be kept constantly repaired to ensure proper protection against grazing.

4. The grass should be removed through Village Forest Committees and given to them as usufruct benefit

5. The Divisional Forest officer shall carry out the assessment of the plantations at the end of the year and a report be submitted to the Conservator of Forests and a copy be pasted in the forest journal.

## 5.6 SILVICULTRE SYSTEM

The silviculture system will be selection-cum-improvement felling system.

#### 5.7 ROTATION

The rotation for various species along with exploitable girth at the end of rotation is given as under:-

S.	Species	Rotation in years	Expected dia at breast height at		
No.			the end of rotation (cms.)		
1.	Kikar	30	35		
2	Popular	20	50		
3.	Willow	20	50		
4.	Mulberry	15	25		
5	Ailanthus	30	35		
6.	Horse chestnut	30	35		
7.	Ulmus	30	35		
8.	Ash	30	35		
9.	Misc	60	60		

Table 78: Rotation of some important Broad leaved species

#### 5.8 YIELD REGULATION

As per the method of treatment prescribed the yield will be controlled by area and checked by volume. The annual coupe will have to be worked out according to the silvicultural requirements.

The Simon's modification of Von Montal's formula is prescribed for volume check.

$$2r$$
  
Y = V \*-----  
 $r^2 - x^2$ 

Where

V = Species wise vol. in  $m^3$  enumerated to x year age.

r = Rotation in years

x = Age in years corresponding to 30 cm. girth up to which enumeration has been carried out.

Y = Annual yield

## 5.9 METHOD OF EXECUTING THE FELLINGS

The size of the annual coupe is left to the discretion of territorial DFO to select the suitable annual coupe for working after considering the

availability of funds, intensity of work, requirements of site etc. He will ensure that work is concentrated in specific area only where felling and regeneration can go hand in hand. The selected annual coupe must be capable of artificially regenerating after the felling operation is over.

## 5.10 SUGGESTIONS FOR MARKING OFFICER

The marking should not be conducted by an officer below the rank of a D.D.R. Ranger and at least 25% marking should be checked by Divisional Forest Officer. The following suggestions are laid down for the marking officer:-

- 1. The marking Officer shall acquaint himself thoroughly with the topography and the condition of the crop in the compartment before conducting the markings.
- 2. No healthy tree below the exploitable size should be marked.
- **3.** All the dead, dying, diseased and malformed trees should be marked.
- **4.** Among the trees of exploitable size, the older trees should be removed in preference to comparatively younger and healthier.
- **5.** Exploitable Broadleaved trees suppressing the conifer advance growth as should be marked without any hesitation.
- 6. No green, healthy trees of any size should be marked in a belt of 25 m around or adjoining blanks and pasture lands. Similarly no green, healthy tree of any size should be marked in a belt of 25m along the demarcation line.
- 7. No green, healthy tree should be marked within the protection belts.
- **8.** Recruit and fruit bearing trees must be retained to serve as a food for wildlife.

## 5.11 SUPPLIMENTARY MARKINGS

These markings will be conducted after the major fellings. The trees and poles which got badly damaged, uprooted or dried up during the major fellings are marked under this fellings.

## 5.12 MAWA PLANTING

Mawa planting has not been given due attention in Pirpanjal Forest Division. The established Mawa plantations could have fulfilled wide demands of public in this division especially firewood requirements of Shia population during Muharram. There is intense demand of public for firewood during Holy month of Muharram and division is completely dependent on other divisions for firewood supplies. The non-availability of firewood creates crisis at times which exposes division to public criticism for crisis. The department supplies willow firewood to Shia community. It comes from Sindh Forest Division and Bandipore Forest Division. Therefore in order to overcome the problem, the raising of Mawa planting is prescribed during this plan period. The suitable sites must be identified in all ranges and brought under plantation with a view to maintain age gradation so that in next 10 years the division becomes self sufficient in firewood supplies from its own plantations. The potential areas are Dalwan, Soibugh and Arizal.

## 5.13 PLANTATION CYCLE

The plantation cycle of 10 years is prescribed. The failed plantation units can be again taken up after a gap of 10 years period.

## 5.14 REGENERATION PROGRAMME

In order to regenerate areas (Blanks, Annual coupes and Plantation failure units) the selected sites should be carefully chalked out and detailed programme of regeneration with respect to these sites should be submitted to Conservator of forests for its approval. The efforts should be made to immediately close the area to grazing and other biotic interference. The closure should remain effective till the regeneration gets established and is beyond the stage of browsing by cattle. The suitable nurseries should be established so that planting stock is readily available for these plantation programmes. The important components of planting programme are discussed below as:-

#### 5.15 NURSERY TECHNOLOGY

- 5.15.1 Seedlings are the basic pre-requisite of an afforestation programme. The success of plantations depends primarily on the quality of seedlings. A nursery can be defined as the site or place where quality seedlings are produced. Nurseries can be permanent (also known as central or main nursery), or temporary (also known as site nursery, field nursery, or flying nursery), depending upon the duration of the plantation programme. In a continuing programme that is likely to go on for more than five years, it is desirable to have at least a few permanent nurseries with proper infrastructure.
- 5.15.2 However, in case of afforestation project lasting five years or less, temporary or semi-permanent nurseries can be established in which the cost can be reduced by dispensing with some of the infrastructure elements such as construction of permanent structures for green houses, store and other nursery sheds, fencing with angle iron posts and irrigation facilities. The establishment of a nursery and raising of quality seedlings is a technical process. It has been described systematically in the following steps.

#### 5.15.3 SELECTION OF SITE

It is one of the most important aspects for the establishment of a proper and quality nursery. One has to consider not only the physical aspects for the selection of the site but also the end use of the seedlings. Following points may be kept in mind while selecting a site for the nursery.

#### a. Location

The site should be centrally located with easy access for transportation of seedlings. It should be close to the area where seedlings are to be utilized. The site should be as square as possible. Sites used earlier for agriculture may be avoided and preference be given to former forest sites where weed problems will be less and beneficial mycorrhizae forming fungi are often endemic.

## b. Water

Enough water should be available especially during the dry season. A natural source of water, at a higher level, will be cheaper, as it can be tapped by gravity. If no natural source of water is available, ground water may be used. It is estimated that the water requirement for a semi-arid area is minimum of 2,000 lit per day during summer, for every 1,00,000 seedlings. Requirement of water will be somewhat less for moist or cold areas.

## c. Topography and drainage

The area should be almost flat with good drainage. This can be managed by providing gentle slope (5 degrees) and channels should be dug to drain out excess water from the nursery. In the hills Northern aspect is desirable up to 1,200 m elevation and beyond it, Western or South Western aspect is best for moist areas and Northern for dry areas. Nursery site should not be selected close to the edge of a high forest or in the middle of the grassland. Frost pool should be avoided.

## d. Soil

The ideal forest nursery should have sandy loam to loamy texture. Sandy soils may be given preference over heavy soils. Soil should have pH 5.5 to 7.5, moderate fertility, with a minimum of 2.5% organic matter. The higher the organic matter content of the nursery soil, the better it is. A high organic matter content ensures good retention of nutrients and water and may improve the working properties of the soil. The depth of soil should not be less than 25 cm. It is not always possible to get good soil everywhere. Under such circumstances, one has to get extra soil, sand as well as farm yard manure from outside; therefore, location of nursery should be close to such areas.

#### 5.15.4 LAYOUT OF NURSERY

- (i) As far as possible the nursery should be of a rectangular shape; so that it can be divided into smaller nursery beds of rectangular shape, leaving space for roads, inspection paths, dumping of manure, hut for Mali and space for people working in the nursery to rest during rain or intervals. In bigger nursery (one ha and above), a road of a minimum width of 3 m should be constructed to facilitate transport of sand and manure inside the nursery and to carry the plants from the nursery, leaving space for turning of the vehicle.
- (ii) The requirement of the total area for the nursery can be calculated by adding together the area required for mother beds, polypots, entire plant/root shoot cuttings and beds required for rooted cuttings. Another 50% area may be added for making the path. Area will also increase if seedlings are kept in the nursery for more than one year, specially for raising tall plants. Area required for sheds, water tank, storage of seed, manure etc. should also be kept in mind.
- (iii) Polypots of size 9 inch x 6 inch need 80 Sqft (=7.43sqmt) (Standard bed size= 20 feet X 4 feet) for keeping 720 bags. Accordingly 1,00,000 polypots will require around 1000 sqm area plus 50% for paths. Thus for raising 1,00,000 polypot seedlings, an area of 1500 sqm may be sufficient.

#### 5.15.5 ESTABLISHMENT OF NURSERY

#### (i) Site preparation

The site should be cleared properly by removing all stumps, roots, lops and tops. Stones collected from the site may be used for metalling the main nursery road. Thorough ploughing or hoeing to a depth of 30 cm should be done, especially in places where plants are to be raised in the nursery beds. The soil should be leveled to form an even slope or, if a site is flat, should be slightly domed. As far as possible, removing of top soil must be avoided. Drainage channel should be dug as early as possible to avoid soil erosion. Drains should be dug on both sides of the paths and connected to main drain. In plains, drain should be adequately sloped and steps should be used in hills to check the flow of water.

#### (ii) Types and size of beds

Beds are prepared to germinate seeds, keep polypots and transplant pricked out seedlings. In the plains, beds of  $10 \times 1$  m size and in the hills beds of  $2 \times 1$  m are generally prepared. However, size can be changed depending on the availability of the area. Width of beds should not be more than 1.2 m otherwise watering of seedlings; especially in the middle part of the bed shall be a problem. The beds should be oriented in East-West direction in the plains and should follow contours in the hills. In areas where

lifting may be restricted due to frozen ground, orienting beds in a North-South direction will facilitate early thawing by the morning sun, and thereby lifting. Following types of beds are prepared in the nursery.

#### a. Sunken beds

These are 15 cm deep and used in arid areas and hot places to protect young seedlings from hot winds, and also to reduce the rate of evaporation, thus reducing the consumption of water.

#### b. Raised beds

These types of beds are generally used in moist areas. The beds are raised 15 cm above the ground to increase drainage and promote warming of seedbed. Beds are given side supports of bamboos, twigs, bricks or other locally available materials.

#### (iii) Preparation of seedbeds

The plot where seedbeds are to be prepared must be ploughed and levelled and sloped (1 to 3%), depending upon the texture of soil (less slope for sandy soils). It should be ascertained that the soil in the seedbed is light. If necessary, sand and soil (1:1) may be mixed so that the seedlings can break through when germinate, and this will also be helpful when plants are lifted for pricking out. The seed beds should not be filled in completely, so as to avoid the washing away of top soil and seed. The surface of the seedbed should be made firm by sprinkling water and then using a wooden plank. These beds are generally used for the following reasons:

- to provide a small reserve of seedlings which can be used to replace direct seeded plants that did not germinate or that died,

- for sowing seeds which germinate slowly or unevenly,
- for the seeds whose quality is not known.

## 5.15.6 SEED COLLECTION AND STORAGE

Seeds can be collected from known stands of trees. Seed collection is considered as the best approach since the quality and provenance of seeds are known. Seed sellers may, of course, also offer good quality seeds and sometimes even better than what one has at hand in the local stands of trees. Moreover, all required species may not be available locally. In any case, it is better to divide seeds into two categories: those that are used in the main afforestation programme and are locally available and those which are raised for distribution to the general public and usually not available locally. The former should be collected from healthy middle-aged trees of good quality and the latter can be purchased from the reputed nurseries or suppliers. It is improper to collect seeds from a mongrel population of trees and to use them in a nursery. Different species have different seeding time; therefore it is necessary to have a time table for collection or purchase of seeds. Seed viability and dormancy are also important factors, which decide the sowing time. Species with very short seed viability must be sown immediately otherwise the germination percentage will go down drastically. Seeds with long viability should be sown when temperatures are moderate, i.e. between July to October and February to March. Whether the required plants are to be of six months, one year or one and a half year age will also affect the sowing time. Following precautions are required to be followed at the time of seed collection:

- Only fully matured seeds should be collected as the unripe seeds of most species do not germinate.

- Mother trees should not the damaged or heavily lopped for seed collection, otherwise the seed tree may die or stop seeding.

- The cones of trees like pine or other coniferous trees should be dried in sun instead of breaking them by hard hitting because drying in sun helps in opening spontaneously.

- Seeds of pulpy fruits can be collected by rubbing them in water followed by washing, drying cleaning respectively e.g. Mulberry etc.

The collected seeds must be dried properly before storing to avoid any possibility of its damage. However, excessive drying should be avoided and
Properly treated seeds should be stored in a place of good ventilation and free from moisture to safeguard them from decaying or losing viability.

#### (i) Estimating seed quantities

It is necessary to compute the required quantities. Factors like germination percentage, number of plants to be raised and amount of wastage involved, all affect quantity of seeds. It is convenient to have a seed weight chart depicting the species wise details of the number of seeds per kilogram to make it handy while computing the quantity of seed required. Per kilogram number of seeds, collection period, viability and pre-sowing treatment of some of the common species is mentioned in Table.

Specie	Seed collection	No. of seeds	Viability	Presowing treatment		
	time	per Kg	(months)			
Walnut	Sep-Oct	75	6	Keep in refrigerator for one month and sow		
Deodar	Oct-Nov	7000	1-6	Store without drying and sow		
				either in Dec or in March		
Fir	Sep-Nov	27000	3	None		
Kail	Sep-Nov	20000	12	Soak in water for 24 hours		
Robinia	July	50,000	36-48	Hot water		
Spruce	Oct-Nov	62,000	12	Soak in water for 24 hrs		
H.C. Nut	Sep-oct	75	1	Store in cowdung for one week or soak in water for 24 hours		

Table 79: Seed weight, collection time, viability and pre-sowing treatment of some common species

#### 5.15.7 SEED SOWING

- (i) Sowing can be done either by broadcasting/scattering, or in lines along the width of the bed. Broadcasting method is used for minute seeds. These are generally mixed with equal amount of fine sand to facilitate uniform seed distribution. Better germination can be obtained if such seeds are sown in small wooden boxes or other containers, which can be kept under controlled environment, so as to protect seeds from excessive heat, rains etc. The small and medium sized seeds are sown in lines or drills 5 to 10 cm apart, the seed is covered with sand or sieved soil and gently firmed.
- (ii) Sowing depth is crucial for the production of a uniform bed of seedling. Best germination is obtained in the case of small and medium sized seed, when they are sown as deep (0.3 to 0.6 cm) as necessary to cover them. The general rule is that the upper surface of the seed should be at a depth equal to the diameter of the seed.
- (iii) Seedbed density and spacing also play an important role in germination. Too dense sowing may result in damping off disease. Mulching by covering the seedbed with dry grass or paddy straw is helpful, as it helps retain moisture, reduces weeds and improves germination. Seed beds sown with minute seeds should be well shaded. After germination, the shade should be removed gradually in stages and the mulch should also be removed. It has been found that different species have different germination potential. Sometimes instead of seeds the whole fruit can be sown to obtain better results. Germination percentage of some seeds is given in Box.

Germination Percentage of important tree species				
Species	Germination percentage			
Robinia, Wildcherry, Walnut, Maple, Pine	70-90%			
Cedar	50-70%			
Fir	20-30%			

Table 80: Germination percentage of important tree species

#### 5.15.8 PROPAGATION OF PLANTS BY CUTTINGS

Seedlings are generally raised from seeds but, in some cases where seed is difficult to get or germination is poor due to small size of seed or infertility, plants are raised by vegetative methods. Cuttings of sections of roots, stems, branches or twigs are taken from suitable mother trees. A light, loose rooting medium should be used for this purpose. The soil should be dug 30 cm deep and sand and compost mixed with it. Cuttings of 5–10 mm diameter and 15–20 cm length should be obtained from young vigorous trees. The leaves should be stripped off the cuttings to reduce the transpiration. It is better to keep such cuttings for rooting into small poly houses to maintain humidity and temperature. Some of the common species which are raised through cuttings are mentioned in Box.

Tuble off species propugated in ough childs				
Species Raised through cuttings				
Species	Period of Planting			
Mulberry, Poplar, Willow, Elm	Feb-March			

Table 81: Species propagated through cuttings

#### 5.15.9 MULCHING

It is beneficial during the dry season to protect the surface of seedbeds against becoming hard, and thereby inhibiting seedlings in breaking through resulting in delaying or leading to poor germination.

## 5.15.10 PREPARATION OF POTTING MIXTURE

The potting mixture should be prepared with meticulous care and control. A fine mixture of soil, sand and manure in the ratio of 6:1:3 should be prepared. Alternatively a good potting mixture can be prepared using well rotten FYM with good earth in the ratio of 2:3. In practice, a well decomposed humus is mixed with earth in the ratio of 2:3 which gives good results. Before mixing, the soil and sand should be sieved and pebbles and other undesirable material separated. The manure should not be sieved but rubbed with hands to make it fine and twigs and other impurities should be removed. Insecticides in the prescribed proportion should be mixed in the mixture. The main characteristics of a good potting mixture are:

- o It must be light in weight
- o It must be well drained and not hold too much water
- o It must be free from insects, diseases and weed seeds
- It must not contain clay soil or large amount of ashes and
- All materials must be well decomposed.

## (i) Filling of polythene bags

The polybags should be punched with a sharp punching tool to make sufficient number of holes to enable drainage of excess water. By using a pincer like punch, twenty or thirty bags can be punched together. A scoop can be used for filling the potting mixture into the polythene bags or it can be made from locally available materials. After first fill the bags should be struck on ground to let the soil settle in and firm in and then the pot should be filled again. If loosely filled, soil will settle later and make polybags limp, resulting in dislodgement of roots and heavy mortality of plants during handling. Atleast half to one inch from top of the pot should be kept empty to avoid spillage. Filled polybags should be placed erect within the sunken beds meant for the purpose.

## (ii) Transplanting of seedlings

Plants sown in germination beds have to be transplanted into polybags. Transplanting age and time vary, but on an average, it has been seen that earlier transplants are more successful. Too big plants in germination beds may have their roots entangled, and disentangling them may cause seedlings to die. As a general guide to transplanting age, 20 to 30 days (excluding germination period) is adequate for most of the species. For transplanting, a scoop may be used to lift a group of plants with soil. From this soil the individual plantlets can be separated and inserted into holes made in the polybag soil by thrusting a sharp punch. The depth of the hole should be equal to the length of the root of the seedling, so that the root does not bend while being pushed into the hole. After inserting the plantlet roots, the hole is closed over up to the collar of the plantlet. The transplanting work should be done in the afternoon so as to avoid mortality of plants in hot sun. A bed of polybags is gently irrigated after all the pots have been transplanted in. If transplanting is done in hot weather, proper shade should be provided over the beds to prevent the tender seedlings from getting scorched to death.

#### **5.15.11 PROVIDING SHADES IN THE NURSERY**

Most of the tree species need shade in the early stage of germination while the seedlings are still tender. Studies at FRI, Dehradun have shown that the shade is more important during summer season and had a great effect in increasing the survival of seedlings. Usually green agronet supported on angle-iron posts is commonly used for providing shade in conifer nursery. However dry grass, bamboo mat, palm leaves or wheat straw can also be used as shading material but tin sheets should be avoided. Shade should be slanting towards North-South to protect the seedbeds or seedlings from the hot sun.

#### 5.15.12 AFTER CARE OF SEEDLINGS

Young seedlings are vulnerable to many factors and major losses can occur if these are not taken care of. Seeds may not germinate or may be lost to predators or diseases, if proper care is not taken. In addition, seedlings may have to survive pricking out shock, dry conditions, heavy rains and hail storms, scorching sun, high temperature and weed competition. Seedlings require after care till they are planted out in the field. This includes weeding, watering, manuring, hardening, protection against adverse climate, diseases and insect pests.

#### (i) Weeding

Weeds come with manure, clay or sand transported from outside. Sometimes undesirable seeds get mixed with the seed sown. It is a simple matter to remove weeds by pricking them out. This operation should be carried out at the earliest opportunity after the weeds have become visible. If two seedlings of the species sown have come up in a polythene bag, one of these should be immediately pricked out and transplanted into another polybag. If any clutter or muck fills up the bags, these should be cleaned. In the mother beds, it is also desirable to hoe the soil periodically, apart from removing the weeds. These seemingly simple operations matter a great deal in determining the growth of plants.

#### (ii) Watering

The soil surface of the seedlings should not be allowed to dry. As a rule, finer textured soils require more frequent watering than coarser ones. Seedbeds and transplant beds should be watered twice a day. Too much watering during germination, however, is not desirable. Excess watering promotes the growth of fungi by decreasing the temperature and increasing soil moisture. Light and frequent watering of polypots is not as good as more thorough, but less frequent watering. Light watering results in the water not penetrating deep into the soil and the seedlings soon dry out. In the exposed surface of the nursery bed, soil surface temperatures can rapidly rise to over 35 C on a warm sunny day. It can damage the root-collar area and kill the seedlings. To prevent damage, the soil surface should be kept cool by proper watering. There are a number of methods of watering. The one most commonly used is sprinkling water by a rose can or through hoses.

Following points must be remembered while watering in a nursery:

- Do not water at a fixed time each day. Water when the plants need *it*,
- All species do not require the same amount of water,
- Small seedlings don't need much water,
- Large plants need more water and more often,
- Plants growing in the shade need less water,
- Plants growing in the sun need more water, more often and
- Plants need more water, often on windy days.

#### (iii) Control of diseases

Periodical spray of insecticides and fungicides is essential to control insect and fungal diseases in the nursery. Some of the common fungicides and insecticides are captan, zineb, blitox, cumin, dithane M-45, thimet, endosulphan, chloropyrophos etc. These should be used immediately when disease or insects appear according to the manufacturers' instructions.

#### (iv) Protection against cutworms, white ants and rats

Considerable damage is caused by white ants and rats in the nurseries. White ants live in colonies deep inside the soil and their number increase rapidly where vegetative waste is available. In order to control them, Endosulphan 20 EC or Chloropyrophos 20 EC should be sprayed after mixing

3 to 4 litres of any of these insecticides in 1000 litres of water. For the control of rats zinc phosphide or aluminum phosphide should be used.

#### (v) Shifting and grading of plants

It is essential to provide adequate growing space in the beds for speeding up the growth of plants in the nursery. Therefore, the surplus plants should be removed carefully and planted in new beds. The beds should be irrigated before the shifting and grading operations. The ultimate spacing between the plants at the time of final shifting should be 15x22 cm. While shifting, plants should be graded according to their heights and put in the beds grade wise. While shifting the polythene bags, the roots of the plants protruding outside the bags should be cut with sharp scissors. It is better to keep these bags over a polythene sheet to avoid roots penetrating the soil. However, keeping such bags on mounted beds gives better result and avoids root coiling by facilitating air pruning of roots.

#### (vi) Hardening off of seedlings

Life is easy for the plants in the nursery since they receive good care there. However, once planted in the field, life is much harder for them. They may not have enough water or food to live very well. Therefore, seedlings must be made tough to survive well in the field. This is called hardening off. It is achieved by gradually reducing the frequency of watering before one month of planting. However, care must be taken that seedlings are not burnt in the process.

#### (vii) Replacement of dead/damaged plants

Care should be taken to replace the dead or damaged plants immediately by sowing of fresh seed or replacing the dead or damaged plants from the existing seedling beds.

#### 5.16.13 TRANSPORTATION OF SEEDLINGS

Seedlings are very delicate and should be handled properly. The polypot seedlings should always be held by the bag and never by the plant itself. Seedlings should be watered thoroughly before carrying them to the field. Seedlings should be transported in the trays, boxes or baskets and not tied in bundles with strings or grass. In case of stumps, they should be bundled, wrapped with a wet sack and transported to the field. The plants should be kept in shade and plants not planted the same day should be sprinkled with water in the morning and evening. While transporting bare root seedlings, the nursery beds from which the plant is taken should be irrigated so as to facilitate making of ball plants. After making ball plants, they should be graded according to their height and put in shade. In order to keep the earthen balls around the roots intact the balls should be wrapped in grass and tied by Sutli (Thick thread).

#### 5.16.14 TIME SCHEDULE OF NURSERY OPERATIONS

## S.No. Nursery Operation Time Schedule Nov -10<sup>th</sup> of December 1. Bag filling and Seed sowing 2. Application of DAP (1/2 Kg/Bed) March 3. Weeding April 4. Drawing of Shadenet Last week of April 5. Segregating & Shifting of mortality Ist week of June 6. Singling out and Transplanting Ist week of June 7. Weeding hoeing-1 Mid- June 8. Urea 1st doze @500 gm/bed Mid-June Mid-August to Mid September 9. Weeding hoeing-II Urea 2<sup>nd</sup> doze @500gm/bed 10. Mid-September to Mid October 11. Removal of Shadenet Ist week of October

#### Table 82: Time schedule for nursery operations

## 5.16 PLANTATION TECHNOLOGY

Following points should be kept in mind before executing any plantation programme in forests. Technical knowledge of these aspects is important for success of any plantation.

## 5.16.1 SELECTION OF SITE

- (i) The selection of site and selection of species are interdependent. The selection of site is however more important as the selection of species depends upon the selection of site. The site selected for planting should be suitable for the growth of species desired to be planted. For this purpose, the soil type, its depth, study of vegetation in the neighbourhood, local factors and other conditions should be given due consideration and advice of the local villagers should be taken.
- (ii) Selection of planting site should be done by the end of April. In case of demarcated forests the areas to be taken up for planting are listed year wise in the working plan of the division. Therefore, the site selection has already been done for plantation works year wise.

## 5.16.2 SITE DEVELOPMENT

- (i) This includes clearance of planting site, bush cutting, control burning, lopping of tree branches, checking of soil erosion, soil conservation works in 'nalas', construction of vegetative or stone check dams, marking of pits for planting of saplings and other soil works.
- (ii) In addition, demarcation of boundary or fencing and inspection paths should be made tofacilitate the movement of people engaged in plantation works. This work should be completed by the end of November. The weeeds should not be uprooted to avoid soil erosion. Parthenium and other invading shrubs should be uprooted and burnt before the onset of rains. While developing the site for planting, care should be taken to retain all indigenous species of trees and shrubs that are naturally growing in the area. They should not be cut and burnt along with weeds and thorny species. Preferably they should be adopted in the plantation and thanwalas

should be made around each of these plants for retention of moisture and for protection against fire and damage by grass cutters.

## 5.16.3 DIGGING OF PITS

After clearing the land and before digging of pits, pit sites should be identified by using a measuring tape to ensure the desired spacing and then mark with wooden or bamboo sticks at the spot that will be the centre of the pit. Pits of the size 30 cm x 30 cm and 45 cm depth should be dug. Pits should be deep enough to ensure that the roots of the plants do not curl up once the planting material is placed in it. The soil dug from the pits should be dumped close to the pit. While digging stones, roots of trees, grass or shrubs, if any, should be separated so that while filling the dug up earth back in the pits these are not mixed with the soil. The spacing of pits varies according to the planting scheme for different areas. Generally the spacing between pit to pit along the contour line is 2 m and the distance between lines (Contour) is 3 m. In hilly areas, it may not be possible to follow this spacing strictly due to presence of boulders or trees. No pits should be dug within the vicinity of five meters from a tree. The spacing between the pits should however, not be less than 2 x 2 m. Pits should always be dug along the contour lines. The procedure of making the contour lines has been described in figure below. The pits in the second line should be dug in such a way that they fall between the pits dug in the first line as shown i.e., staggered (Fig. 11). The triangular planting method, which is specially practiced in the hills, checks the flow of rain water and facilitates its percolation in the ground. This method should also be applied while digging contour trenches.

#### **5.16.4 PROTECTION OF PLANTATION SITES**

The proper fencing of plantation areas is essential to protect the seedlings from damage by the cattle and wild animals. The choice of fencing depends on the type of terrain, soil depth and the kind of soil. Since most of the afforestation programmes are employment oriented, a fence type with high labour input is preferred. Cost of fencing is another important criterion, but normally no compromise should be made on this count, because if fencing is not effective, all other measures, how far effective, will come to a naught. Some of the common fencing types are discussed below:



Fig: 10 Adjust a frame on the slope to bring plumb line/string to the center of the A-frame (Point E). Mark spot on the slope. These spots will form a contour line. Distance between contour hedgerows should be approximately 4 m - 6 m.



Fig: 11 If the spots located by the A-frame zigzag too much, while planting consider only those points that form a smooth contour.

## (i) Barbed-wire fencing

In areas where stones are not easily available or where cartage of stones is expensive due to long distances, the plantation area should be protected by barbed wire fencing. Wooden posts are used for this purpose with a length of 3 m and a girth of 30 cm to 45 cm. The upper ends of the posts are fashioned in conical shape to avoid rain water from rotting it. The lower end which remains in contact of the soil is painted with coal tar to avoid damage by white ants and wood decay fungi. The posts are dug 30 cm deep and placed 2.5 m to 3 m apart. Three strands of barbed wire at the height of 22, 52 and 74 cm from the ground level are stretched and fixed to these posts with the help of iron staples. To make this barbed wire fencing more effective thorny bushes are put along the fencing. For entry in the plantation area wooden ladders are provided. From the landing point of the ladder an inspection path is made inside the plantation area. Areas having goat menace or damage by animals like deer etc. requires at least 4 rows of barbed wire fixed at an interval of 30 cm each with two strands of barbed wire inclined at 450 to the poles to provide extra strength (Fig.12,13).

## (ii) Social fencing

In areas close to habitations, local villagers must be encouraged to resolve among themselves about not sending their cattle in plantation areas and protect grasses in the plantation areas to be cut after maturity by mutual agreement. VFC's should be made workable to execute the plantations with the assurance to self protect the site from grazing or any other kind of damage. The grasses so produced can be shared by the villagers as per the mutual agreement through VFC.

#### (iii) Fire protection

A 1.5 m wide strip along the outer periphery of the fencing should be cleared of grass and bushes and the strip scrapped with spade for fire protection so that any fire from outside may not enter the plantation area. A hut should be constructed inside the plantation area, preferably at the entrance point. This can be used for the stay of the people during rains and heat. After the plantation work is over the hut can be used for the stay of Mali deputed to look after the plantation.

#### 5.16.5 FILLING OF PITS

This work should be completed by Oct- November. The dug earth dumped near the pits should be filled back after about a month or after the snow melts, so that the pit and the earth to be filled are exposed to sunlight. Insecticides may also be mixed in the soil while filling into the pit. The pit should be filled a little above the ground level so that after the earth settles the upper surface of the pit is level to the ground thus avoiding any water logging. While filling the pits, the area surrounding the pit should be scraped with spade to remove grasses or weeds. Top soil should be filled in the bottom of the pit and after this, subsoil should be filled.

#### 5.16.6 PLANTING OF SAPLINGS

The plantation of sapling must be done either before snowfall or immediately after snow melts before the last week of March. Planting of naked root plants should be completed as early as possible so as to take full advantage of the rain. The planting work should be done either in the afternoon or during light rain or cloudy sky. The roots of the plants should be kept straight and the plant put straight in vertical position. For this a hole should be made with the help of a stick or small crow bar. The collar of the plant should be kept at the surface level of the pit. After planting the sapling, the earth around it should be firmly pressed by hands or feet and while doing so the plant should be pulled about half inch to make sure that its roots is not bending. Bagged plants should be sprayed with water before planting. The polythene should be carefully removed so that the plant is not damaged. The plant with the soil intact should then be placed in the pit in straight position, the collar of the plant being in level with the ground. The soil around the plant should then the pressed firmly by hands only. Pressing by feet is likely to disturb the soil of the plant. The planted saplings should be of suitable thickness and height.

#### 5.16.7 SOILWORKING AND WEEDING

Thanwalas should be made around all the seedlings having inward slopes. For this purpose a semicircular pit about 15 cm deep, 25-30 cm apart from the plant should be dug. The earth taken out from the pit is put around the base of the plant. This has double advantages; firstly, there will be nowater logging at the base of the plant which may otherwise cause damage to the plant; secondly, the rain water collected around the plant will help in retaining the moisture for the plant. Naturally growing species which have been adopted at the time of site development should also be included in *Thanwala* making and weeding / hoeing operations. After the rains are over, capillary actions begin in the pits. This causes loss of moisture due to evaporation in the hot sun. To check this, weeding should be done in and around the pits. During this operation, grasses and weeds should be removed and the earth clumps should not be broken. Second weeding should be done in September end. Third weeding should be done soon after the winter rains.

#### 5.16.8 MAINTENANCE AND AFTER CARE

A Mali/Chowkidar/Class IV staff must be deputed for five years in the plantation area to look after it soon after the planting work is over. Following duties should be assigned to him:

- o Periodical weeding and removal of grasses suppressing the plants,
- Maintenance and repair of inspection paths
- Repair of fencing where ever necessary
- To protect the plantation area from grazing and damage by wild animals and villagers cutting grass
- To protect the area from fire, cleaning of dry grass and twigs, etc. from the area and cleaning of inspection paths,
- $\circ$   $\,$  Cleaning of the outer periphery of the plantation area in two meter width
- $\circ$  Keeping regular watch over the plantation area during the fire season and
- Seeking help and co-operation of the neighbouring villagers in the protection of the plantation area.

#### 5.16.9 MAINTENANCE IN SUBSEQUENT YEARS

(i) Ist year: Beating up works should be carried out in the second year. In this operation the dead plants are replaced by planting fresh saplings immediately at the onset of spring season during rains. Under normal conditions not more than twenty five per cent plants are required to be planted during the beating up operation in the second year. The reasons for mortality should be ascertained. The dead plants should be replaced by the species which are growing successfully. At least two weeding should be

done and thanwalas be made. Fencing should be repaired where ever necessary.

(ii) Second, Third and Fourth year: Normally not more than 15 per cent plants are required to be planted during the beating up operation in the second year. In the third year there is a provision of 10 percent beating up. No beatings up operations are carried out in the forth year. Full attention is given to protect the area from grazing and fire. However, soil working and weeding around the plants during the rainy season promotes the growth of seedlings. Therefore, provision of sufficient funds should be made for this purpose too.

#### 5.16.10 CAUSES OF FAILURES OF PLANTATIONS

Following are the main causes of failure of plantation works:

1. Wrong selection of species such as planting of deodars at low altitudes,

2. Planting of weak and damaged saplings,

3. Untimely planting of saplings,

4. Carelessness in cartage of plants. The bagged plants need very careful handling during loading/unloading. If, cartage is done by head load they should be carried in trays or baskets to avoid damage,

5. Lack of supervision at the time of growing plants in the nursery and while planting in the plantation area,

6. When proper shifting, grading and root cutting of plants is not done in the nursery as prescribed, before taking plants to the planting site and

7. Proper attention is not paid in planting, weeding and other works.

In addition to the above, grazing, frost, lack of desired rainfall or excessive rain and fire are other adverse factors causing failure.

## 5.16.11 PLANTATION MODELS

MODEL	- A (Aided Natural	Regeneration	Model	with	Poly-bag	planting	; in	blank
areas) (	for 1 hectare)							
S.No	Item					Unit	Phy	ysical

S.No	Item	Unit	Physical
1	Planting in pits of size (45cm <sup>3</sup> ) in staggered fashion	No.	400
	along contours at 3mx2m spacing (3m plant to plant,		
	2m line to line) on about 25% area on an average		
2	Dibbles at one each in between 2 plants in the row	No.	200
	over 12% area on an average		
3	Sowing in patches of 45cmx15cmx15cm size one each	No.	200
	in between 2 plants in the row over 12% area on an		
	average		

Note: 70-75% area is presumed to be having adequate regeneration

- Spacing can be changed as per availability of open spaces in the unit.
- Planting of bulbs/rhizomes of medicinal plants can be resorted to instead of dibbling wherever required as per suitability.
- o Provision of casual labor to be kept under maintenance in the second year onwards.
## MODEL B (Sowing Planting with Naked root Pit Planting) (for one hectare) LAY OUT PLAN



S.No	Item	Unit	Physical
1	Planting in pits of size (45cm <sup>3</sup> ) in staggered fashion	No.	1650
	along contours at 3mx2m spacing (3m plant to plant,		
	2m line to line)		
2	Dibbles at one each in between 2 plants in the row (on	No.	825
	50% area on an average		
3	Sowing in patches of 45cmx15cmx15cm size one each	No.	825
	in between 2 plants in the row(on 50% area on an		
	average)		

Note: Planting of bulbs/rhizomes of medicinal of medicinal plants can be resorted to instead of dibbling wherever required as per suitability.

Provision of casual labor to be kept under maintenance in the second year onwards

	- (		
S.	Item	Unit	Physical
No			
01	Planting in pits of size (45cm) <sup>3</sup> in staggered fashion	No.	1650
	along contours at 3mx3m spacing.( 3m plant to		
	plant, 2 mx2m lime to line spacing.		
02	Dibbles one each in between 2 plants in the row (on	No.	825
	50% area)		
03	Sowing in patches of 45cmx45cmx15cm size in	No.	825
	between 2 plants in the row (on 50% area)		

Model -C (Sowing Planting with Poly bag pit planting) (for one hectare)

Note:- Planting of bulbs/rhizomes of medicinal plants can be restored to instead of dibbling wherever required as per requirement.

Provision of Casual Labour to be kept under maintenance in the second year onwards.

Model –D (Sowing Planting with Naked Root Trench planting) (For one hectare area)

S.	Item	Unit	Physical
No			
01	Planting in trenches of size 90cmx45cmx45cm in	No.	1250
	staggered fashion along contours at 4mx4m plant to		

	plant and 2mx2m line to line spacing.				
02	Dibbles one each in between 2 plants in the row (on	No.	625		
	50% area)				
03	Sowing in patches of 45cmx45cmx15cm size in	No.	625		
	between 2 plants in the row (on 50% area)				

Note:- Planting of bulbs/rhizomes of medicinal plants can be restored to instead of dibbling wherever required as per requirement.

Provision of Casual Labour to be kept under maintenance in the second year onwards.

MODEL-E (Sowing Planting with Poly bag Trench Planting) (For one hectare area)

S.N	Item	Unit	Physical			
01	Planting in pits of size 90cmx45cmx45cm in	No.	1250			
	staggered fashion along contours at 4mx4m plant to					
	plant and 2mx2m line to line spacing.					
02	Dibbles one each in between 2 plants in the row (on	No.	625			
	50% area)					
03	Sowing in patches of 45cmx45cmx15cm size in	No.	625			
	between 2 plants in the row (on 50% area)					

Note:- Planting of bulbs/rhizomes of medicinal plants can be restored to instead of dibbling wherever required as per requirement.

Provision of Casual Labour to be kept under maintenance in the second year onwards.

MODEL -F (Silvi pasture with Fodder Plants) (For one hectare area)

S.	Item	Unit	Physical
No			
01	Planting in pits of size (45cm) <sup>3</sup> in staggered fashion	No.	400
	along contours at 5mx5m spacing.		
02	Sowing of legumes/grasses in patches of	No.	2500
	45cmx45cmx15cm size at 2mx2m spacing in the		
	interspaces.		

Provision of Casual Labour to be kept under maintenance in the second year onwards.

#### 5.17.12 Fencing Model with Angle Iron Posts and Black Annealed Barbed Wire)

PHYSICAL (For 100 Rfts)					
S.	Item	Unit	Physical		
01	Total no. Of fence posts to be used Angle Iron Posts	No.	13		
	with specification 50x50x6mm=weight 1.40 Kg/Rft	vith specification 50x50x6mm=weight 1.40 Kg/Rft			
	6.5 ft tall at 8' post to post spacing.				
02	Black Annealed Barbed Wire in 7 stands with two	47.25			
	criss cross strands.				
	ecification: line wire 2.5 mm dia point wire 2mm				
	dia barb spacing 75+12mm confirming to ISI:278				



- Rate per Rft of Angle-Iron BW fencing (with 5 strands) = Rs. 14/=
- Additional cost on a/c of 2 strands in criss-cross (9'× 2= 18 ft in length @ Rs. 5/- = (excluding fixation)



Note: Fence post should be 1.5 to 2 ft deep in ground

## 5.17 SOIL AND WATER CONSERVATION MEASURES

Forests play a very important role in soil and water conservation. Tree leaves intercept the rain and allow its water to percolate deep into the ground thus charge the ground water reservoir. The dense network of roots hold the soil and prevent erosion thus plays an important role in maintaining soil fertility. The productivity of agricultural lands is decreasing day by day due to population pressure and unsustainable exploitation of natural resources. The ground water table is also going down very fast due to excessive tapping. The development of lands and water resources cannot be considered independent of each other for sustainable natural resource management. Conservation and management of rain water is very important for the development of agriculture especially in the hills where most of the agriculture is rain fed. This situation can be improved by taking suitable soil and water conservation measures at appropriate places with the involvement of local communities under. Following remedial measures are being suggested under these activities:

#### 5.17.1 GULLYPLUGGING AND NALA CONTROL

In control of gullies and nalas the erosive velocities are reduced by flattening out the steep gradient of the gully by constructing a series of checks which transform the longitudinal gradient into a series of steps with low riser and long flat treads. This involves construction of check dams (vegetative, stone and crate wire or wire mesh check dams). Spur walls and retaining walls can also be constructed for bank protection to save valuable agricultural fields from being cut up. Mechanical measures (check dams) are supplemented by planting in gullies behind check dams. All gully or nalla control work should start from the top of gully/nalla and this activity must cover both non-arable and arable land.

The stabilization of gullies through vegetation is difficult task as gullies have to be used for conveying run off during the time vegetative measures are undertaken and these measures get damaged by runoff. Therefore, mechanical measures have to be adopted to prevent washing away of vegetative measures by large volume of runoff. Vegetation once established is able to take care of gully. Thus mechanical measures, temporary or permanent, are necessary in gully control to be supplemented by vegetative measures since mechanical measures weaken and vegetative measures get strengthen with the passage of time. Following types of check dams are being suggested under mechanical measures:

#### (i) Brushwood check dams

The main requirement of temporary control structures is that they must be quick and easy to construct and use cheap readily available materials. In brushwood check dams small branches preferably of coppiceable species are fixed in two parallel rows across the gully or nala and packed with brushwood between the rows of these vertical stakes (Fig.14). The vertical stakes can be tied down with wires or fastened with sticks across the top. The important point in erecting brushwood check dams is to pack the brushwood as tightly as possible and to secure it firmly. Brushwood check dams are generally meant for small gullies or at the starting stretch of the gullies.









Fig. 14 : A double row brushwood check dam

Posts are set in trenches  $(0.3 \times 0.2 \text{ m in size})$  across the gully to a depth of about 1/3 to 1/2 of the post length, and about 0.3 to 0.4 m apart. The length of the posts is 1.0 to 1.5 m and their top-end diameter is 3 to 12 cm. Any tree or shrub species, such as Robinia, Alnus, Pine, Bamboo, Salix, Poplar, etc., can be used as posts. The flexible branches of trees (Salix, Poplar, etc.) flexible stems of shrubs (Parrotia, Indigofera etc.), and the strips made of bamboo stems may be used as interlink material. These materials are woven between wooden posts driven into the ground. The ends of interlink materials should enter at least 30 cm into the sides of the gully. The space behind the brushwood check dams must be filled with soil to the spillway. If sprouting species (Salix, Poplar, etc.) are selected as posts and interlink materials, brushwood check dams should be constructed when the soil in the gully is saturated or during the early rainy season. If nonsprouting species (Pine and Alnus as posts, bamboo strips as interlink materials) are used, brushwood check dams can be constructed during any season.

## (ii) Stone check dams

For constructing R.R. dry stone check dams, the site where it is to be constructed is cleared and the sides are sloped 1:1. The bed of gully is excavated for foundation to a uniform depth of 0.45 m to 0.60 m and dry stones are packed from that level. Over the foundation, R.R. dry stone masonry super structure of check dam can be constructed. The stone are dressed and properly set in with wedges and chips. The width of check dam at the base should be approximately equal to maximum height and successive courses are narrower so the section is roughly a trapezium. It is common to find upstream face of check dams vertical with all slopes on the downstream face but while there is sound engineering reason for this in case of large dams but it is not of any consequence in small gully control dams. In the centre of the dam portion sufficient waterway is allowed to discharge the maximum run off. The dry stone work should go up to 0.30 m to 0.60 m in the stable portion of the gully side to prevent end-cutting. Sufficient apron should be provided to prevent scouring of the structure. The thickness of the apron packing should be about 0.45 m and gully sides above the apron have to be protected with packing to a height of at least 0.30 m above the anticipated maximum water level to prevent side scour being formed by the falling water.

#### (iii) Crate wire or wire mesh check dams

When a dry stone check dam is held down with woven wire netting, the life and strength of the structure is enhanced many fold. The mesh of wire is generally 0.15 m x 0.15 m and care should be taken that stones used are larger than the mesh size so that stones do not pass through the mesh. The wire netting is spread below the stone foundation and in the sides before stone work and after completion of stone work the wire netting is tied, covering the masonry tightly so that the whole structure becomes one piece. The stability is secured by careful masonry work, setting and wedging. Wire mesh stone check dams have proved very useful and more lasting than ordinary stone check dams.



Fig. 15: A dry stone check dam (A: Front view; B: 'A'-'A' cross section)

## 5.17.2 STABILIZATION OF LANDSLIDES

#### (i) Stream bank protection

One of the main reasons for the frequent occurrence of landslides in the hill areas is toe cutting by streams and rivers. In order to confine the flow and protect the bank, construction of spur walls/retards is desirable to deflect water of torrents from toe cutting of banks particularly at the curves. As a matter of fact R.C.C. block spur wall involves large scale work with heavy cost. Therefore, wire mesh boulder or stone spur walls must be constructed as there is no dearth of boulders or stones in the hills.

A method for locating the spur wall or retard is shown in Fig. below. The first major retard at A is located by the intersection of the projected centre line of flow with the concave bank. In locating the second major retard C, a line HB is drawn parallel to the above projected centre-line and through the end of retard A. The intersection of this line with the concave bank locates point B. AC is then made equal to twice AB. Additional retards are located by intersection of a line connecting end points of two previous retards with concave bank (see D). An auxiliary retard at K is located at a distance AB upstream from A and is extended into the stream about one half the lengths of other retards.



#### Fig 16: Design and location of retards

The retard of spur walls should extend into the stream at an angle of 45 degree for a distance of about 30 per cent of the channel width. On small streams the spacing of retards may be made equal to stream width and length 0.25 times the spacing. In the silt setting between parallel lines of spur walls, species which grow well near stream beds should be planted e.g. *Alnus nepalensis, Ipomoea carnea, Populus ciliata, Salix, Vitex negundo* and local grasses etc.

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# **CHAPTER VI**

# ECOTOURISM MANAGEMENT [OVERLAPPING] WORKING CIRCLE

## 6.1 GENERAL CONSTITUTION

- 6.1.1 Ecotourism is a new concept in tourism. "It is a purposeful travel to natural areas to understand the cultural and natural history of environment, taking care not to alter the integrity of the ecosystem, while producing economic opportunities that make conservation of natural resources beneficial to local people". It is a nature based tourism that involves education and interpretation of natural environment and is managed to be ecologically sustainable.
- 6.1.2 Ecotourism contributes to the conservation of natural areas by providing economic incentives local people and revenue for the Government to preserve and manage natural areas. It also provides environmental education opportunities to raise awareness and enlist support for conservation efforts, especially at local level.
- 6.1.3 For ecotourism to be truly a form of environmentally conscious tourism and not just a pursuit of remote pristine locations, it has to be sustainable with continuous capacity to:
  - a) Safeguard natural environment, the very basis of tourist attraction.

b) Provide and maintain the quality of tourist experience and satisfaction, and benefit the local people.

6.1.4 Also for ecotourism to be sustainable, it has to be a small scale venture in terms of tourist numbers, physical infrastructure and facilities. At present there is no institutionalized system/channel through which public can see the forests and have a lasting experience. The quick visit to a sanctuary, as being practiced now, cannot be ecotourism. What is needed is a more focused strategy, which is supply driven and small group oriented.

- 6.1.5 Tourism in an ecologically sensitive area needs close monitoring. In short, tourism in these nature-based areas should be ecologically sustainable. There should also be provision for learning process for a visitor.
- 6.1.6 The eco-tourism working circle shall include the forests at and around the tourist spots like Yousmarg, Dudhpatri, Toshamaidan and all those forests enroute to these hill resorts.
- 6.1.7 The constitution of working circle is as under:-

Range Blocks		Compartments	Total
			Area(ha)
Doodhganga	Yous, Nilnag	D-3,Ri-29,Ri-30,Ri-31,Ri-32,N-6	1768.25
Raithan	Gurweith,	S-1a,S-1b,D-29,D-30,D-31,D-32,D-	9635.6
	Raiyar	33a,	
		D-33b	
Sukhnag	Khalkat	S-8a,S-8b,S-9	8310.0
Total			19713.85

Table 83: Statement of Blocks & Compartments constituted in Ecotourism W.C.

# 6.2 GENERAL CHARACTER OF VEGETATION

- 6.2.1 This working circle includes important sub-alpine pasture lands (margs) like Yousmarg and Dudhpatri. These pasture lands are surrounded by well stocked and high quality forests. The Kail and Fir constitute the main crop of working circle with occasional broad leaved associates like Ash, Maple, Bird cherry and Walnut which are confined to Nalla bank, depressions and cooler aspects. Some solitary Birch trees are found scattered above the upper limit of Fir zone. The alpine pastures support luxuriant ground flora with occasional woody form bushes like Rhododendron and Junipers etc. The occurrence of different kinds of forest types in the division has been described in the Chapter II of Part I.
- 6.2.2 The herbaceous flora forms source of variety of important medicinal plants like *Sussurea lappa* (Kuth), *Dioscoria, Aconitum heterophullum* (Patris), *A. chresentum* (mohri), *Podophyllum spp.,* (Bankhakhri) and Jurinea macrophylla (Dhoop) etc.

# 6.3 SPECIAL OBJECTIVES OF MANAGEMENT

This will be an overlapping working circle constituted mainly to ensure that silvicultural prescriptions of the working plan are in harmony with requirement of ecotourism. The specific objectives of this working circle are-

- 1. To improve and protect natural and pristine forests.
- 2. To open forests for nature lovers having potential for ecotourism.
- 3. To provide and maintain the quality of tourist experience and satisfaction.
- 4. To provide benefits of tourism to local people.
- 5. To allow travel to natural areas without compromising the integrity of the ecosystem.
- 6. To diffuse environment education among people using available media.

# 6.4 ECOTOURISM OPPUTUNITIES OF DIVISION

It is discussed under two broad headings viz:-

- (i) Strength
- The division has many world renowned tourism destinations like Dudhpatri, Yousmarg, Toshamaidan etc.
- Massive marketing campaign undertaken by Government of J &K in the tourism field.
- Creation of Developmental Authorities for development of tourism in potential tourist spots.
- Scope for a variety of ecotourism activities such as trekking, bird watching etc.
- (ii) Weakness
- Less infrastructure such as accommodation in tents, tree top houses etc. in interior forests.
- No focused strategy for ecotourism. It is yet to be defined, message conveyed to public and marketed as a distinct product.
- > No institutional set up to give specialized attention.

# 6.5 MANAGEMENT ISSUES

- *i. Training of local people:* One of the main thrust areas of ecotourism is benefit to local people. In order to gain benefits from the emerging economic opportunities, local people have to be empowered. Continuous training programmes on various aspects of guiding, souvenir development & selling, providing local accommodation, development of community-based ecotourism enterprises etc. is to be undertaken. Similarly awareness programmes are to be initiated at local level on various issues related to tourism.
- *ii. Formation of VFC*: All trekking programmes are to be through the VFC. This system is already well developed and Forest department has the expertise for adaptability to suit the local conditions. During off season the members

of VFC will assist the Forest Department in preventing illicit felling, poaching etc.

# 6.6 ECOTOURISM DESTINATIONS

The places having ecotourism potential in PP Forest Division are as under:-

## **6.6.1 YOUSMARG** (7,500' above the msl.)

Yusmarg is 40 km south of Srinagar and close to Chrar-e-sharief. Yus is short for "Yousa" or "Youza," the kashmiri word for Jesus. Marg means "meadow". Thus, without doubt Yousmarg means the meadow of Jesus, even though there is plenty of room for debate as to who this particular Jesus was. (Jesus or its local variant is not a name that one comes across often in Kashmir or anywhere else in the world, except when used for the lord himself.)

In any case Yusmarg is not a meadow but a series of wooded meadows amidst the Pir Panjal range. They are located in a small, open valley. It is the fifth most popular recreational resort in Kashmir, after Srinagar, Pahalgam, Gulmarg and Sonamarg. Like the three mentioned last, it is substantially higher and cooler than the state's summer capital. It also has an artificial lake (a reservoir, actually). After 1997, Yousmarg became a favoured destination for day trips, normally combined with a visit to Chrar-e-sharief. Its meadows are very popular with picnickers.

The mountains around the Yusmarg valley have giant pines and firs. *Paritherum* is grown on their lower slopes. Yousmarg is the base for many celebrated treks.

## **6.6.2 DOODHGANGA (**Lit.: The river of Milk)

This stream got its name because of its milk white water. It is at a short distance from the Yousmarg meadows and Piknickers often lunch on its banks. Known for its trout, the Doodhganga later merges with the Jehlum, of which a mighty river the Doodh Ganga is a tributary.

## 6.6.3 MOUNT TUTAKOTI (15,500' above the msl.)

This peak is barely a kilometer from Yousmarg. On the way is the source of the trout-rich Doodh Ganga river.

## 6.6.4 Nil NAG (Pron: Neel; Nag- Lit.: 'the blue spring')

This is an oval blue water lake in a hollow on the hill slopes of Gogji Pathar Village. It is a 4 Km downhill trek from Yusmarg through thick forests, or a picturesque 13 km uphill drive from Nowgam, or 6 kms west of Tsrar/Chrare-sharief. It is about 100 mts long, 18 mts wide and 12 mts deep. It is on the other (Northern) side of the hill from Yusmarg. The waters of the lake are warm. The Hindus consider it holy. Apparently even in pre-historic times, in the days of the *Puran* scriptures-the Kashmiris would retreat to the warmer plains ( of Jammu Province) in winter, 'leaving Kashmir to the demons'. The old would sometimes get left behind. This is what happened to an elderly Brahmin who had to seek refuge in the warmth of a cave. Their demons caught hold of him, took him to a lake called the Nil Nag and threw him in. (*The Verinag of Anantnag District too, is known as Nil Nag. However, most people believe that scriptures refer to the Nil Nag of Budgam*).

At the bottom of the lake, the Brahmin found a palace. It belonged to King Nil Nag, son of Kashyap Reshi, the saint after whom Kashmir probably takes its name. Nil Nag, who was the king of the snakes, was sitting on his throne. (Nag not only means "spring" but also king Cobra'.). The Brahmin told Nil Nag his tale of woe.

The Serpent king pulled out and gave him a copy of (presumably waterproof) the *Neelmat Puran*, the oldest extant book written in Kashmir. He advised the Brahmin to act at all times as advised in the book and make offerings as directed, if he wanted the demons to stop bothering him. The Brahmin not only did so himself, he also spread the good word among his people who stopped migrating (to Jammu) for the winters for many centuries after that. In turn, the demons stopped bothering them. (*The demons must have resumed their act towards the end of the 19<sup>th</sup> century and by the mid-20<sup>th</sup> century many, Kashmiris started going south of their winters again.)* 

The local Muslims, too, hold the lake in mystic awe. The 16<sup>th</sup> century Mughal historian Abul Fazl, after praising the lake's 'exquisitely clear waters', wrote '*Many perish by fire about its border*. Strange to relate, omens are taken by its means. A nut is divided into four parts and thrown in. If an odd number floats, the augury is favourable. If otherwise, the reverse. The banks of the lack are precipitous. There is a Forest Rest House nearby.

#### 6.6.5 SANG-E-SAFED

Sang, pron. 'sung' means 'stone', while Safed means white together the name means 'the white stones (or rocks)'. This is an oval meadow 10km uphill from Yusmarg, on the way to Mount Tutakoti. The Doodh Ganga passes through it. Nearby meadows include the *Liddermar*, which is a fine camping ground, and *Haigin*, which is a meadow amidst pines, 4km from Yusmarg.

#### 6.6.6 DUDHPATHRI

Doodhpathri falling in District Budgam of Kashmir Valley in the south western side and can be approached from Srinagar via Budgam, Raiyar

junction. The wide area with length of about 23 Kms and width of 5 Kms starts from Raiyar and ends in Tosamaidan with Doodhpathri as the central spot.

Doodh-pathri a Kashmiri word comprising two words "Doodh" meaning "Milk" and "Pathri" meaning meadow is the name given to the vast expanse of meadows and forests running over wide range of green and snow covered Himalayan peaks. The name given by the elders bear the rich history of "Sufism" in Kashmir. The meadow as the best among all in Kashmir Valley had been considered to flow streams of milk for the people but more specific is that the meadow have been providing solace and place of worship to lot many Rishies and Munies for meditation. A wide number of wild goats feeding milk to these saints has been instrumental in the attribution of the said name as " Doodh Pathri", these are the beliefs of elders.

The great Kashmiri Saint Hazarat Sheikh Noor-u-din Noorani has also been one among such Saints and has also chosen his final resting place in the foothills of this great range of meadow.

#### 6.6.7 KHAG

Khag 'block' (major cluster of villages) is renowned for its physical beauty. This is a fairly large mountainous region within Budgam district, still unknown to most tourists and still thickly wooded. Its accessible areas start around eight thousand feet above the mean sea level and go up to round fourteen thousand feet. There are mountains, with a mean elevation of around 17000 feet, around the meadows. The nomadic Bakerwal shepherds and their flocks spend their summers in these mountains. While they are there, these tribals, with their colourful camps and haunting evensong, add to the allure of Khag.

#### **6.6.8 TOS(H)A MAIDAN** (10,500 feet above the msl.)

'Maidan' refers to any large level field, pasture or even playground. Tosa/Tosha could possibly have been derived from the name of a very expensive and soft woolen shawl. So, could the name of this large pasture refer to soft, downy quality of its grass. This is the largest meadow in the region, being almost 5km long and 3 kms wide. A dense forest of very tall Fir trees surrounds it. People say that the quality of grass is very good which remains green even in the winters. Its wild flowers are known for their fragrance. In the summers, the Maidan, especially its lower portion, the Wattadar- plays host to the cowherd Gujjar tribals as well as the Bakerwals. The Gujjars bring their cattle along to graze.

There are countless streams between the ridges in the vicinity. This Maidan in the Himalayan range is 10km from Khag and 16km South-east of Gulmarg. It is located on the Mughal route and the Mughals would cross over from Poonch (in Jammu Province) to the Maidan through the **Basmai Gali pass** (13000 feet) from which the Nil Nag, too can be approached. The Basmai is the pass closest to the plains of (West) Punjab (Now in Pakistan). This also represents the most direct route between Srinagar and Poonch. (*The Pass remains closed from mid or late October till sometime in June.*)

The mughals are believed to have constructed a seven-storey palace, the K**achehry Dam Dam**, at the maidan. It is on a hillock, from which a path leads down to Tasl.The other ruined tower, hexagonal in shape and about 25 feet high, is named after Sardar Attar Muhammad Khan.

#### 6.6.9 PEHJAN

From this high altitude pasture one can see the Wular lake on one side and one of the world's highest peaks, the Nanga Parbat(26,696 feet) on the other. To get to Pehjan, you have to go past the sloping pastures of Donwar, Brari pather and Yangapather. The meadow abounds in *Saussuera lappa*(locally known as kuth) and several types of asters. Beyond pehjan are the pastures of Parhan, known as *Rachi parhan*.

6.6.10 NAKWAER PAL (14,000 feet) (lit:the 'nostrile' rock )

The tallest peak in the range ,the rocky nakwear pal is on the route to Pehjan. Legend has it that when all of Kashmir was a lake called the *Satisar*, a particularly celebrated rock at Nakwear pal was where boats would be anchored. The presence of an iron hook, variously called the Ded Bal and the Lal-khanen-Ghar, embedded in the rock, buttresses the legend. Shepherds and cowherds from the neighbouring villages come here to graze their flock.

#### 6.6.11 SHRINES

Charar-e-Sharief (correctly Tsrar-e-sharief: Charar-e-sharief is located at 28 km from South-west of Srinagar on the road to Yousmarg. The Tomb of Sheikh Noor-ud-din (RA) at Tsrar-e-sharief is without doubt, the most popular, the most revered Kashmiri Muslim Shrine in the valley. Hindus and Muslims alike accept him as the patron saint of Kashmir.

There is a mosque next to the shrine. It was first built by Sangram Dar, a disciple of the Sheikh. Sangram was the owner of the land on which both the shrine and the mosque now stand. Every Friday afternoon the sheikh also known as the Alamdar (flag-bearer) of Kashmir, would offer prayers at this mosque.

There are many legends about the Sheikh-ul-Alam's out of body experiences, powers that are said to have continued after his death as well.

The sheikh died, in 1438, at some distance from the mosque. So his body wrapped in a shroud, flew to an open space next to the mosque, where he was subsequently buried. (*The other graves in the shrine are those of the sheikh's disciples, including renowned Baba Nasr-ud-Din.*)

King Zain-ul-Abideen (1420-70), better known as Budshah, come over from Srinagar to attend the sheikh's funeral. He got a shrine built over the grave. Being made of wood, the Chrar-e-Sharief shrine, like almost all major kashmiri Muslim Shrines, got burnt several times over the centuries. Its oldest recorded gutting was in the 1580s, following which Yaqoob Chak, the last independent king of Kashmir, got it repaired. That a king who happened to be Shia got repaired a shrine dedicated to a Sunni saint is further proof that sectarian histories are wrong.

Then in the early 19<sup>th</sup> century almost the entire town got burnt. Ata Muhammad khan, the Afghan governor of Kashmir, got the shrine reconstructed. (He made major additions to the adjoining mosque.) The Prime minister of Jammu and Kashmir, Bakshi Ghulam Mohammad got several cosmetic changes effected around the shrine in the 1950s.

**Annual** *Urs*: The sheikh died on the 26<sup>th</sup> day of Ramzan. According to the Kashmiri Calander, this happened in the month of Poh (December). Therefore, his urs is observed in Poh and is one of the most popular urses of Kashmir.

- 2. The Budgam Imambara: Aga Syed Mehdi was a major spiritual leader of the Shias (Shiites) around the middle of the 19<sup>th</sup> century. He used to pray under a Chinar. On his death another famous Shia guide, Aga Syed Mohammad, got the present Imambara constructed in 1857, near the Chinar. Its interiors were designed by Asghar Ali of nearby Mirgund. The exteriors are Indo-Iranian. The Imambara was enlarged in 1924 on the orders of Aga Syed Sahib and panels of Paper mache, a French craft that has struck roots among the Shias of Iran and Budgam were added. In 1955, Aga Syed Yousuf Almousavi Alsafvi got the Imambara augmented further through the Anjuman-e-shari-Shian organization. He also got a mosque constructed next door. Today, the Imambara is octagonal and has five grand doors, each twelve feet wide. Of these, one door is earmarked exclusively for women.
- **3.** Hamchapora-The Alamdar-e-Kashmir Ziarat: The Alamdar of Kashmir, sheikh Noor-ud-din Wali (RA) travelled extensively through the land, to meditate but also to spread his message. On entering the Khag region, he choose a rock to meditate on, and left his foot prints on it. The rock came to be called *Shah Kean* (The king of stones). A lady spiritualist, *Sham Ded*, sought the sheikh out at Poshkar for religious instruction, which she received and helped her become one of the major saints of Kashmir. The present Ziarat (Shrine) marks the place where the sheikh-ul-Alam lived during his longish stay in Hamchapora.

- **4. Kanihama-Hazrat Syed Zia-ud-din Bukhari's tomb:** One of the major events in the history of Kashmir is the migration of 360 Syeds from Bukhara (Central Asia) following their persecution there. Syed Zia-ud-din chose Kanihama for his mission. Of the many miracles associated with him, the best known is about a blind girl whom he asked to bring a Kangri. (A Kangri is a pot made of clay, enclosed in a cane basket in which embers are kept smoldering). The girl told him that she could not do so because she was blind. So, the Syed put his hand on her eyes and she began to see. The Syed died in Kanihama. His annual urs is on the 26<sup>th</sup> of Rajab of the Hijri calendar.
- 5. Khansaheb-Hazrat Saleh's Shrine: This shrine is located in the administrative 'block' called Khansaheb, after the shrine. Hazrat syed Saleh Khan, the saint of shrine, was born in Pakhla (in present day Pakistan) in the 16<sup>th</sup> century. There were omens and signs at the time which indicated to those who could interpret such things that a major saint had been born. As many as 99 saints went to the house of Khansaheb's father, Ismail sahib, to see Saleh, the day that he was born.

An uncle wanted to adopt Saleh, when he was five. When his requests failed to move Ismail Sahab, he started restoring to pressure. Things were getting unpleasant, so Ismail sahib packed his bags and migrated to Kashmir, along with his son. En route they met the renowned central Asia saint, Bu Ali.

In Kashmir they sought out Baba Naseer-ud-din Ghazi, the leading seer of the age, who let them stay with him. Ismail left after a year, but Saleh sahib remained with the Baba for the next 12 years. Then for another 12 years, Saleh sahib meditated in a cave, which is still associated with him and is called Khansaheb. It was during this phase that legends about his spiritual powers began to spread. He acquired a huge following, which would flock to his cave. For a while he shifted to Srinagar, before moving to the woods to pray and meditate.

Khansaheb was an outstanding calligrapher. A copy of the holy Quran copied by him is still extant and is to be found in the Watal Kadal area of Srinagar. The Syed died on the 17<sup>th</sup> of Zeeqad, in the 1019<sup>th</sup> year of the Islamic caledar. The annual *urs* of khansaheb is , therefore, held in the month of Zeeqad at his tomb.

- 6. Lassapora -Syed Mohammad Samri's shrine: The Syed belonged to Shopian and lived perhaps in the 17<sup>th</sup> or 18<sup>th</sup> century. He went to meditate in the forests of Lassapora, 7 kms from Habir, a village in Khag. After some years of such meditation, he died and was buried there. His annual *urs* is celebrated on the 12<sup>th</sup> day of Phagun (Roughly, the 3<sup>rd</sup> march).
- 7. Palapora(Poshkar)-Hazrat Ganga Baba Rishi's Shrine: The rishi migrated from Maraz to Palapora (3 km. from Khag). During his life time, he got 360 mosques built. He also got an equal number of culverts constructed over streams in the Khag area. In the tradition of that great environmentalists,

Sheikh Noor-ud-din (RA), Ganga Baba too got thousand of trees planted. At least one of these trees, a poplar, went on to acquire a diameter of 12 mts (40 feet).

8. Poshkar-Baba Latif-ud-din Qazi's Tomb: Born Ludo (or Ladi) Raina in Kishtwar, the Baba came over to Kashmir looking for a job, a spiritual guide and a cure for some disease that he was suffering from. In the Sheikh-ul-Alam, he found all three, during the Alamdar's stay in Poshkar. The sheikh agreed to take Ludo Raina as his disciple and Raina became Hazrat Baba Latif-ud-din Qazi. He followed his mentor's method of meditating on the one hand and serving his fellow men (i.e., performing what we now call 'social service') on the other.

The Sheikh also taught the Baba how to meditate in a cave. So, the Qazi left Poshkar, never to return. He spent many years and died, in a cave quite far from Poshkar. The cave and the meadow around it have since been known as Baba Marg ( the meadow of the Baba).

The Baba's distraught disciples were unable to reach the then inaccessible cave to collect his body for burial. In death as in life the Baba followed his guide. The Baba's body, wrapped in a shroud, flew from the cave to Poshkar to land where the tomb now is. The Baba's annual *Urs* is celebrated on the 7<sup>th</sup> of Phagun (Roughly, the 26<sup>th</sup> Feb) every year. On the occasion, the Baba's sword and some other relics associated with him are displayed.

- **9.** Poshkar-Sham Ded's Tom: Sham Ded died and was buried in her own village, where her father had been a Black smith. 'Ded' (Porn.: d-yed) means "Sister" (as in the hindi "Didi"). "Sham" means 'the evening'. The saint got her moniker because when her spiritual guide, the sheikh-ul Alam, died, it was she who carried the news to Baba Latif-ud-din Qazi and it was evening when she did so.
- 10. Poshkar- the place: (8,873 feet) Vigne called this wooded hill on the western edge of Kashmir " the highest of all the isolated hills within the [v]alley" like the village of the same name, it is located between Khag and Ferozpur.
- **11. Sikanderpora-The tombs of the Syeds Taj-ud-din and Alla-ud-din:** Syed Tajud-din first went to Sukhnag to pursue his spiritual mission. After a longish stay there he went from village to village with the goal of reaching Sikanderpora. Legend has it that the Mala Kol stream followed him silently as he travelled from Sukhnag to Sikanderpora where he settled down and, later died. His son Syed Alla-ud-din proved a worthy successor. The tombs of both are in Sikanderpora.

The ecotourism has underlying principle to send out the environment message among masses. In order to reach out public, following projects should be undertaken to achieve the desired purpose.

- 1. Creation of Herbal Garden at Yousmarg.
- 2. Creation of Orchid Garden at Yousmarg.
- 3. Creation of Butterfly Garden at Dudhpathri.
- 4. Creation of Eco-friendly huts at Toshamaidan.

# 6.7 TREKKING ROUTES

The important trekking routes are discussed below:-

1. YOUSMARG-SUNSET PEAK-YOUSMARG: (Five days trekking programme) Day 1: (16 km. from Yousmarg to Durga-Lotan)

The trek is undulating and passes through woods. It leads to a tiny valley. *Day2: (13 km to Danzab or 18 km to the foot of the glacier)* 

The trek goes up a gentle incline, again through forests. Aconites, a poisonous herb is found in abundance here. One can camp on the Danzab meadow or further south at the bottom of the glacier.

Day3: (To sunset peak, 15, 567 feet and back to the camp)

One would first have to cross the Romshi. The trek along the right bank of the stream leads to the foot of the glacier. This is one of the Kashmir's safer glaciers to climb on. One needs to go up and over the glacier to get to the peak. The main rocky peak looks like a giant crouching lion. From the peak, there is a grand view of the plains in the South. Regardless of whether one had camped at Danzab or at the foot of the glacier the previous night, it would be a good idea to return to Danzab for the night. *Day 4: (Return from Danzab/the foot hill to Durga-Lotan, 13 or 18 km) Day5: (Back to Yousmarg from Durga-Lotan -16 km)* 

*Alternative:* On day 4, one does not need to return to Yousmarg. Instead one can go 10 km South-west from Danzab to Chitta-patthar.

# 2. YOUSMARG- CHITTA PATTHAR-TATAKUTI PEAK-YOUSMARG: (5 days trekking programme)

## Day-1: (5-6 hours from Yusmarg to Frasnag)

Frasnag is a spring known for its Icy waters. It is 6 km to the west of Durga-Lotan.

## Day-2: (10 km to Chitta-Pathar)

In the 2<sup>nd</sup> Kilometer there will be a bridge over the DoodhGanga. Cross over to the left bank of the river. Now follow the river till the valley comes to an end. One can camp at Navuk, near the small gorge where the river emerges.

*Day-3:* (*To the Tatakuti Peak, 15,560 feet and back to Chitta-pathar*) Travel south along the same path as yesterday, still along the river's left bank. After a few Kilometers and after crossing a low saddle, the path will turn west. After that one has to climb through rocks and loose stones to reach the Chhoti Gali Pass (14, 100 feet). (This pass leads to *Behram Gala* in Jammu. Therefore, one should not cross the Chhoti Gali pass by mistake.) It is a stiff ascent to the base of the peak and sharper till to the peak itself. Return the way one had come. There are many mountain tarns in this DoodhGanga valley which are worth a visit. There are glaciers too with steep passes into the Jammu provinces.

#### Day-4: (Return to Frasnag)

#### Day-5: (Return to Yousmarg)

*Alternative:* Instead of returning from Frasnag to Yousmarg, one can go to Gulmarg. (see the "Yusmarg-Tosha maidan-Gulmarg" trek.)

# 3. YOUSMARG-TOSHAMAIDAN-GULMARG TEKKING ROUTE: (4 Days Trekking programme)

#### Day-1: (5-6 hours to Frasnag)

#### Day-2: (16km to Dorein)

Cross the bridge over the Doodhganga. Climb up through a forest to Miskan. Continue climbing up a very long moor and cross a river to reach Diskal (C. 11,000feet). After that there is a slight descent to Dorein (c. 9,500 feet) which has some Bakerwal huts.

#### Day-3: (10 hours to Bandi)

Climb up a gentle slope to Hakakhal. You will next pass the Lal Shah Alam ridge before reaching the grassy Tosha maidan valley (10,500 feet). Climb from the maidan, up a gradual slope, to the Kralnag pass (12,002 feet). From there it is down hill to Bandi (11,200 feet) where the Bakerwals camp. Tosha maidan ( also Tosha maidan) is a large, mostly plain, sometimes undulating, pasture east of the Pirpanjal range. Hills rise gently on all sides of the green plain. The pass of the some name connects the valley with Poonch in jammu provinces.

#### Day-4: (6 hours to Gulmarg)

Go downhill from Bandi to catch the track that goes from the Firozpur nalla (Kashmir) to Poonch (Jammu). Take this track. It goes down a sharp slope, through a forest, to Gulmarg.

#### 6.8 METHOD OF TREATMENT PRESCRIBED

To achieve the above objectives, it is essential to protect the forest from deteriotion. Following treatments are suggested during this plan period.

1. The forest areas in this working circle will be worked as per the prescriptions given in main working circles. The objective should be, however to improve the natural stocking and site quality of these forests.

- 2. Plantations with angle iron fencing will be raised in these areas to increase the density of crop and meet the local demands of fuel, fodder and small timber and to reduce the pressure on natural forests.
- 3. The ornamental plantations will be carried out along road side.
- 4. The Herbal garden, Butterfly garden, Orchid garden and Lavender garden will be established at important tourist destinations to attract tourists.
- 5. The Natural Interpretation Centers will be established at Doodhpathri and Yousmarg for dissemination of nature related information among tourists to generate awareness among people.
- 6. The demarcation pillars will be erected where ever missing in order to save forests from encroachment. The value of land has increased substantially in these areas due to tourist rush. Therefore it is evident that more land grab cases will occur if demarcation is not taken due care of. The demarcation of the forests under this working circle will be taken on priority and all such forests should be demarcated in this plan period. Besides all encroachments shall be removed in this plan period.

# 6.9 METHOD OF EXECUTING THE FELLING

The yield will be realized as per the recommendations of main working circles

# 6.10 YOUSMARG DEVELOPMENT AUTHORITY

Yousmarg Development Authority has been constituted vide Govt. Order No: 262-TSM of 2005 dated 27-12-2005, it was in pursuance of the Cabinet Decision No. 10/03/2005. The authority was created with a view to attract the Tourists to the yousmarg area without affecting the ecology. The Authority is being sponsored by the Central Government of India under improvement to the tourism infrastructure. Yousmarg is one of the captivating valley in district Budgam. It is about 50 Kms south west of srinagar, situated at an altitude of 7500 feet above mean sea level. It is a cluster of meadows surrounded by Pir panjal ranges. By road, the valley is connected with Srinagar via Charar-e-sharif.

Yousmarg Development Authority is making efforts for making the area attractive for tourists by way of taking up different development projects in hand and a part of it has been proposed to facilitate the area by way of providing of rain shelters, accommodation, roads, parks etc.

The forest area diverted to Yousmarg Development Authority for creation of various amenities for tourists is given below in the table:-

Table 84: Statement showing area diverted to YDA under FCA

Phase Area diverted No. of trees Amount Remark
--

	(Ha)	involved	due/Paid	
Ι	1.9975	Nil	Rs 12,58,550	199-FST of 08
				dt. 27-05-2008
II	1.55	Nil	Rs 11,60,950	481-FST of 08
				dt. 19-12-2008
Total	3.5475		Rs 24,19,500	

#### 6.11 DUDHPATHRI DEVELOPMENT AUTHORITY

Doodhpathri Development Authority has been constituted vide Govt. Order No: 261-TSM of 2005 dated 27-12-2005. Doodhpathri falling in District Budgam of Kashmir Valley in the south western side and can be approached from Srinagar via Budgam, Raiyar junction. The wide area with length of about 23 Kms and width of 5 Kms starts from Raiyar and ends in Tosamaidan with Doodhpathri as the central spot.

The forest area diverted to Dudhpathri Development Authority for creation of various amenities for tourists is given below in the table:-

Phase	Area diverted	No. of trees	Amount due	Remarks
	(Ha)	involved		
Ι	1.97	Nil	Rs 12,41,100	198-FST of 08
				dt. 27-05-2008
Π	2.8375	Nil	Rs 21,25,288	11-FST of 10
				dt. 11-01-2010
Total	4.8075		Rs 33,66,388	

Table 85: Statement showing area diverted to DDA under FCA

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# CHAPTER VII

# NON-TIMBER FOREST PRODUCE (OVERLAPPING) WORKING CIRCLE

# 7.1 GENERAL CONSTITUTION

- 7.1.1 This is an overlapping working circle and the area of operation will cover all the natural forests and plantations. NWFP resources of this Division are subjected to severe threat. The following are the broad categories of threats to the NWFP resources.
  - 1. Destruction or modification of habitat.
  - 2. Over exploitation for commercial purposes.
  - 3. Diseases and pests.
  - 4. Inadequacy of existing regulative mechanism.
- 7.1.2 Almost all the above mentioned factors have contributed to the impoverishment of NWFPs. Illicit felling, grazing coupled with annual fires, unscientific and destructive extraction, microclimatic changes, conversion of forest areas for agriculture and other purposes are some of the major factors that have contributed to the destruction of many such valuable species. The combined effects of all such destructive factors on the natural environment have resulted in degradation of habitat.
- 7.1.3 The NWFP working circle extends over the whole Working Plan area and the prescription under the working circle will apply equally well to other working circles also. The total area of the working circle will be the total area of the Division.

## 7.2 GENERAL CHARACTER OF VEGETATION

- 7.2.1 The species yielding non-timber forest produce grow everywhere in the forests of the division with other vegetation. The occurrence of different kinds of forest types in the division has been described in the Chapter II of Part I and non-wood forest vegetation are their associates.
- 7.2.2 Leaves, flowers, seeds, barks, roots, etc which are non-wood forest produce are collected from herbs, shrubs and trees of the forests for their medicinal and economical values. The deodar, Kail and Fir constitute the main crop of working circle with occasional broad leaved associates like Ash, Maple, Bird cherry and Walnut which are confined to Nalla bank, depressions and cooler aspects. Some solitary Birch trees are found scattered above the upper limit of Fir zone. The alpine pastures support luxuriant ground flora with occasional woody form bushes like Rhododendron and Junipers etc.
- 7.2.3 The herbaceous flora forms source of variety of important medicinal plants like *Sussurea lappa* (Kuth), *Dioscoria deltoidea, Aconitum heterophullum* (Patris), *A. chresentum* (mohri), *Podophyllum spp.,* (Bankhakhri) *and Jurinea macrophylla* (Dhoop) *etc.*

# 7.3 SPECIAL OBJECTIVES OF MANAGEMENT

- 1. To protect, conserve and propagate the medicinal plant wealth of our forests.
- 2. To ensure sustainable collection and cultivation of minor forest produce with sound silvicultural principles, besides value addition and marketing of such products.
- 3. To harness the maximum potential of the site.
- 4. To develop and adopt a package of scientific practices for sustainable extraction and usage.
- 5. To bring the cultivation and marketing of NTFPs under the ambit of J.F.M. and Forest Development Agency so that it gradually becomes a source of livelihood for the fringe residents.
- 6. To increase the market and scope for processing of these medicinal plants to economical products.
- 7. To raise crop as under-storey plantation and maintain them.
- 8. To conserve the natural heritage by preserving the existing forests with their variety of flora and fauna and to conserve the genetic resource.

# 7.4 SILVICULTURAL SYSTEM

7.4.1 The silvicultural system to be followed is the Selection System. Only the silviculturally available non-wood forest products are to be extracted with due importance to the rotation of the specific species. The trees, which have medicinal values for their fruits, seeds, barks, leaves, etc are to be protected and the vegetative parts are to be extracted scientifically. The Plantation of medicinal plants and other highly valuable NWFP are to be

raised following the standard method. Natural regeneration in patches of medicinal plants and other NWFP may be supplemented by artificial planting.

7.4.2 The selection of the areas is left to the discretion of the territorial DFO's and it should be tried to raise these plantations through JFM beneficiaries after markets are sought so that they get some revenue. Demonstration centers like Herbal gardens should be created to raise more awareness among common public.

## 7.5 EXPLOITABLE SIZE AND ROTATION

- 7.5.1 Non-wood forest produces are derived from herbs, shrubs, climbers, grasses, trees, etc, which are annual, bi-annual and perennial in longevity. So the herbs, shrubs, climbers etc are to be collected annually or bi-annually depending upon the life span of the individual species.
- 7.5.2 The flowers, fruits, seeds, barks, leaves and other vegetative parts are to be collected from the perennial trees depending on their phenological characters, i,e., flowering time, fruit maturing time, seed maturing time, etc. Barks and roots from trees are to be collected only with permission from the Divisional Forest Officer. The trees yielding non-timber forest products are not be felled for extraction before attaining their age of physical rotation.

## 7.6 METHOD OF TREATMENT

- 1. Wherever medicinal tree species are mixed with the principal species they are to be retained during tending, thinning, etc operations which are being carried out for establishment of the principal species.
- 2. During tending, thinning, etc operations in these areas, if any patch of medicinal plant is found which requires tending, thinning, etc for its improvement such operations are to be carried out.
- 3. Non-wood forest produce or minor forest produce are as important as major forest produce and have pronounced uses in human life. So, all the forest field officers should remember during carrying out different operations in the forests that the NWFP are protected, maintained and improved.
- 4. The NTFP plantations raised are to be adequately tended according to standard procedure and schedule.
- 5. Grazing is totally prohibited in the areas where NTFP plantations are raised.
- 6. Adequate fencing is to be provided wherever necessary

# 7.7 MISCELLANEOUS REGULATIONS

- 1. Identify plants and their habitat.
- 2. Survey and demarcate the area by erecting boundary pillars. Prepare maps showing all the landmarks, wooded area, rocky patches, marshy areas etc.
- 3. Stock maps showing the extent and intensity of availability based on inventory for the selected species should be prepared.
- 4. Conduct total inventory of vegetation in a given locality for enumerating the availability of species and their distribution etc. The medicinally important plants and their associates be identified and encouraged through managerial interventions.
- 5. Treatment maps of the site may be prepared indicating the places where the seedlings of trees, shrubs, seasonal herbs and climbers are to be cultivated.

## 7.8 IMPORTANT NON-WOOD TIMBER PRODUCTS

- (i) HONEY: Honey has good potential in the Pirpanjal Forest Division. Already people collect honey from natural forests. However, people shall be trained to practice Apiculture at the boundaries of forest. The practice of honey collection can be improved by involving local people through Joint Forest Management by providing them knowhow of Apiculture and suitable incentives.
- (ii) WICKER WORK: Kangri making, an art that originated from Italy, has been mastered in Kashmir and is now used as an antidote for winter. Walter Lawrence wrote in his book 'What Laila was on Majnoon's bosom, so is Kangri to a Kashmiri. Though Kangri is woven in different parts of Kashmir like Bandipora, Sopore, Baramulla, Anantnag but Kangri from Chrari Sharief is known for its beauty and durability, and is sold at higher prices. Kangri is a traditional fire-pot made of a bowl-shaped baked clay pot called as 'Koundal' held in a frame of wicker work. The outer encasement of wickerwork looks pretty with ornamentation of rings using wickers of varied colours which makes Chrari Sharief Kangri different from Kangris manufactured in other parts of Kashmir. Three types of Kangris - 14, 20 and 24 pour (dimension), besides highly priced bridal Kangris are being made here. In Chrari Sharief, there is a locality called Kaanil Mohalla where scores of families are associated with this craft. They not only make beautiful, costly Kangris but also fruit-collection baskets and other wickermade decorative items. The craftsmen procure wicker for the purpose from the far-off forests in Kashmir. They also extract and collect wickers of species Indigofera heterentha, Parrotiopsis jacquemontiana, Cotoneaster racemiflora and Vibernum grandiflorum in limited guantities in a proper manner from the nearby forest compartments viz Co. N2b, N1a, N1b, N2a, Ri32, Ri31, Ri25, Ri26, Ri27, Ri28, Ri29, Ri30, N3, N4, N5 and N6 of Chrari Sharief, Kanidajan, Yusmarg and Nilnag forest blocks of Doodganga Forest

Range respectively. The craftsmen are very choosy while dyeing the wickers in different colours to decorate the Kangris. The plant material from which wicks are extracted is regenerative and needs scientific and sustained management for its bulk production so as to boost the trade of Kangri production.

- (iii) Gucchies (Morchella esculenta): Commonly known as Kangucch is a species of fungus the *Morchellaceae* family of the Ascomycota. It is one of the most readily recognized of all the edible mushrooms and highly sought after. Each fruit body begins as a tightly compressed, gravish sponge with lighter ridges, and expands to form a large vellowish sponge with large pits and ridges raised on a large white stem. The pitted yellow-brown caps measure 2-7 cm (0.8-2.8 in) broad by 2-10 cm (0.8-3.9 in) tall, and are fused to the stem at its lower margin, forming a continuous hollow. The pits are rounded and irregularly arranged. The hollow stem is typically 2-9 cm (0.8–3.5 in) long by 2-5 cm (0.8–2.0 in) thick, and white to yellow. The fungus fruits under hardwoods during a short period in the spring, depending on the weather, but it is also associated with old orchards, woods, disturbed grounds and burnt areas. Although a process was reported in 1982 to grow the fruit bodies under controlled conditions, attempts to cultivate the mushroom commercially have only been partially successful. The Guchies are auctioned annually to highest bidder. The bidder employs local villagers for collection. The bidder registers his MFP depot in division where he dumps all collected quantity and applies for lifting permission. The pass is issued for transportation from Division office. The Guchie production seems to be on decline in Pirpanjal Division as low bids are received every time. It is recommended that Guchie collection should be taken as Joint Forest Management activity by involving local people and forest staff. The estimated market cost of Guchies is Rs 10,000 per Kg.
- (iv) Boulder and Bajri: Boulder and Bajri from demarcated forest area should not be allowed. The Hon'ble High Court of J & K has already imposed ban on extraction of stone quarrying from demarcated forests.
- (v) Medicinal Plants: The medicinal wealth of Pirpanjal forest Division is immense. The medicinal areas are mostly found in alpine pastures and subalpine pastures. It is proposed that the medicinal plant potential of Pirpanjal division be tapped as per the Government policy guidelines subject to proper resource mapping is conducted and sustainable yield harvesting methods are employed. The important medicinal plants are:
  - **a)** Aconitum heterophyllum (Patis)
  - **b)** Arnebia acuminata (Khazaban)
  - c) Atropa acuminate/Atropa belladonna
  - d) Dioscorea deltoids (Dioscorea)
  - e) Valeriana jatamansi (Mushkibala)
  - f) Viola odorata/ Viola canescens/ Viola himalyensis (Banafsha)

- g) Picrorhiza kurroa (kour)
- h) Sussurea lappa (Kuth)
- i) Heracleum candicans (Shuriyal, Phulao, Kaindal)
- j) Rheum emodi (Pambechalan)
- **k)** Adiantum capillus (Gavtheri)
- I) Althaea officianalis (Sazmol)
- m) Angelica orchangelica (Choru)
- n) Carum spp. (Zeera)
- o) Ferula jaeschkeana (Hing)
- **p)** Juniperus spp (Wethur)
- **q)** Jurinea macrocephala (Dhoop)
- **r)** Phytolocea acinosa (Hapatmakai)
- s) Skimmia laureola (Botapater)
- t) Trillium gavanianum (Naagshatri)

# 7.9 DISTRIBUTION OF MEDICINAL WEALTH

The following table gives the distribution of medicinal wealth in Pirpanjal Forest Division

Range	Blocks	Comptts.	Species found
Doodhganga	Yus, Padshatar, Nilnag, Jabad.	Ri-27,Ri-29, Ri-30, D- 11,D-12, N- 6, D-13, D- 14a	Jurinea macrocephala, Podophyllum emodi, Adiantum capillus, Althaea officinalis, Juniperus spp., Atropa spp., viola odorata, Arnebia acuminata, Morchella esculenta Rheum emodi, Rumex nepalensis Cichorium intybus etc.
Raithan	Kachwari, Palmaidan, Gurwaith, Raiyar	D-23, D-24, D-25, D- 29,D-30, D- 31, D-32, S- 2, S-3	Saussurea lappa/simpsoniana, Dioscorea deltoidea, Jurinea macrocephala, Podophyllum emodi, Adiantum capillus, Althaea officinalis, Juniperus spp., Atropa spp., viola odorata, Arnebia acuminata, Morchella esculenta Rheum emodi, Rumex nepalensis Cichorium intybus etc.
Sukhnag	Khalkat, Ringzabal, Zugoo, Sutaharan, Drang	S-4, S-5, S- 8a,S-8b S- 10, S-11, S- 12, S-13, S- 14,S-15, S- 19,S-20, S- 21, S-22,S- 23 and S-24	Saussurea lappa/simpsoniana, Dioscorea deltoidea, Jurinea macrocephala, Podophyllum emodi, Adiantum capillus, Althaea officinalis, Juniperus spp., Atropa spp., viola odorata, Arnebia acuminata, Morchella esculenta Rheum emodi, Rumex nepalensis Cichorium intybus Trillium gavanianumetc.

 Table 86: Distribution of medicinal plants in PP Forest Division

 Pages
 Plants

 Pages
 Species found

# 7.10 IMPORTANT MEDICINAL PLANTS OF PIRPANJAL

The list of commercially important medicinal plants found in Pirpanjal Forest Division is tabulated below:-

Specie Name	Local Name	Medicinal Use	Part Used
Aconitum hetrophyllum	Patis	Nasal insufflations of roots is beneficial in migrane, crushed seeds locally applied on throat, in tonsillitis. Roots are also used in cervical lymphadenitis, ascites, spermatorrhoea. Root decoction reduces burning of urinary tract and perspiration.	Roots and leaves
Arnebia acuminata	Khazaban	Dry flowering shoots used in tongue and throat diseases. Also useful in cardiac ailments. Underground parts yield a purple dye. It is one of the ingredients of Livocin.	Whole plants used for medicines especially Flower and leaves
Atropa acuminata / Atropa belladona	Deadly night shade / Belladona	Pain reliever, muscle relaxer anti- inflammatory; helps treat menstrual problems, peptic ulcer disease, histaminic reaction and motion sickness	Whole plant
Dioscorea deltoidea	Dioscorea / Kreach / Yam	Tubers used for washing woollens. Also a promising source of steroidal sapogenins used in oral contraceptives.	Underground stem/rhizome
Valeriana jatamansi	Mushkibala	Roots used medicinally in Ayurvedic formulations. Valtrats isolated from rhizomes have tranquilizing and sedative action. Also used in perfumes.	Roots / rhizomes

Table 87: Important medicinal plants of PP Forest Division

Viola odorata /Viola canescens / viola himalyensis Picrorhiza kurroa	Banafsha / Nunposh Kour	It is mainly used in respiratory ailments. It is very beneficial in treatment of congestion, coughs and sore throat. It is also used as emetic. Presence of glycoside of salicylic acid in its leaves explains its efficient use in headache and body pain. Flowers are anti-septic, anti inflammatory, laxative and expectorant. The rhizome has a long history of use in	Whole plant mostly Flowers Root
		treatment of digestive problems. Other uses have been proposed for asthma, liver damage, wound healing, vitiligo.	
Saussurea lappa / Saussurea costus	Kuth	Very important medicinal plant, roots used in cosmetic and ayurvedic formulations. Roots yield essential oil which has strong aromatic odour. The powdered roots are sprinkled over crops as insecticide. Roots are also kept in woollen garments as insect repellant. Root drug is useful in controlling Bronchial asthama.	Root
Heracleum candicans	Shuriyal, Phulao, Kaindal	Roots are used as a source of xanthotoxin, a furanocoumarin used in treatment of leuciderma. Fruits are used as nerve tonic.	Roots, leaves, Flowers
Rheum emodi / Rheum moorcroftianum	Pambechalan	Roots used in wound healing, muscular swellings and mumps. Also used to dye woollens.	Roots, leaves
Adiantum capillus	Gavtheri	The plant is pectoral, expectorant, emmenagogue, astringent and diuretic. Also used in throat affections and bronchial disorders. Leaves are used in catarral affections. The plant is also used as a tea to relieve colic and for amenorrhoea. Rhizome is used for respiratory diseases. Decoction of leaves cures stomach pain.	Roots, leaves
Althea officinalis / Althea rosea	Sazposh	The root of the plant is used in jaundice, stomach, urinary ulcers and liver disorders. This plant possesses valuable soothing properties, especially	Flowers and roots

		for the inflammation of the uterus and general female troubles.	
Angelica orchangelica	Mohrchhar / Chohore	Roots used for flavouring dishes. Seeds fed to horses in stomach pain. Musk like odour of roots is used in perfumes. An infusion of leaves is useful in sore throat.	Roots, leaves, Seed
Carum spp.	Zeera	Caraway seeds are useful for relieving gas pains and brochial spasms. Useful ammenorrhoea, blood vomiting, rheumatism and fevers. Reported to be abortifacient. Also used in breads, cakes, cheeses and liquers.	Seeds
Ferula jaeschkeana	Hingu / Haput Kanphur	Used as fodder for goats. Also yields essential oil.	Whole plant
Juniperus spp.	Wethur	Fruits and oil used for flavouring gin and food products. Used against swellings, tumors and warts by locals. Useful in asthma.	Leaves, Seeds, Fruits.
Jurinea macrocephala	Dhoop	Roots are used in dhoop making	Roots
Phytolocea acinosa	Hapatmakai	Leaves are cooked as vegetables. Ripe fruits are eaten by black bears	Leaves, seeds, Fruits
Skimmia laureola / Skimmia anquetilia	Botapater/ Ruspatta / Nera	Leaves used as incense and flavouring agent. Finds use in perfumes and cosmetics	Leaves
Trillium govaniana	Naagshatri / Satgandi	Roots yield diosgenin on hydrolysis.	Underground stem/rhizome
Podophyllum emodi	Banwgum	Used in cancer treatment, as stimulant and purgative.	Fruit, roots

# 7.11 EXPLOITATION METHODOLGY FOR MEDICINAL PLANTS

The medicinal plants from natural forests have to be extracted scientifically. The method of harvesting should be non-destructive. The aim of exploitation should be getting maximum returns on sustainable basis with conservation of species in natural habitat as priority. Keeping in view all aspects following exploitation methodology is prescribed for minor forest produce of Pirpanjal Forest Division.

#### 7.11.1 SURVEYING, MAPPING & DATA ANALYSIS

- 1. The boundaries of the compartment should be ascertained properly before commencing the survey. The Technical Officer shall acquaint himself thoroughly with the topography and the condition of the crop in the compartment before conducting the survey. He should always keep in mind that he is conducting survey in the eco-sensitive zone which is of vital importance in the environmental, water and soil conservation.
- 2. The following methodology should be used for estimation of NTFP's in forest compartment.
- 3. **SAMPLE DESIGN:** Quadrants of 5 m x 5 m (25m<sup>2</sup>) shall be laid at every 200 meters along transect lines. The transect lines are laid through all over compartment 300 meters apart. Transects are used because they are of considerable importance in the description of vegetative change along an environmental gradient, or in relation to some marked feature of topography. (Braun-Blanquet approach of phytosociology as modified by van der Maarel)
- 4. **DATA ANALYSIS:** The collected data from quadrats should be analyzed using following parameters.
- a) Density is a count of the numbers of individuals of a species within the quadrat. It is closely related to abundance but more useful in estimating the importance of a species. Counting is usually done in quadrats placed several times in vegetation communities under study. Afterwards, the sum of individuals per species is calculated in terms of species density per convenient area unit such as a hectare (Mueller-Dombois and Ellenberg).



**b) Frequency** is defined as the probability or chance of finding a species in a given sample area or quadrat. It is dependent on quadrat size, plant size and patterning in the vegetation. It is calculated with this formula:

Number of plots in which a species occur

F =

Total no. of plots

The higher the frequency, the more important the plant is in the community. Although a high frequency value means that the plant is widely distributed through the study area, the same is not necessarily true for a high abundance value. This abundance is not always an indicator of the importance of a plant in a community. A better idea of the importance of a species with the frequency can be obtained by comparing the frequency of occurrences of all of the tree species present. The result is called the relative frequency and is given by the formula:

Relative frequency (RF) =

Frequency of a species

cy (RF) = \_\_\_\_\_

\_\_\_\_\_ X 100

X 100

Total frequency of all species

c) Abundance: Abundance is the average occurrence of given specie in the quadrats of its occurrence.

Abundance $(\Lambda)$ –	Total no. of Individuals of a specie found					
Abundance (A) –	No. of Quadrats of occurrence					
Relative Abundance (RA) =	No. of Individuals of a species					
	X 100					
Tota	al no. of individuals of the species in the area					

**d) Importance Value Index (IVI):** is useful to compare the ecological significance of species. It combines data for three parameters (Relative frequency, Relative density and Relative abundance)

Importance value index (IVI) = RD + RF + RA

Where, RD is Relative Density, RF is Relative Frequency, and RDO is Relative Abundance.

					· ·					
S.	Specie	Quadrats laid down					Total no.	Frequency	Density	Abundance
No.		1	2	3	4	5	Of	(%)		
							individuals			
							of a species			
1				-						
2										

Table 88: Illustrated formats for compiling of information

3					
4					

~		~	~								
S.	Local	Scientifi	Symbol	Total no.	Total no.	Total no.	R.D	R.F	R.A	I.V.	Densit
No	name	c name	s used	of	of quadrats	of				Ι	y per
				individual	of	quadrats				(8+	hectare
				s of a	occurrence	laid				9 +	
				species						10)	
1	2	3	4	5	6	7	8	9	10	11	12

## 7.11.2 ESTIMATION OF QUANTITY OF MFP AVAILABLE FOR EXTRACTION FROM COMPARTMENT PER HECTARE

After getting the exact details of medicinally useful species naturally available in a compartment/sub-compartment, the next step will be to find out the estimated quantity of major species which can be harvested annually without disrupting the existing pattern of species. Such an exercise can be conducted on the lines of yield calculations as previously made in respect of Kuth. The outturn of Kuth roots per hectare (dry) in quality class I (dense) areas was found to be 187 Kgs, in quality class II (fairly dense) areas 94 Kgs and in quality class III (Scattered crop) areas 36 Kgs. Similarly the estimation of quantities available in respect of roots, rhizomes, bark, full plant, leaves, seeds, fruits etc can be determined on the basis of per plant/per hectare by practical analysis, extraction figures and constant experiments.

## 7.11.3 EXTRACTION & HARVESTING

For this purpose, the medicinal/aromatic plants should be grouped under following categories as per the utility of the part of plant for pharmaceutical purposes.

[1] Whole Plant [2] Bark [3] Leaf [4] Flower [5] Fruit & Seed [6] Root & Rhizome [7] Bulbs/Bulbils and [8] Gums & Resins

Some important rules with regard to harvesting and extraction of medicinal plants are as under:-

- 1. Collection of whole plant should be made when the flowers begin to wither away.
- 2. The collection of underground roots may be effected when these are mature and when the flowers have appeared.

- 3. The underground bulb or rhizome must be extracted when mature and when the leaves (aerial parts) have dried up.
- 4. In case of collection of bark (both stem/branch/root-bark) it should be effected when the leaves have fallen and new buds begin to sprout out.
- 5. Leaf drugs may be collected before the plant starts to flower.
- 6. Flower drugs to be collected when the flowers have bloomed but before seed formation.
- 7. Fruit and seed in most cases when these have fully matures and in some stray cases when the fruits are still immature.
- 8. Resins and gums exude in good quantity in hot season, hence should be collected during this period.

#### 7.11.4 DRYING

Drying involves reduction of moisture content generally up to 5 to 10 percent. This helps in reduction of weight and damage due to fungus or insect attak in storage. Also the properly dried herbs will retain their original colour- a vital factor in the eyes of purchasers to judge the quality. The herbs are spread in thin layers on clean surfaces protected from all sorts of interference by cattle, dogs etc. The drying should be effected in such a manner, which will assure the retention of shape, flavor and aroma. Naturally drying in shade is better in some cases and artificial drying within the temperature limit of 40°C is also resorted to. In case of Kuth rhizomes special type of drying in higher altitudes is resorted to, to reduce the weight of the produce and maintain it. The drying process for whole plants, underground parts, bark, flowers and fruits may vary to some extent. The generalized item-wise details can however be summarized as follows.

- 1. In case when whole plant is used as drug, the material soon after harvesting is dried in sun for a little time on tarpaulin sheets thinly scattered, leaves not over lapped, till whole of the surface moisture is evaporated. Then the material is transferred to shady open clean place having sufficient ventilation. After some time when one finds that it has dried up to an appreciable extent, it is tied in loose bundles and allowed to get further dry. In case the usable part is the aerial portion (as in case of *Artemisia spp.*), the material should be formed into bunches, tied loosely with rope and hanged to dry up. Tender leaves should be dried up rapidly to avoid discolouration and mould. Stem portion takes more time to dry up. These portions need to be dried up slowly and steadily. After proper drying the material should be packed in gunny bags lined internally with polythene and then stored in safe dry store rooms.
- 2. In case of underground parts like roots, rhizomes, corms etc. the extraction should be conducted carefully, so that these parts are not damaged. The damaged parts should be rejected to avoid spread of disease, mildew or
rot to solid portions. The extracted material should lightly be washed with fresh water to ward of soil lumps. Small secondary rootlets, scales, deformed and diseased roots, rhizomes, corms etc. should be handpicked and buried deep in soil. In case of Diascorea and such other fleshy tubers, cutting of tubers into thin small pieces for quick drying is advised. The drying should be conducted in shade.

3. The bark should be removed either from roots or stem or branches with the help of sharp instrument. In some trees/ bushes complete girdling is avoided to let the plant remain alive. In some other cases a shoot or two are left intact (as in case of *Berberis spp.*) to form a future bush. The bark should be cut in long flakes/ pieces and dried in open shady places free from dust, dirt and interference of animals and dogs.

### 7.11.5 STORAGE

Well ventilated storage sheds need to be provided in a group of units (Compartments/subcompartments) to temporarily store material, till its complete extraction, drying, grading and packing is completed.

### 7.11.6 MARKETTING

The quantity harvested after proper drying, grading and packing can be put to auction after fixing reserve rates.

### 7.12 CONSERVATION

Conservation and sustainable utilization of medicinal plants must necessarily involve long term integrated action programme. Protection, preservation, maintenance, characterization, evaluation, cultivation, conservation and sustainable utilization are the main ingredients. A holistic approach envisaging the interaction between social, economic and ecological systems will be a significant one towards achieving the most tangible results of conservation and judicious harvesting of medicinal plants. Integrated approach bridging both in situ and ex-situ conservation methods can be judiciously used for harnessing the best benefit from the medicinal plants.

#### 7.12.1 In situ conservation

The best way to arrest the shrinkage of resource base is to promote integrated management of forest lands for wood and non wood products/ benefits through in situ conservation in their natural habitat.

#### 7.12.2 Ex-situ conservation

Scientifically, ex-situ conservation is a part of an overall conservation strategy to ensure that species ultimately survive in the wild. Its role should be seen as a means to an end, not an end in itself; populations as part of ecosystem management, for research and education and for selecting material for introduction into the nursery trade. The annual target may be fixed as 5 ha in each Range during the plan period.

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## CHAPTER-VIII

## JOINT FOREST MANAGEMENT (OVERLAPPING) WORKING CIRCLE

## 8.1 GENERAL CONSTITUTION

- 8.1.1 Out of the total geographical area of district Budgam, it is about 53 percent of area under forest cover. So the dependence of people on the forest is high in terms of fuel-wood, timber and small wood requirement and grazing. The protection of the existing forests has become the biggest challenge nowadays. So the only possible way by which the existing forests can be protected is through participation of people who reside in and around these forests. So it is of utmost importance that JFM is implemented and strengthened.
- 8.1.2 This working circle has been formed for implementation of the policies and guidelines of the Joint Forest Management formulated by Central and State Governments. It has been decided that the welfare of the forest should be integrated with the forest management by local people. It is now being increasingly felt that the protection and conservation of forests cannot be effective without creating awareness and the active cooperation of the people living near forests. It is, therefore, necessary to involve the local community actively with the forest management. So the Government of Jammu & Kashmir passed a resolution vide Notification No. SRO-61 of 19.3.1992 for the constitution of JFM committees.
- 8.1.3 A large part of this division has potential for developing into good JFM working areas. However stress may be given to those areas where there are more barren areas in the form of degraded forest, institutional land or wasteland as well as area prone to illicit damage. This selection may be

judiciously done by Divisional Forest Officer to create sense of responsibility towards the forest and to suit the needs of protection of state's valuable forests. It is proposed that entire forests of division constituting an area of **20962.65 ha** excluding alpine and uncommercial areas shall form part of this working circle.

## 8.2 GENERAL CHARACTER OF VEGETATION

- 8.2.1 The Fir and Kail constitute the main crop of working circle with occasional broad leaved associates like Ash, Maple, Bird cherry and Walnut which are confined to Nalla bank, depressions and cooler aspects. Some solitary Birch trees are found scattered above the upper limit of Fir zone. The alpine pastures support luxuriant ground flora with occasional woody form bushes like Rhododendron and Junipers etc. The occurrence of different kinds of forest types in the division has been described in the Chapter II of Part I.
- 8.2.2 Leaves, flowers, seeds, barks, roots, etc which are non-wood forest produce are collected from herbs, shrubs and trees of the forests by local people for medicinal and domestic purposes. The herbaceous flora forms source of variety of important medicinal plants like *Sussurea lappa* (Kuth), *Dioscoria deltoidea* (Kreach), Aconitum heterophullum (Patris), A. chresentum (Mohri), *Podophyllum hexandrum* (Bankhakhri) and Jurinea macrophylla (Dhoop) etc.

## 8.3 SPECIAL OBJECTIVES OF MANAGEMENT

- 1. To give adequate protection to the existing forest resources in the division through effective people's participation.
- 2. To maintain and improve the quality of the environment, that is, the existing vegetation/tree cover should be maintained for the conservation and improvement of the environment and for the better living conditions for human beings.
- 3. To reduce the pressure on the forests by diverting the pressure with the alternative sources of energy.
- 4. To manage the forests in such a way that there is effective sharing of usufructs to the people in a sustainable manner.
- 5. To create awareness among the people about the importance of the forest resources/ tree cover for a better future to humanity.
- 6. To ensure overall socioeconomic development of the fringe areas.

## 8.4 GOVERNMENT POLICY ON JFM

8.4.1 The Government of Jammu & Kashmir passed a resolution vide Notification No. SRO-61 of 19.3.1992 for the constitution of JFM committees. All the JFMCs in each forest division are coordinated under the Forest Development Agency (FDA's) for that particular division. The main objectives of this agency are:-

- 1. Conservation, management and increase in the forest cover in the project area, in a sustainable manner.
- 2. Conservation of soil and water in the project area.
- 3. Employment generation through creation of productive community assets.
- 4. Formation of village level committees which will carry out the proposed activities.
- 5. Employment generation to most needy section of the society, particularly women, SC/ST and landless labourers and encourage them to be self-sufficient.
- 6. To train the rural women in income generating activities and to improve their social, economical and health conditions.
- 7. To avail the alternative sources of energy to the rural people, and subsequently decreasing their dependence on forest for fuel.
- 8. To inculcate the idea of conservation of natural resources among the members of JFMs and other people.
- 9. To ensure the active people participation in the implementation of the different objectives of the project.
- 10. To share the usufructs with the local people.
- 8.4.2 To effectively implement these objectives, a percentage of the allocated funds can be used for entry point activities which are taken up in the JFM areas so that active coordination between the Forest Development agency and the villagers improves. Micro plans are also to be drawn up for investment and production activities after taking into consideration the local needs of the people. Self Help Groups can also be constituted. The money saved can be used for developing other income generating activities. Along with these there is increased need to improve the marketing and processing facilities so that the villagers world is open to major marketing places economically. As the self reliance of the Villagers increase, their dependence on the forests and resulting destruction of these valuable resources gradually decreases.
- 8.4.3 The FDAs have an executive committee and a general body. The Conservator of Forests heads the executive body of the FDA. There would be representation from all the line departments and JFM committees. The Divisional Forest Officer is the Chief Executive Officer of the FDA. The executive body has to meet once in every year to elect its office holders from among the JFMC members. The general body also meets regularly in a year to decide on their activities.

## 8.5 PRESENT STATUS OF FORESTS

The natural forests have deteriorated alarmingly due to illicit felling, encroachment, grazing and absence of regeneration. The plantations raised artificially could not be protected to their rotation ages. Constraint to protection of forests is mainly due to the close vicinity of the forest with human habitations. The forest areas have also depleted considerably and more and more areas are going out of management every year. The result of deterioration and depletion of forests is that an acute crisis of timber, firewood and other forest produces.

## 8.6 MANAGEMENT STRAGEIES IN CHANGED SITUATION

- 1. The existing forests are to be maintained and improved for conservation & amelioration of environment and other living conditions.
- 2. Protection is the most important challenge that the forests are facing and JFM should ensure social fencing in all the areas where the problem exists. Forest Protection Committees should be constituted for that purpose.
- 3. Forest protection volunteers should be identified to aid the forest patrolling parties to protect the forests.
- 4. The demand of timber, fuel wood and other forest produces are to be met up from the existing forests by way of sharing of usufruct benefits in lieu of protection.
- 5. The interests of forest dwellers are to be integrated with forest management objectives.

The above strategies will help in successful protection and conservation of the existing forests.

## 8.7 JOINT FOREST MANAGMENT IN PIRPANJAL FOREST DIVISION

- 8.7.1 The Pirpanjal Forest Division falls in district Budgam. Almost all area is highly prone to forest damages especially the Sukhnag and Raithan Ranges. The people residing near forest are poor with scanty sources of earning. They are largely dependent on forests for timber for building their houses, firewood to save themselves from chilling winter and fuelwood to keep their Cholas burning. People generally perceive forests as common property resource. The forest staff with limited resources in hand fail to protect open and vast forest wealth. As a result, the illegal extractions from the forests keep going on. The forests near the villages can be protected only if the local people are also taken on board. They will come forward for protection of forests if they are made to feel that the forest wealth belongs to them equally and they are the important stakeholders in the scheme of management of these natural resources. This can happen only if part of government revenue coming out of the forests is also shared with them. So it is the active participation of the local people in forest management vital for the protection and preservation of forests.
- 8.7.2 The introduction of Joint Forest Management Policies is an attempt to begin natural life supporting system for the forest dwellers. So in consideration of

the above fact, the Joint Forest Management Policies are being implemented in Pirpanal Forest Division with utmost priority.

## 8.8 IMPLEMENTATION OF JFM PIRPANJAL FOREST DIVISION

8.8.1 Joint Forest Management has very recently started taking roots in this forest division. The list below shows number of JFMC's registered in Pirpanchal Forest Division.

S.No	Name of VFC's	Name of	Registeration No
		Revenue	
A	Doodganga Range	vinage	
1	Batwadur	Batwadur	No.FDA/PP/01 Dated 01-08-2002
2	Loolipora/Hafroo/Watkalu	Loolipora	No.FDA/PP/02 Dated 01-08-2002
3	Shankerpora/Kralpora	Shankerpora	No.FDA/PP/03 Dated 01-08-2002
4	Darwan/Nowgam/Batpora	Darwan	No.FDA/PP/04 Dated 01-08-2002
5	Kanigam/Aglar/Kadipora	Kanigam	No.FDA/PP/05 Dated 01-08-2002
6	Dudkhatu	Dudkhatu	No.FDA/PP/06 Dated 01-08-2002
7	Wasiemarg	Wasiemarg	No.FDA/PP/07 Dated 01-08-2002
8	Bonen	Bonen	No.FDA/PP/08 Dated 01-08-2002
9	Nowhar	Nowhar	
10	Zinpanchal/Gundshamus	Zinpanchal	
11	Brampathri/Fraslub	Brampathri	No.FDA/PP/12 Dated 01-08-2002
12	Kaigen	Kaigen	No.FDA/PP/13 Dated 01-08-2002
13	Charipora	Charipora	No.FDA/PP/14 Dated 01-08-2002
14	Pethyar Bonyar	Pethyar	
15	Neegu	Neegu	No.FDA/PP/16 Dated 01-08-2002
16	Laden Dobhan/Kralgam	Laden	No.FDA/PP/17 Dated 01-08-2002
17	Buzgoo Payeen Brenjen	Buzgoo	No.FDA/PP/18 Dated 01-08-2002
18	Abhama	Abhama	No.FDA/PP/10 Dated 01-08-2002
19	Darwan/Dradip/Chayan	Darwan	No.FDA/PP/19 Dated 01-08-2002
	Payeen		
<i>B</i> .	Raithan Range	1	1
20	Khansahib	Kansahib	No.FDA/PP/20 Dated 01-08-2002
21	Dabipora/Kharipora	Dabipora	No.FDA/PP/21 Dated 01-08-2002
22	Bugchill	Bugchill	No.FDA/PP/22 Dated 01-08-2002
23	Fajapora	Fajapora	No.FDA/PP/23 Dated 01-08-2002
24	Khudpora	Khudpora	No.FDA/PP/24 Dated 01-08-2002
25	Shalnar	Shalnar	

Table 89: List of Village Forest Committees registered in Pirpanjal Forest Division

26	Kachwari	Kachwari	No.FDA/PP/26 Dated 01-08-2002
27	Airwari/Fraslab	Airwari	No.FDA/PP/27 Dated 01-08-2002
28	Lanilab	Lanilab	No.FDA/PP/28 Dated 01-08-2002
29	Panchal Beat	Panchal Beat	No.FDA/PP/29 Dated 01-08-2002
30	Balpora	Balpora	No.FDA/PP/30 Dated 01-08-2002
С.	Sukhnag Range		
31	Nasarpora Surash	Nasurpora	No.FDA/PP/62 Dated 01-08-2002
32	Kanchatipora	Kanchatipora	No.FDA/PP/69 Dated 01-08-2002
33	Lachanpora	Lachanpora	No.FDA/PP/70 Dated 01-08-2002

8.8.2 Here all the VFC's are working under FDA. In all these VFC's a variety of entry point activities are proposed to be undertaken under FDA which shall include activities like poultry, Sheep breeding, mushroom cultivation, providing fish fingerlings, providing sewing machines to villagers, self starter generators, bicycles, cows, etc. Those assets that will be created as entry point activities shall be handed over to the self help groups for upkeep maintenance and future benefit sharing.

## 8.9 STRATEGY FOR IMPLEMENTATION

Participatory Forest Management (PFM) can be adopted in areas adjacent to habitations in degraded forests. The following operations are prescribed in such areas under PFM.

- i. Soil conservation works like check-dams, contour bunds, gully plugging etc.
- ii. Afforestation by indigenous fruit species, medicinal plants, fuel trees etc.
- iii. Protection from fire, grazing, illicit felling, encroachment etc.

These may be executed by implementing micro plans prepared for each site. Micro plans have to be prepared for the PFM activities. Initially one site may be selected in each range to meet the objectives already set out through PFM. The PFM activities may be extended to cover other areas after evaluating the results of already initiated activities with necessary modifications.

In a major shift from the earlier system of forest management, Ministry of Environment and Forests, Government of India issued policy instructions to all the state forest departments on 1st June 1990, promoting active participation of people in improving the degraded forest tracts. The major provisions of these guidelines are summarised below.

i. The programme should be implemented under an arrangement among the voluntary agency - NGO, the village community (beneficiary) and the state forest department.

- ii. The beneficiaries should be entitled to a share in usufructs to the extent and subject to the condition prescribed by the state government.
- iii. Access to forestland and usufruct benefits should be only to the beneficiaries, who get organized as a village institution specifically for forest regeneration and protection.
- iv. Areas to be selected for the programme should be free from claims of any person who is not beneficiary under the scheme. The selected site should be worked out in accordance with a working scheme, which should be prepared in consultation with the beneficiaries.
- v. For raising nurseries, preparing land for planting and protecting the tree after planting, the beneficiaries should be paid by the Forest Department.
- vi. It should be ensured that there is no grazing at all in the forestland protected by the village community and stall-feeding is to be promoted. No agriculture should be permitted on the forestland.
- vii. Along with tree for fuel, fodder and timber, the village community may be permitted to plant fruit trees, medicinal plants and trees helping soil and water conservation.
- viii. The benefits of people's participation should go to the village communities and not to commercial or other interests.
- ix. The Forest Department should closely supervise the works of the beneficiaries or NGOs.

## 8.10 MICROPLAN

The micro plan should confirm to the following pattern.

- i. The micro plan should be a written document.
- ii. The document should be written in regional language, so that it can be understood by the field staff and villagers, who are the main players concerned with the implementation of the plan.
- iii. The document should be written in simple language; it should be brief and objective.
- iv. The micro plan should be flexible. There should be provision for review of the plan and scope for amendment, if required. After modifications at different stages, the prerogative of finalization and adoption of the plan should rest with the general body of the village institution.
- v. Micro plans should be prepared for a period of five years.
- vi. There should be one micro plan for each village institution, since a village is the unit, which will take responsibility for implementation of the plan.
- vii. A system of monitoring should be built with the plan.
- viii. Process of development and implementation of micro plan
- ix. The unit of a micro plan should be a society viable unit of organization. It could be hamlet, a sub-group, a village or a cluster of villages.
- x. The micro plan should be the basis for planning at the Division level, where such activities as allocation of resources and scheduling of activities will be taken into considerations.

- xi. Forest Department along with the NGO should play a prominent role as facilitators and help the community in developing the micro plan.
- xii. While preparing a micro plan, discussion and deliberation should take place at a sub-group level (of class, caste, gender, etc). However, the entire general body of the village institution has to be involved in order to ensure transparency, consensus and meaningful participation.
- xiii. While preparing a micro plan, such factors as existing use patterns of the community and their nature and extent of dependence on resources should be taken into consideration.

#### 8.10 ACHIEVEMENTS UNDER NAP

#### Table 90 (A,B,C,D): Achievments under National Afforestation Scheme, FDA

- A. Name of FDA:- FDA Pirpanjal
- Year:- 2002-03

S.No.	Name of	Period	No.	Total	Total	Physical	Amount	Amount	Fencing	Planting
	FDA	of	of	outlay	Physical	achievement	Released	utilized		
		Project	VFCs		target					
				Rs. In	Hac	Hac	Rs. In	Rs. In	(Rfts)	(Nos)
				Lakhs			Lakhs	Lakhs		
01	FDA	2002-	77	293.04	1750	530	97.98	45.11	108000	-
	Pirpanjal	03 to								
		2006-								
		07								

#### B. Name of FDA:- FDA Budgam Year:- 2002-03

	1 cui. 20	102 05								
S.No.	Name	Period	No.	Total	Total	Physical	Amount	Amount	Fencing	Planting
	of FDA	of	of	outlay	Physical	achievement	Released	utilized		
		Project	VFCs		target					
				Rs. In	Hac	Нас	Rs. In	Rs. In	(Rfts)	(Nos)
				Lakhs			Lakhs	Lakhs		
01	FDA	2001-	50	117.10	1140	723	102.52	61.04	212550	229000
	Budgam	02 to								
		2005-								
		06								

#### C. Name of FDA:- FDA Pir Panjal Year:- 2011-12 executed in 2012-13

S.No.	Name of	Period	No.	Total	Total	Physical	Amount	Amount	Fencing	Planting			
	FDA	of	of	outlay	Physical	achievement	Released	utilized					
		Project	VFCs		target								
				Rs. In	Hac	Нас	Rs. In	Rs. In	(Rfts)	(Nos)			
				Lakhs			Lakhs	Lakhs					

01	FDA	2011-	33	104.20	675	110	77.07	44.31	33000	111000
	Pirpanjal	12								

D. Name of FDA:- FDA Pir Panjal Year:- 2011-12 executed in 2013-14 (Balance Programme)

S.No.	Name of	Period	No.	Total	Total	Physical	Amount	Amount	Fencing	Planting		
	FDA	of	of	outlay	Physical	achievement	Released	utilized				
		Project	VFCs		target							
				Rs. In	Hac	Нас	Rs. In	Rs. In	(Rfts)	(Nos)		
				Lakhs			Lakhs	Lakhs				
01	FDA	2011-	33	32.74	188	188	32.74	32.09	56400	127000		
	Pirpanjal	12										

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## CHAPTER-IX

# WILDLIFE MANAGEMENT [OVER LAPPING] WORKING CIRCLE

## 9.1 GENERAL CONSTITUTION

The management and protection of forests are integrated with the management and protection of wildlife. So this working circle has been formed for protection and conservation of the wildlife found in the forests as well as non-forest areas of the division. This covers the whole area of this forest division.

## 9.2 GENERAL CHARACTER OF VEGETATION

- 9.2.1 The Kail and Fir constitute the main crop of working circle with occasional broad leaved associates like Ash, Maple, Bird cherry and Walnut which are confined to Nalla bank, depressions and cooler aspects. Some solitary Birch trees are found scattered above the upper limit of Fir zone. The alpine pastures support luxuriant ground flora with occasional woody form bushes like Rhododendron and Junipers etc. The occurrence of different kinds of forest types in the division has been described in the Chapter II of Part I.
- 9.2.2 The herbaceous flora forms source of variety of important medicinal plants like *Sussurea lappa* (Kuth), *Dioscoria deltoidea (Kreach), Aconitum heterophullum* (Patris), *A. chresentum* (Mohri), *Podophyllum hexandrum* (Bankhakhri) *and Jurinea macrophylla* (Dhoop) *etc.*.

## 9.3 SPECIAL OBJECTIVES OF MANAGEMENT

This will be an overlapping working circle constituted mainly to ensure that silvicultural prescriptions of the working plan are in harmony with requirement of wildlife and its habitat. The specific objectives of this working circle are-

- 1. To improve and protect wildlife habitat.
- 2. To provide food and shelter to wildlife.
- 3. To mitigate man-animal conflict.
- 4. To aware common public about the ecological significance of wildlife for health of the forests.

## 9.4 WILDLIFE OF PIRPANJAL FOREST DIVISION

- 9.4.1 The common wild animals are leopard, Black Bear, Brown Bear, Jackal, Porcupines, *Herpestes edwerimi* (Common Mangoose), *Lepus Nigricollis* (Common Hare), *Felis chaus* (Jungle cat) etc.
- 9.4.2 There are reptiles like Monitor lizard, Garden lizard, Wolf snake, Viper etc.
- 9.4.3 A large number of bird species are also found all over the division. A check list of wild life found in this division has already been provided in Part-II of Chapter-II. The birds found in the division are Kashmir flycatcher, Magpie, bulbul, wood pecker, Cattle egret, Kingfisher, Common teal, Oriole, Blue jay, Hoopoe, Indian cuckoo, Common koel, Tree pie, Common Indian kite, Doves, Pigeons, Rose ringed parakeet, Western tragopan, Indian myna, Babbler, thrushes and shrikes, etc.

### 9.5 LEGAL POSITION

The Wildlife (Protection) Act, 1972 is in force for protection and conservation of Wildlife in Jammu & Kashmir. Under the above act, the forest officers have been duly empowered for implementation of the policies of protection & conservation of Wildlife as the Wildlife Wardens. The junior officers are vested with the powers of detection of illegal wildlife crime. They are required to report to the Chief Wildlife Wardens for taking necessary actions and drawing of Wildlife Offence Reports.

### 9.6 RIGHTS & CONCESSIONS OF WILDLIFE

No right and concession in respect of wildlife has been recognized.

## 9.7 HUNTING & SHOOTING

Hunting, shooting and capturing of wild animals and birds are not allowed. However, Chief wildlife warden of the state is empowered under the Act to permit shooting of any animal which become dangerous for the human life.

## 9.8 GENERAL CENSUS

Census of wild animals and birds has never been done in Pirpanjal Forest Division.

## 9.9 MAINTENACE OF WILDLIFE HABITAT

The maintenance of the habitat of wildlife has been ensured through the provisions in the silvicultural system of all the Working Circles being implemented in the division.

## 9.10 IMPROVEMENT OF HABITAT

- 1. Plantations for shelters: The plantations may be raised at some important places for shelter of the animals if such tree cover do not exist. Beside, scattered vegetation covers may be created by raising plantations throughout the forest areas for facility of the extension of the habitat of the wildlife.
- 2. Raising of grass plantations for Herbivores: Palatable grass plantations for herbivores may be raised in a scattered manner for keeping such animals inside forest and saving the agricultural crops of the adjoining farmers crop field.
- **3.** Raising of Fruit Trees for Birds: Some trees like Walnut, cherry, Fig, Horsechestnut species etc whose fruits are eaten by the birds should be raised in scattered manner throughout the forests if such trees are found deficit.
- **4. Water Holes:** Water is a problem in summer. So it is necessary to dig up some ponds or tanks at some important points for the facility of making the drinking water available to the animals in summer months.
- 5. Salt Licks: The herbivores suffer from salt deficiency. So it will be better to have some salt Licks at some convenient places for herbivores. The regulated intake of salt will improve the health of the herbivore and other animals.

## 9.11 INJURIES TO WHICH WILDLIFE IS LIABLE

- (i) FIRE: Fire destroys the vegetation and the roosting sites of the wild animals. In the months of Autumn, fire may sweep through the forests, as the forest floor is very dry. Besides, grass collectors set fire after collection of grass to get vigorous shoots next year & the fire spread from there.
- (ii) Grazing: Grazing is rampant all over the forest and reduces the forage available for wild life besides physically trampling their niches.

(iii) Poaching: Poaching is not common in Pirpanjal Forest Division.

## 9.12 MAN ANIMAL CONFLICT

During the last decade the issue of Man Wild Animal Conflict has emerged as the single most important issue before the Wildlife Department which has caused immense loss to human life which has converted into public outcry. Not only the people residing adjacent to forests and Wildlife Protected Areas are the targets of this menace, even big town and city dwellers get affected. During the last five years, deaths of many people and injuries to the scores of persons in the Wild Animal attacks have occurred. The conflict spans range of conditions from crop raiding, dangerous and sometimes fatal encounters with humans and retaliatory attacks on wildlife by the humans, which at times result in killing of wild animals as a result of mob fury. The attacks by large carnivores that result in human injury or death undermine conservation by resulting in negative attitudes towards such efforts.

A study conducted jointly by Wildlife Trust of India (WTI) and Department of Wildlife Protection in the year 2006 pointed growing human population, increase in livestock numbers, land use change particularly in favour of orchards, dissection of habitats and their consequent shrinking as the basic reasons for resurgence of the wild animals outside the forest area. The two species in question in J&K are the common leopard (*Panthera pardus*) and the black bear (*Ursus thibetanus*). However still a large number of communities expressed willingness to participate in mitigation efforts provided they are equipped properly to deal with conflict situations.

The study recommended to realign the compensatory mechanism, intersectoral cooperation between Health Department, Social Welfare Department and Wildlife Department, awareness programmes and training aimed at mitigation, setting up of Central Conflict Mitigation Center (CMCC), development of community-level Primary Reaction Teams, creation of Rapid Response teams and improving the man power resources available with the Department of Wildlife protection. Among the long term measures the study recommended habitat restoration / improvement, establishing monitoring and evaluation system to develop and maintain capacity of Forest and Wildlife Department, establish linkages with local institutions / research establishments, outsourcing work to external agencies.

The study also identified conflict prone areas, particularly in Kashmir valley. A proposal to enlist the support of local people in resolving conflicts was discussed in the 1st meeting of State Board for Wildlife (SBWL) and subsequently Government decided to constitute Conflict Resolution Squads at village level as local level Primary response teams. These squads are presently under constitution following approval of the proposal by the

Steering Committee of CAMPA. 100 villages in the state have identified for the purpose and the progress will be reviewed subsequently.

During the year 2006 a scheme to compensate people who died or got injured due to wild animal attacks had been introduced from January, 2006. The State Government approved payment of exgratia for loss of life and property due to predation / depredation by the wild animals, as per rates approved by the Government of India, Ministry of Environment & Forests. Ex-gratia payment is being paid @ Rs 1.00 lakh to the family of deceased and from Rs 0.05 lakh to Rs 0.33 lakh in case of injuries depending upon the nature of injuries w.e.f. the year 2006-07 onwards.

The rates on compensation on account of loss of life / incapacitation and injuries to human beings was discussed and reviewed in the 4th meeting of the Standing Committee of State Board for Wildlife and recommended for enhancement. The Government order is expected shortly. The proposed rates are

i. Death of human beings: Rs 2,00,000

- ii. Permanent incapacitation: Rs 1,50,000
- iii. Grievous injury: upto Rs 50,000
- iv. Minor injury: Rs 10,000

Year	O.B		Received		Total		Settled		Pending	
	Death	Injury	Death	injury	Death	Injury	Death	Injury	Death	Injury
2006-07	0	0	0	0	0	0	0	0	0	0
2007-08	0	0	0	0	0	0	0	0	0	0
2008-09	0	0	0	0	0	0	0	0	0	0
2009-10	0	0	0	0	0	0	0	0	0	0
2010-11	0	0	2	9	2	9	0	1	2	8
2011-12	2	8	2	9	4	17	2	12	2	5
2012-13	2	5	1	4	3	9	2	9	1	0
2013-14	1	0	5	21	6	21	2	10	4	11
	5	13	10	43	15	56	6	32	9	24

Table 91: Statement showing abstract of position of man-animal conflictcases in District Budgam from January 2006 onwards

Source: Wildlife Warden Wetlands Kashmir, Srinagar

The intensity of conflict can be gauged from the following table which indicates the number of incidents which the department has to make in handling man wild animal conflict incidents reported to them by the villagers or other agencies:

 Table 92: Statement Showing division wise intensity of conflict incidents being handled by the Department of Wildlife in the month of July, 2011

Name of	Number of	Action taken by the Department to handle the situation								
the	Rescue parties	Safe	Wild	Cage	Injury /	Livestock	Wild			
Division	deputed to	passage	Animal	installed	Death	depredation	Animal			
	tackle the	/ driven	captured		reported		eliminated			
	conflict	back	/ rescued							
	situation in									
	the reported									
	area									
Central	26	12	-	3	2	-	-			
Division										
North	53	31	3	5	8	4	2			
Division										
Total	79	43	3	8	10	4	2			

(Source: An Overview-2001-2010)

## 9.13 IMPORTANT WILDLIFE AREAS OF DISTRICT BUDGAM

- 1. HOKERA WETLAND (13.75 Sq.Km): The wetland partly falls in district Budgam. It lies between 36.6 <sup>o</sup> N and 74.5<sup>o</sup> E longitude. The wetland is fed by a perennial stream of Doodgamga that originates from Dudhganga watershed in Pirpanjal range of Himalaya which makes its way into wetland after passing through the village Hajibagh situated onits south-west. The sukhnag is another stream that feeds this wetland. Sukhnag enters into wetland near village Narabal located on the North-west. Migratory birds start their annual sojourn here in early September and stay until mid-February or early March. Around 7 lack migratory birds of several different species visit Hokersar Reserve every year on an average. The commonly seen birds include - Geese, Shovelers, Red-crested pochards, White-eyed pochards, Common teals, Egrets, Wigeons, Coots and Greylags.
- 2. NARKARA WETLAND (3.25 Sq.Km): The wetland falls in district Budgam located in village Narkara. The Narkara Wetland receives its water supply from Doodhganga catchment and is surrounded by the paddy cultivation and willow plantation areas. Due to heavy encroachments, the considerable amount of marshy area has been converted into the solid land masses. Narkara wetland is the favorite habitat site for a number of water fowl species like Grelag goose, Ruddy shelduck, Pintail, Common teal, Mallard, Gadwal, Wigeon, Shoveller and Tufted duck. As per the census data the population of migratory birds has reduced from lacks to only 3,275 birds in winter season. The wetland is presently under the administrative control of Rakhs & Farms (Agriculture Department).

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## CHAPTER-X

## FOREST PROTECTION (OVERLAPPING) WORKING CIRCLE

## **10.1 GENERAL CONSTITUTION**

- 10.1.1 The general principle followed in constitution of this working circle has been explained in earlier chapters. This working circle has been formed for protection of forest wealth by way of regular patrolling in the forest as well as non-forest areas of the division. Forest resources particularly timbers and fuel wood is very valuable and is growing in nature in open conditions. Forests meet up the basic needs of the people. Forest produce is largely used as industrial raw materials. Forests i.e. green vegetative covers maintain environmental living conditions for human being and all other animals. So its protection is necessary and is to be ensured.
- 10.1.2 The pressure on the forests is also very high as there is increase in population and because of the easy money it brings through illegal activity. The working circle extends over the whole of the Pirpanjal Forest Division as the whole of the forests is under severe biotic especially human pressure. The protection can also be from other stresses like fire, soil erosion, herbs and firewood collectors.

## 10.2 SPECIAL OBJECTS OF MANAGEMENT

- 1. To provide protection of the valuable forests of Pirpanjal Forest Division.
- 2. To prevent free flow of illegal timber.
- 3. To protect the forests against fire.
- 4. To prevent encroachment on forest land.
- 5. To prevent illegal stone quarrying.

- 6. To prevent poaching of wildlife.
- 7. Increase social fencing measures through effective JFM programmes.

## **10.3 PROTECTION ENFORCEMENT SYSTEM**

- 10.3.1 The DFO is in overall charge of the protection of forests in the division. The Range Officer is entrusted with the responsibilities of enforcing protection measures in the range by way of patrolling and detecting forest offences. He is required to draw damage reports and send them to the DFO to get it sanctioned either for compounding of offence or for prosecution which has to be decided by the DFO. The Block Officer is entrusted with the responsibility of enforcing protection measures in the Block area by way of patrolling and detecting the forest offences. Block forest officer is also empowered for accepting the compounding fee from the offenders as well as sending the cases for prosecution. Foresters are directly assisted by the Forest Guards posted under him. The Forest Guards posted in the beats are entrusted with the power of detecting forest offences and they are required to report to the Block Officers under whom their services have been placed.
- 10.3.2 The Forst Protection Force has been created by J & K Government in 1996 with a view to provide maximum protection to natural forests. The gamma unit looks after one forest division which is headed by Deputy Director. The Dy. Director is assisted by Assistant Directors and Inspectors.
- 10.3.3 The new concept of JFM has provisions for formation of Self Help Groups, Forest Protection Committees or Village Forest Committees which are given the responsibility of protection in lieu of the usufructs that they receive from those areas.

## **10.4 LEGAL PROVISIONS**

Forest is a renewable resource and its management cannot be successful without its protection. So there are legal provisions for protection of forests in **Jammu & Kashmir Forests Act 1930 A.D.** and its amendments and Forest Rules. All the forest personnel engaged in the management of forests have been duly empowered for protection of forests. The Divisional Forest Officer is in overall charge for protection of forests in the division and the Range Officers, Block Officers and Forest guards in their respective protection Units to assist him.

# 10.5 THE JAMMU AND KASHMIR FOREST ACT (1930 AD.) (Amended in 1997)

### Section (2): Definitions

In this Act unless the context otherwise requires: - ~

**a) "cattle"** include elephants, camels, buffaloes, horses, mares, geldings, ponies, colts, fillies, mules, asses, pigs, ram, ewes, sheep, lambs, goats and kids;

**b)** "composition" means the cost of forest produce together with the compensation imposed under the provisions of this Act;

**c)** "demarcated forest" means forest land or waste land under the control of the Forest Department, of which the boundaries have already been demarcated by means of pillars of stone or masonry or by, any other conspicuous mark, or, which hereafter be constituted a demarcated forest under section 3'

**d)** "forest based industry" means an industry or unit in which any forest produce is used as raw material or as a source of energy or fuelwood;

**e)** "forest offence" means an offence punishable under this Act, or under any rule made under this Act.

**f)** "Forest Officer" includes the Principal Chief Conservator, Chief Conservator, Conservator, Deputy and Assistant Conservators, Divisional Forest Officer, Range Officers, Junior Range Officers, Foresters, [Deputy Foresters], Forest Guards, Members of the Forest Protection Force and any person whom the Government or any officer empowered by the Government may, from time to time, appoint by name or as holding an office to carry out all or any of the purposes of the Forest Act, or to do anything required by this Act or any rule made under this Act to be done by a Forest Officer;

#### g) "Forest produce" includes.-

(a) The following, when found in or brought from, a forest or not, that is to say; timber, cautchus, catechu, wood oil, resin, natural varnish, bark, lac, mahus flowers, myrabolams and krench lobidwoladioscoria, firewood, humus, charcoal, rasoant, carbon chips, rosin, turpentine and fungi (guchhies); and

(b) The following when found in, or brought from, a forest, that is to say:-

(i) Trees and leaves, flowers and fruits and all other parts or produce not here in before mentioned of such trees;

(ii) plants not being trees (including kuth, grass, creepers, reeds and moss) and all parts' of produce of such plants;

(iii) wild animals and skins, tusks, horns, bones, silk cocoons, honey and wax and all other parts or produce of animals; and

(iv) Peat" I [surface soil], rock and minerals (including limestone, laterite, mineral oils and all. products of mines or quarries);

**h)** "river" includes streams, canals, creaks and other channels, natural or artificial excepting such kuhls and channels as are constructed and maintained by the Zamindars at their own expenses for purpose of irrigation and in regard to which no settlement has been arrived between the Forest and the Revenue Departments to bring them within this. definition; "saw mill" means any device and machinery with which and the premises (including the precincts thereof) in which or in any part of which sawing is carried on with the aid of electrical and mechanical power;

(j) "timber" includes trees and bamboos when they have fallen or have been felled, and- all wood whether cut up or fashioned or hallowed out for any purpose or not;

(k) "transporter" includes a person, a private agency, a Government Department, Corporation or any other agency engaged in transport of forest produce whether on his own behalf or on behalf of any other person;

(I) "tree" includes palms, bamboos, stumps, brush-wood and cane;

(m) "undemarcated forest" means and includes all forest land (other than demarcated forest) which is the property of the Government and is not appropriated for any specific purpose and further includes all the undemarcated and berun line forest vested with the Forest Department under the provisions of section 48 of the Jammu and Kashmir Village Panchayat Act, 1958 or any other law for the time being in force.

## Section (6): Acts prohibited in demarcated forests

### Any person who

(a) Sets fire to a demarcated forest, or kindle any fires, or leaves any fire burning in such manner as to endanger such a forest;

(b) Kindles, keeps or carries any fire except at such seasons as the Conservator of the Circle may from time to time notify in this behalf;

(c) causes any damage by negligence in 'felling any tree or cutting or dragging any timber;

(d) fells, girdles, lops, taps, or burns any tree, 'or strips off the bark or leaves from, or otherwise damages, the same;

(e) quarries stone, burns lime or charcoal or collects, subject to any manufacturing process, or removes, any forest produce; knowingly receives or is in possession of illicit forest produce.

(f) clears or breaks up any land or erects a fence, enclosure or any structure for cultivation 3 [or cultivates or attempts to cultivate any land in any other manner in any demarcated forest or for any other purpose];

(g) in contravention of any rules which the Government may from time to time in the Jammu and Kashmir Government Gazette be prescribed, hunts, shoots, fishes, poisons water or sets traps or snares;

(h) in such' forest or part thereof duly declared to be, closed by competent authority trespasses cattle or pastures cattle, or permits cattle to trespass; or (i) removes or damages the utensils, lips, nails or other articles fixed to trees for the collection of resin;

(j) installs or establishes a saw mill or forest based industry within such limits outside the demarcated forest to be prescribed by the Government from time to time,

Nothing in this section shall be deemed to prohibit

(a) any act done by permission in writing of a Forest officer, or under any rule made by the Government; or

(b) the exercise of any right created by grant or contract in writing or concession, made by or on behalf of the Government.

Section (15): Power to make rules to regulate transit of forest produce: The control of all rivers and their banks as regards the floating of timber, as well as the control of all timber and other forest produce in transit by land or water is vested in the Government who may from time to time make rules to regulate the transit of all timber and other forest produce. Such rules may (among other matters):

(a) prescribe the route by which alone timber or other forest produce may be imported, exported or moved into, from or within the State;

(b) prohibit the import and export or moving of such timber or other produce without a pass from an officer duly authorized to issue the same, or otherwise than in accordance with the conditions of such pass;

(c) provide for the issue, production and return of such passes and for the payment of fees thereof.

(d) provide for the stoppage, reporting examination and marking of timber or other forest produce in transit in respect of which there is reason to believe that any money is payable to State on account of the price thereof, or on account of any duty, fee, royalty or charge due thereon or to which it is desirable for the purposes of this Act to affix a mark;

(e) provide for the "establishment and regulation of depots to which such timber or other produce shall be taken by those in charge of it for examination, or for the payment of such money, or in order that such marks may be affixed to it; and the conditions under which such timber or other produce shall be brought to, stored at and removed from such depots;

(f) prohibit the closing up or obstructing of the channel or banks of any river used for the transit of timber or other forest produce, and the throwing of grass, brush-wood, branches and leaves into any such river, or any act which may cause such river to be closed or obstructed;

(g) provide for the prevention and removal of any obstruction of the channel or banks of any such river and for recovering the cost of such prevention or removal from the person whose acts or negligence necessitated the same;

(h) prohibit absolutely or subject to conditions within specified local limits the establishment of saw-pits, the converting, cutting, burning, concealing of marking of timber, the altering or effacing of any marks on the same, and the possession or carrying of marking hammers or other implements used for marking timber;

(i) regulate the use of property-marks for timber and the registration of such marks, prescribe the time for which such registration shall hold good, limit the number of such marks that may be registered by anyone person, and provide for the levy of fees for such registration. The Government may direct that any rule made under this section shall not apply to any specified class of timber or other forest produce of any specified local area.

#### Section (16): Penalty for breach of rules made under section 15

Any person, who infringes any of the rules made under section 15 may be punished with imprisonment for a term which may extend to two years but shall not be less than three months and with fine which may extend to five thousand rupees but shall not be less than one thousand rupees: Provided that where the' value of timber seized exceeds rupees five thousand the fine may extend up to the value of timber so seized.

#### THE LAND TRANSPORT RULES (Order No. 448 of 1935)

(Sanction is hereby accorded to the rules for the transport of timber by land under section 15 of the Forest Act, as proposed by the Chief Conservator of Forests)

- **Rule 4.** No timber or other forest produce shall be moved on any route on which a depot or checkpost has been established unless covered by a pass issued by the Forest Officer or the Revenue Officer or by the owner of a private forest or his agent.
- **Rule 5.** Such pass shall be in the form as may be prescribed by the Chief Conservator of Forests and shall specify kind and quantity of timber, the mark it bears and the place it came from and shall be legibly signed or stamped by the Forest Officer, or when such timber or forest produce comes from the forests under the administrative control of the Revenue department or a private forest by the Revenue officer or by the owner of such forest or his agent respectively.
- **Rule 6.** All passes issued by the Revenue officer or the owner of a private forest or his agent, shall be exchanged for a pass issued by the Forest officer at the forest depot or check post to which the timber or other forest produce covered by the pass is brought.

(In order to ensure that the provisions of this rule are being observed, the person in charge of any vehicle, whether carrying any timber or forest produce or not, shall

stop his vehicle for inspection at any checkposts if required to do so by the officer in charge of such post)

- **Rule 7.** The forest officer issuing a pass shall levy fees according to the scale in force at the time under the orders of the chief conservator of Forests who shall from time to time publicly notify a reasonable scale of fees according to the local circumstances of each place.
- **Rule 8**. The moving of any timber or other forest produce through or out of any demarcated or undemarcated forest or from any sale depot except by routes on which checkposts have been established under Rule 2 is prohibited.

#### Amendment to Land transport Rules

In partial modification of para 6 of instructions previously issued under this office No. C. XII 292/AB dated 11/2/1936, it is ordered that for purpose of the transport of timber by land, timber from the following species will henceforth be included for the operation of the rules:-

- (a) All conifers
- (b) All broad leaved trees of the Special class
  - 1. Juglans regia (Akhur, Akhrut)
  - 2. Fraxinus excelsior (Sum, Sinno, Hum)
  - 3. Buxus sempervirens ( Chikri)
  - 4. Acer spp. (Trikana, Kanzal)
  - 5. Prunus padus (Tarani zum, Bharat, Jammu)
  - 6. Cedrela spp. (Tun, Tooni)
  - 7. Ulmus wallichiana (Bran, Bari, Mannu)
- (c) The following A class trees:-
  - 1. Dalbergia sissoo (Tali)
  - 2. Cedrela serrata (Drave, Dadri)
  - 3. Olea cuspidate (kan)
  - 4. Aesculus indica (Bunkhor, Wandun)
  - 5. Prunus armenica (Hari, Sari)
- (d) And the following B class trees:-
  - 1. Morus alba (Tut)
  - 2. Celtis australis (Kharakm Brimji)

#### Fees for carriage of timber by land

Under the powers vested in the Chief Conservator of Forests vide rule 7 of the Land transport Rules, I hereby sanction the following rates of fees for transport of timber by land in both the Jammu and Kashmir provinces.

- 1. Timber in the round 6 paisa per piece exceeding 5ft in length
- 2. Sawn timber 2 paisa per piece exceeding 5ft in length
- 3. Pieces below 5 ft in length may continue to be re-exempted from the payment of fees

# Section (17): Government and Forest officer not responsible for damage to forest produce at depot

The Government shall not be responsible for any loss or damage which may occur in respect of any timber or other forest produce while at a depot established under a rule made under section 15, or while detained elsewhere for the purposes of this Act and no Forest Officer shall be responsible for any such loss or damage unless he causes such loss or damage negligently, maliciously or fraudulently.

## Section (26): Seizure of property liable to confiscation

(1) When there is a reason to believe that a forest offence has been committed in respect of any forest produce, such produce together with all tools, arms, boats, carts, equipment, ropes, chains, machines, vehicles, cattle or any other article used in committing any such offence may be seized by a Forest Officer or Police Officer.

(2) Any officer seizing any property under this section shall place .on such property a mark indicating that the same has been so seized and shall, as soon as may be, make a report of such seizure before an officer not below the rank of the Divisional Forest Officer (hereinafter referred to as 'authorised officer'):

Provided that when the forest produce with respect to which such offence is believed to have been committed is the property of the Government and the offender is unknown, it shall be sufficient if the officer makes, as soon as may be, a report of the circumstances to his official superior.

(3) Subject to sub-section (5), where the authorised officer upon receipt of report about seizure, is satisfied that a forest offence has been committed in respect thereof, he may, by order in writing and for reasons to be recorded, confiscate forest produce so seized together with all tools, arms, boats, carts, equipment, ropes, chains, machines, vehicles or any other articles used in committing such offence. Copy of the order of confiscation shall be forwarded without any undue delay to the person from whom the property is seized and to the Conservator of Forest Circle in which the timber or forest produce, as the case may be, has been seized.

(4) No order confiscating any property shall be made under Sub-section (3) unless the Authorised Officer,

(a) sends an intimation in writing about the proceedings for confiscation of the property to the Magistrate having jurisdiction to try the offence on account of which the seizure has been made but no order to be passed;. (b) issue a notice in writing to the person from whom the property is seized and to any other person who may appear to the authorised officer to have some interest in such property;

(c) gives to the officer effecting the seizure and the person or persons to whom notice issued under clause (b) a hearing on date to be fixed for such purpose.

(5) No order of confiscation under sub-section (3) of any tools, arms, boats, carts, equipment, ropes, chains, machines, vehicles or any other article (other than timber or forest produce seized) shall be made if any person referred to in clause (b) of sub-section (4) proves to the satisfaction of authorised officer that any such tools, arms, boats, carts, equipment, ropes, chains, machines, vehicles, cattle or any other articles were used without his knowledge or connivance or, as the case may be, without the knowledge or connivance of his servant or agent and that all reasonable and necessary precautions had been taken against the use of objects aforesaid or commission of forest offence.

(6) Where the cattle are involved in the commission of a forest offence, the same after seizure by any officer, as the case may be, shall be entrusted to any responsible person under a proper receipt on an undertaking to produce the same when required in case there is no cattle pound within a radius of five kilometers from the place of such offence:

Provided that notwithstanding anything contained in section 30, in case of unclaimed cattle a Forest Officer not below the rank of Range Officer, after giving sufficient publicity in the vicinity of the place of offence for the owner to come forward to claim the cattle within seven days from the date when such publicity has been given, may dispose them of by public auction. The provisions of the Cattle Trespass Act, Samvat 1977, shall apply in respect of the charges to be levied for the upkeep and fee of the cattle.

#### Section (26-A): Power of search and seizure

Any forest officer not below the rank of Range officer, having reasonable grounds to believe that forest produce is, in contravention of the provisions of this Act, in the possession of a person in any place, may enter such place with the object of carrying out a search for the forest produce and its confiscation:

Provided that such search shall not be conducted otherwise than in accordance with the provisions of the Code of Criminal Procedure.

# Section (26-B): Revision before Court of Sessions against order of confiscation

(1) Any party aggrieved by an order of confiscation under Section 26-A may within thirty days of the order or if facts of the confiscatian have not been communicated to him, within thirty days of knowledge of such order submit

a petition for revision to the Court of Sessions Division whereof the headquarters of Authorised Officer are situated.

*Explanation I.* - In computing the period of thirty days under this subsection, the time requisite for obtaining certified copy of the order of Authorised Officer shall be excluded.

*Explanation II.* - For the purposes of this sub-section a party shall be deemed to have knowledge of the order of confiscation under section 26 on publication of such order in two daily newspapers having circulation in the State.

(2) The Court of Sessions may confirm, reverse or modify any final order of consequential nature passed by the Authorised Officer.

(3) Copies of the order passed in revision shall be sent to the Authorised Officer for compliance or passing such further order or for taking such further orders or for taking such further action as may be directed by such Court.

(4) For entertaining, hearing and deciding a revision under this section, the Court of Sessions shall, as far as may be, exercise the same powers and follow the same procedure as it exercises and follows while entertaining, hearing and deciding a revision under the Code of Criminal Procedure, Samvat 1989.

(5) Notwithstanding anything to the contrary contained in the Code of Criminal Procedure, Samvat 1989, the order of Court of Sessions passed under this section shall be final and shall not be called in question before any Court.

# Section (26-C): Bar to jurisdiction of Courts etc. under certain circumstances

(1) On receipt of report under sub-section (4) of Section 26 about intimation of proceedings for confiscation of property by the Magistrate having jurisdiction to try the offence on account of which the seizure of property which is subject matter of confiscation, has been made, no Court, Tribunal or Authority (other than Authorised Officer and Court of Sessions referred to in Section 26 and (26-B) shall have jurisdiction to make orders with regard to possession, delivery, disposal or distribution of the property in regard to which proceedings for confiscation are initiated under section 26; notwithstanding anything to the contrary contained in this Act, or any other law for the time being in force.

*Explanation.* - Where under any law for the time being in force, two or more Courts have jurisdiction to try the forest offences, then receipt of intimation under sub-section (4) of section 26 by one of the Courts shall operate as bar to exercise jurisdiction on all such other Courts.

(2) Nothing in sub-section (1) shall effect the power saved under section 34 of the Act.

Section (26-D): Penalty for forcibly opposing seizure: Any person who opposes the seizure of tools, arms, boats, carts, equipment, ropes, chains, machines, vehicles or cattle liable to be seized under this Act or forcibly receives the same after seizure shall be punished with imprisonment for a term which may extend to two years but shall not be less than three months and with fine which may extend to six thousand rupees but shall not be less than one thousand rupees.

Section (26-E): Power to keep property seized on Sapurdnama: Any officer, who or whose subordinate has seized any tools, boats, carts, arms, vehicles, machines, equipment, implements, chains, ropes or cattle or any other articles used in committing any forest offence, including the forest produce, under section 26, may keep the same on the "Supardnama " of a respectable person on the execution of a bond thereof, by such person, for the production of the property so kept on "Supardnama" if and when required by the Magistrate having jurisdiction to try the offence or before the authorized officer empowered under sub-section (2) of section 26, on account of which the seizure has been made.

**Section (27):** Upon the receipt of any report under sub-section (4) of section 26 the Judicial Magistrate shall, with all convenient dispatch, take such measures as may be necessary for the arrest and trial of the offender and the disposal of the property according to law:

Provided that before passing any order for disposal of property the Magistrate shall satisfy himself that no intimation under subsection (4) of section 26 has been received by this court or by any other court having jurisdiction to try the offence on account of which the seizure of property has been made.

Section (28): Forest produce, tools, etc., when liable to confiscation : All timber or forest produce which in either case is not the property of the Government and in respect of which a forest offence has been committed and all tools, boats, carts, motor vehicles, machines, ropes, chains, equipments, arms, cattle or any other articles in each case used in committing any forest offence shall, subject to the provision of section 26, 26-B and 26-C, be liable to confiscation upon conviction of the offender for such offence.

Such confiscation may be in addition to any other punishment prescribed for such offence.

Section (29): Disposal on conclusion of trial for forest offence of produce in respect of which, it was committed. Without prejudice to the provisions of section 26-C when the trial of any forest offence is concluded, any forest produce in respect of which such offence has been committed shall, if it is the property of the Government or has been confiscated, be taken charge of by a Forest officer, and in any other case, may be disposed of in such manner as the Court may direct.

Section (30): Procedure when the offender is not known or cannot be found: When the offender is not known or cannot be found the Magistrate may if he finds that an offence has been committed, but subject to section 26-C order the property in respect of which offence has been committed, to be confiscated or forfeited together with all tools, boats, carts, motor vehicles, machines, ropes, chains, equipments, arms or cattle and other article used in committing the offence, and taken charge of by the Forest officer, or to be made over to the person whom the Judicial Magistrate deems to be entitled to the same:

Provided that, no such order shall be made until the expiration of one month from the date of seizing such property or without hearing the person (if any) claiming any right thereto, and the evidence (if any) which he may produce in support of his claim.

#### Section (31): Procedure as to perishable property seized under section 26:

(1) The Judicial Magistrate or subject to such rules as may be prescribed, the Authorised Officer under sub-section (2) of section 26 may, notwithstanding anything hereinbefore contained, direct the sale of any property seized under section 26 and subject to speedy and natural decay, and may deal with the proceeds as he would have dealt with such property if it had not been sold.

(2) Notwithstanding anything contained to the contrary in any other law for the time being in force, the Judicial Magistrate shall make an order under sub-section (1) within thirty days from the date of presentation by the Forest Officer or any other party having any interest in the property.

#### Section (32): Appeal from orders under section 28, 29 or 30

The officer who made the seizure under section 26 or any of his official superiors or any person claiming to be interested in the property so seized, may, within the period ordinarily allowed for appeals from the orders of such Judicial Magistrate appeal from any orders passed under section 28,29 or 30 to the Court to which, orders made by such Judicial Magistrate are ordinarily appealable; and the order passed on such appeal shall or shall not be final according to law relating to criminal procedure for the time being in force in the State.

**Section (33): Property when to vest in State:** (1) Property ordered to be confiscated by an Authorised officer under section 26, subject to the result of revision before Court of session under section 26-B shall upon conclusion of proceedings in revision vest in the Government free from all encumbrances after the expiry of specified period of revision.

(2) when an order for the confiscation of any property has been passed under section 28 or 30, as the case may be, and the period limited by section 32 for an appeal from such order has elapsed and no such appeal has been preferred, or when on such an appeal being preferred the appeallate Court confirms such order in respect of the whole or a portion of such property, such property or such portion thereof, as the case may be, shall vest in the Government free from all encumbrances.

**Section (34): Saving of power to release property seized:** Nothing hereinbefore contained shall be deemed to prevent any officer empowered in this behalf by the Government from directing at any time the immediate release of any property seized under Sec.26.

## (State Council Resolution No. 10 dated 27<sup>th</sup> January, 1900)

The following powers are exercisable by officer in charge of a division where specially authorized in that behalf by the Conservator of Forests:-

- 1. To notify seasons during which the kindling etc of fire is not prohibited section 6 (b)
- 2. To direct the release of property seized (section 34)
- To permit acts otherwise prohibited in state forests.
   The Conservators (Chief and circle) are also empowered to exercise all or any of the above powers.

Section (35): Penalty for counterfeiting or defacing marks on trees and timber and altering boundary marks: Whoever, with intent to cause damage or injury to the public or to any person or to cause wrongful gain as defined in the Ranbir Penal Code:-

(a) knowingly counterfeits upon any timber or standing tree a mark used by Forest Officer to indicate that such timber or tree is the property of the Government, or of some person or that it may lawfully be cut or removed by some person, or

(b) alters, defaces or obliterates any such mark placed of a tree or on timber by or under the authority of a Forest Officer; or

(c) alters, moves, destroys, or defaces, any boundary mark of any forest or waste land to which the provisions of Forest Act are applicable.

Shall be punished with imprisonment for a term which may extend to two years but shall not be less than three months and with fine which may extend to two thousand rupees but shall not be less than five hundred rupees.

**Section (36): Power to arrest without warrant:** Any Forest officer or Police officer may without orders from a magistrate and without a warrant, arrest any person against whom a reasonable suspicion exists of his having been concerned in any forest offence punishable with imprisonment.

Every officer making an arrest under this section shall without unnecessary delay and subject to the provisions of this Act and to release on bond take or send the person arrested before Judicial Magistrate having jurisdiction in the case, or to the officer in charge of the nearest Police station.

**Section (36-A): Offences non-bailable:** Notwithstanding anything contained in this Act or in any other law for the time being in force all offences under this Act other than those compoundable under section 38 shall be non-bailable, and nothing in section 497-A of the Code of Criminal Procedure, Samvat 1989 shall apply to offences under this Act.

**Section (36-B): Power to release on bond person(s) arrested:** Any Forest Officer of a rank not inferior to that of a Range Officer, who or whose subordinate has arrested any person or persons under the provisions of section 36 and subject to provisions of section 36-A and 38 of this Act may release such person or persons, on executing a bond thereof by such person or persons to appear, if and when so required, before the magistrate or before the authorized officer under Sec. 26(2) having Jurisdiction in the case.

**Section (36-C): Requisition for police assistance:** Any Forest Officer may requisition the services of any Police Officer to assist him for all or any of the purposes specified in section 26, 35 and Section 36 of this Act and it shall be the duty of every such officer to comply with such requisition.

Section (36-D): Police Officers bound to seek technical clearance from Authorized Officer: Any Police Officer seizing any property under the provision of this Act or rules framed there under shall be bound to seek technical clearance of the authorized officer to lodge a complaint to the magistrate under section 26 of this Act.

**Section (37): Power to prevent commission of offences:** Every Forest officer and Police officer shall prevent and may interfere for the purpose of preventing the commission of any Forest offence.

(Comments: Forest officers (and Police Officers) are bound to prevent and may interpose for the purpose of preventing forest offences. This would naturally include the right of warning people and of taking cognizance of persons wandering about in the forest armed with axes, saws etc although this latter is not in itself an offence).

Section (37 –A): Power to try offences summarily: Any Magistrate of the first class, specially empowered in this behalf by the Government in consultation with High Court, may try summarily, under the Code of Criminal Procedure, Samvat 1989 any such offence punishable with imprisonment for a term not exceeding two years or with fine not

exceeding six thousand rupees, or with both, and the provision of the said Code shall, as far as may be, apply to such trial, but notwithstanding anything contained in the said Code, in the case of conviction for any offence in summary trial under this section, it shall be lawful for the Magistrate to pass sentence of imprisonment for any term for which such offences are punishable under this Act.

#### Section (38): Power to compound Offences

(1)Any Forest officer not below the rank of Range Officer may from time to time by notification in the Jammu and Kashmir Government Gazette empower a Forest officer not below the rank of a Ranger

(a) [accept] from any person against whom a reasonable suspicion exists, that he has committed any forest offence involving damage not exceeding five thousand rupees other than an offence specified in section 35 or section 43, a sum of money by way of composition for the offence, which such person is suspected to have committed:

Provided that the sum of money accepted by way of composition shall in no case be less than double the amount involved in the loss caused by such offence, and

(b) when any property has been seized as liable to confiscation, [release] the same on payment of the value thereof as estimated by such officer.

(2) On the payment of such sum of money, or such value, or both, as the case may be, to such officer, the suspected person if in custody, shall be discharged, the property, if any, seized shall be released, and no further proceedings shall be taken against such person or property.

Notification No. F/16 dated 23<sup>rd</sup> November, 1931- (1) Under State Counsil Resolution No. X of 5<sup>th</sup> June, 1924, all officers of the Forest department of rank not inferior to that of Probationary Assistant Conservator of Forests and such Forest rangers as may from time to time be notified by name are invested with the powers described in section 38 of the Forest Act, 1987. (2) This notification supersedes Notification No. F/12 dated the 19<sup>th</sup> July, 1926.

Section (39): Presumption that the possession of forest produce is illicit: When in any proceedings taken under this Act or in consequence of anything done under this Act a question arises as to whether the possession of any forest produce of a person is illicit or not such possession shall be presumed to be illicit until contrary is proved by the accused.

**Section (39-A): Double penalties for offences:** The penalties which are double of those mentioned under the provisions of this Act or rules framed there under shall be inflicted in cases where the offence is committed after

sunset and before sunrise, or after preparation for resistance to lawful authority or where the offender has been previously convicted of a like offence.

#### Section (41): Investment of powers to Forest Officers

(1) the Forest Officers are invested with the following powers, that is to say:-

(a) powers to enter upon any land and to survey, demarcate and make a map of the same.

(b) the powers of a Civil Court to compel the attendance of witnesses and the production of documents and material objects;

(c) Power to hold an inquiry into forest offences and in the course of such inquiry, to receive and record evidence; and

(d) power to issue search warrants under the provisions of the Code of Criminal Procedure, Samvat 1989: Provided that powers under clause (b) and (c) shall not be exercised by a Forest officer below the rank of a Range Officer Provided further that the powers under clause (d) shall not be exercised by a Forest Officer below the rank of a Divisional Forest Officer.

(2) Any evidence recorded under clause (c) of sub-section (1) shall be admissible in any subsequent trial before a Judicial Magistrate; provided that it has been taken in the presence of the accused person.

(3) Any Forest Officer not below the rank of a Range Officer may delegate his powers of inquiry to the Forester if the offence is compoundable under section 38 of this Act.

#### Section (42): Forest officers to be public servants

(1) No suit or criminal proceeding or other legal proceeding shall be initiated against any public servant for anything done by him in good faith under this Act.

(2) No Court shall take cognizance of any offence alleged to have been committed by a Forest Officer while acting or purporting to act in the discharge of his official duty except with the previous sanction of the Government.

*Indemnity for act done in good faith* - No suit shall lie against any public servant for anything done by him in good faith under this Act.

**Section (43):** Any Forest officer or Police officer who vexatiously and unnecessarily arrests any person or detains any person when arrested or seizes any property on pretence of seizing property liable to confiscation under this Act, shall be punished with imprisonment of either description for a term which may extend to six months or with fine which may extend to five hundred rupees or with both.

### **10.6 THE LEGAL POWERS OF FOREST OFFICERS**

#### 10.6.1 Power of Arrest

By the JK Forest Act (section 36) any Forest Officer (or Police officer) may without orders from a Magistrate, and without a warrant, "arrest any person against whom a reasonable suspicion exists of his having been concerned (*i.e.*, as a principal or abettor) in any forest offence provided that the offence is punishable with imprisonment.

There must be no "unnecessary" delay in sending the person arrested before a Magistrate having jurisdiction. Alternatively, the forest officer making an arrest can hand over the person to officer in charge of the nearest Police station.

#### 10.6.2 Power to seize Property

The Forest officers are entitled to seize all forest produce in respect of which there is reason to believe a forest offence has been committed, as well as all cattle, tools, boats, carts, vehicles etc, used in committing it. (Section 26). A mark has to be put on the property seized, and a report made at once to the Authorised officer for initiation of confiscation proceedings under section 26(3) of JKFA under intimation to Magistrate having jurisdiction: where property seized is government property and no offender is found, then a report to the seizing officer's superior is alone sufficient.

### 10.6.3 Power to interpose and prevent Offences

Forest officers (and Police officers) are bound to prevent, and may interpose for the purpose of preventing, forest offences. This would naturally include the right of warning people, and of taking cognizance of persons wandering about in the forest armed with axes, saws, etc. Forest officers can also take cognizance of movement of ponies, vehicles etc in and around the forests to check modes of illegal transportation of timber etc. Forest officers, properly empowered, are also entitled to guard against fire, by notifying certain seasons *during which only* the carrying of fire in government forests is permitted.

#### 10.6.4 Power to demand Aid from certain Persons

This is the place to mention that in certain cases forest officers are empowered to demand aid in the execution of their functions.

At a timber station or depot, all servants, whether Government or private, employed at such stations, may be called upon to aid in case there is danger to the property stored there, in any emergency (such as cases of flood or fire). (J & K Forest Act, section 18)

Forest officers may also demand aid in extinguishing forest fires, in preventing offences, and in discovering and arresting offenders, under section 48 of the Act. In this case the persons liable to give such aid are—

(a) Rightholders;

(b) Persons holding permission to take produce or to graze cattle;

(c) the servants and employees of (a) and (A);

(*d*) every person employed by Government or remunerated by Government for services in any village contiguous to the forest;

and these persons are also bound to give information of offences that may come to their knowledge.

#### 10.6.5 Aid by the Police

The section 36-C of J & K Forest Act states that any Forest officer may requisition the services of any Police officer to assist him for all or any of the purposes specified in section 26 (seizure), 35 (defacing tree marks and altering boundary marks) and section 36 (arrest) of this Act and it shall be the duty of every such officer to comply with such requisition.

The Forest Act is categorical that Forest officers have right to demand the aid of the public force (Police) in searching for stolen property, or in preventing offences, or arresting offenders, or in cases of fire.

Under the Criminal Procedure Code, if it is a case of offence of the graver kind (*e.g.*, theft) cognizable by the Police, the Police would be bound to take up the case on the information of a forest officer. Under the Forest Act, all offences (except those minor ones which are compoundable under Section 38) are "cognizable" by the Police; hence, according to section 156 of the Criminal Procedure Code, the Police officer has power to investigate such a case and is bound to do so (section 157), if it occurred within his jurisdiction, unless the proviso to the section applies.

**Further under section 150 Crpc:-** Every police officer receiving information of a design to commit any cognizable offence shall communicate such information to the police officer to whom he is subordinate, and to any other officer whose duty it is to prevent or take cognizance of the commission of any such offence.

NOTE: Section 156(Crpc): Police officers power to investigate cognizable case.-

(1) Any officer in charge of a police station may, without the order of a Magistrate, investigate any cognizable case which a Court having jurisdiction over the local area within the limits of such station would have power to inquire into or try under the provisions of ChapterXIII.
 (2) No proceeding of a police officer in any such case shall at any stage be called in question on the ground that the case was one which such officer was not empowered under this section to investigate.

(3) Any Magistrate empowered under section 190 may order such an investigation as abovementioned.

#### Section 157 (Crpc): Procedure for investigation.-

(1) If, from information received or otherwise, an officer in charge of a police station has reason to suspect the commission of an offence which he is empowered under section 156 to investigate, he shall forthwith send a report of the same to a Magistrate empowered to take cognizance of such offence upon a police report and shall proceed in person, or shall depute one of his subordinate officers not being below such rank as the State Government may, by general or special order, prescribe in this behalf, to proceed, to the spot, to investigate the facts and circumstances of the case, and, if necessary, to take measures for the discovery and arrest of the offender: Provided

(a) when information as to the commission of any such offence is given against any person by name and the case is not of a serious nature, the officer in charge of a police station need not proceed in person or depute a subordinate officer to make an investigation on the spot;(b) if it appears to the officer in charge of a police station that there is no sufficient ground for entering on an investigation, he shall not investigate the case.

(2) In each of the cases mentioned in clauses (a) and (b) of the proviso to sub-section (1), the officer in charge of the police station shall state in his report his reasons for not fully complying with the requirements of that sub-section, and, in the case mentioned in clause (b) of the said proviso, the officer shall also forthwith notify to the informant, if any, in such manner as may be prescribed by the State Government, the fact that he will not investigate the case or cause it to be investigated.

#### 10.6.6 Power to use Weapons or to use Force

With regard to question whether a forest officer is justified in using his weapons in resisting offences etc; no special rule is laid down on this subject, but the usual law of the right of private defence of course applies to forest officers as to any others. This right is stated in sections 97-106 of the Indian Penal Code, and it extends to defending one's self or the person of anyone else against any offence affecting the human body, or one's own property, or the property of Government, or of anyone else, whether movable or immovable, against theft, robbery, mischief, or criminal trespass, or attempts to commit these offences. The right extends even to killing the person attacking, in those very grave assaults against the person, which reasonably cause immediate apprehension of death or *grievous* hurt (section 100, Indian Penal Code), but not otherwise; and in cases against property (section 103, Indian Penal Code) only in grave cases of robbery, house-breaking by night, or mischief by fire to a human dwelling or place used for the custody of property, but not otherwise. In all other cases it only extends to causing harm, short of death, to the wrongdoer.

In *no* case does it extend to doing *more harm than is necessary* to effect the object of defence.

In no case also does it arise if there is time to apply to the public authorities for help.

It may also be mentioned here that if a *public servant* causes death, though exceeding his real powers, but acting in good faith and doing what he

believed to be lawful and necessary for the discharge of his duty, and bearing no ill will to the person killed, he cannot be charged with murder, but only with culpable homicide. (Section 300, Indian Penal Code)

The Criminal Procedure Code says (section 46) that a *Police* officer, *or other* person authorized to make an arrest, may use all means necessary to effect the arrest if that arrest is forcibly resisted; but this does not extend to causing death, unless the offence for which the arrest is made is one punishable with death or transportation for life.

This could not of course deprive the officer of the right to kill the person resisting if the *resistance was so violent that it caused to the officer reasonable apprehension that he himself would be killed,* or subjected to grievous hurt; because, in that case, the right of defence above alluded to would come into play.

#### 10.6.7 Power of Search and Arrest

The powers incidental to an arrest, such as the power of entering a house, breaking a door and so forth, have been already described. And the "search warrant" has also been alluded to. Forest officers are invested with powers under Section 41(1)(d) to issue search warrants under the provisions of the Code of Criminal Procedure. The same powers cannot be exercised by a forest officer below the rank of a Divisional Forest officer.

JAMMU AND KASHMIR FOREST DEPARTMENT (Under section 41(1)(d) of J&K Forest Act and Section 94 of CrPC)										
Warrant to Search Suspected Place of Deposit										
То										
(Name and designation of a Forest Officer above the rank of a Forest Guard)										
No Dated										
Whereas information has been laid before me, and on the inquiry thereupon had, I have been led t         believe       that       the	to									
or other place i.e., name of the owner of the house or premises to be searched) is used as a place for the depose (or sale) of property (or if for either of the other purposes expressed in the section	st sit m nd									
This is to authorise and require you to enter the said house (or other place) with such assistance a shall be required, and to use, if necessary, reasonable force for that purpose, and to search every part of the said house	as id o a									
property(or documents, or stamps or steals, as the case may be	e)									
(add when the case requires it) and also of any instruments and materials which you may reasonably believe to be kept for the manufacture of forged documents, or counterfeit 'stamps, or false seals (as the case may be) and forthwith to bring before this officer such of the said things as may be taken possession of, returning the warrant, with an endorsement certifying what you have done under it, immediately upon its execution.	to nd nis									

#### **10.6.8 Power to conduct Prosecutions**

It will naturally be asked what powers forest officers of any grade have to conduct prosecutions, or to appear as complainants in a Criminal Court, on behalf of the State, to procure a summons against an offender, and conduct the case. It is to be regretted that nothing definite is laid down about this. Most certainly, forest officers ought to have a definite standing before the Magistrates' Courts in this respect.

At present everything is matter of inference, or at best of the permission of the Magistrate. A forest officer can certainly take cognizance of an offence and arrest an offender and take him before a Magistrate. Of course, therefore, he may appear on the trial (if one follows) as complainant; but to be complainant is not the same thing as being allowed to conduct the case, to examine or crossexamine witnesses, and address argument to the Court. By the Police Act, section 24, it is expressly provided that any Police officer may lay information, act, investigate and prosecute any case before a Magistrate. By the Criminal Procedure Code, section 495, the Magistrate may in any trial before him (or preliminary enquiry) permit any person to conduct the prosecution. So the forest officer might get *leave* to prosecute. Government might also appoint forest officers "public prosecutors" for their own class of cases, under section 492. In any grave case the Government would appoint a public prosecutor or send a Government Advocate; but this does not remove the daily inconvenience of wanting а recognized locus standi for forest officers in the Magistrates' Courts, and the want of some section in the forest law just like the section 24 of the Police Act, or, better still, like the French Code.

As to the powers of forest officers to act in civil suits, see the section on Government suits in the Chapter on Civil Procedure law.

#### 10.6.9 Power to compound Offences

Officers specially empowered by the Government under section 38 of the J & K Forest Act, have the right to '*compound*' all forest offences (except those grave ones specified in section 35 or section 43 of the Act). The composition consists in accepting a sum of money as compensation for damage done: if this is paid, the person is set free, and any property or cattle seized is let go.
No person, it will be understood, is in any way bound to pay the sum required. If he thinks the sum too high, or that he has committed no offence, or can show a valid excuse, he may refuse to pay and submit to be tried for the alleged offence before a Magistrate.

#### 10.6.10 Powers under Forest Act, Section 41

Lastly, forest officers may be invested with certain special powers under section 41, J & K Forest Act.

The power under (a) relate to the survey of land, and enquiries into rights, and may be required when a forest officer is sent on survey duty, preliminary to a settlement or otherwise, or perhaps when he is working with a Forest Settlement Officer without himself being actually appointed Joint Settlement Officer (in which case he could be vested with the powers of the office).

The power under (c) relates to the powers of a civil court invested with forest officers to compel the attendance of witnesses and the production of documents and material objects;

The power under (*d*) relates to the detection of offences, and to this has been already alluded to.

#### 10.6.11 Power to record Evidence on the spot

Under section 41 (c) the forest officer empowered may hold a preliminary enquiry into a forest offence just as the Police do, only with this important difference that he may record evidence; and this, provided it has been taken in the presence of the accused, is admissible in a subsequent trial before a Magistrate, but may, of course, be disproved or contradicted.

How officers should record evidence in such cases may be learned from the section on record of evidence under the Criminal Procedure Law.

The use of this power is very limited: it is not intended to be used as a matter of course in every forest case, but only where the forest officer comes across some case in which the witnesses are at hand, and the accused is either arrested on the spot or can at once be brought there; also where the facts are such that the evidence of them is likely to disappear by lapse of time and influence of weather etc, unless they be proved, and the record of them secured, at once. It would not of course be applied where no offender was found, or where none could properly be arrested at or near the spot, nor would it be where the witnesses were not on the spot or close by and could be questioned at once: in such cases a police investigation must be sought, or a complaint made to a Magistrate. At best, the power in the Act is merely a half measure, a tentative introduction of a new power, which will no doubt, on revision, be placed on a proper basis.

#### 10.6.12 Powers as receivers of Government Revenue

Forest officers have also certain powers in connection with collection and receipt of revenues, and expenditure of Government money.

There are departmental rules about the power to expend money provided in the divisional budget, and also rules about keeping accounts, dealing with revenue received, supplying subordinates with funds by imprest advances, and so forth, which are laid down in the Departmental Code, and with which this manual has no concern. Forest officers may also receive revenue from sales of forest produce and so forth, but they have no functions to execute for its actual recovery. Generally payments are made before delivery, but where this is not so, or where otherwise there are outstandings to be recovered, all the forest officer has to do is to report (in a form prescribed by order) to the Collector who can recover as an arrear of land revenue (J & K Forest Act, section 52)

(a) All money payable to Government under the Act or rules;(b) All money payable on account of any forest produce,(c) All money as expenses incurred in the execution of the Act in respect of such produce.

#### 10.7 OFFENCES AGAINST THE AUTHORITY OF PUBLIC SERVANTS

#### 1. Resistance to Summons, Arrest etc

In order that the legal powers given to public servants may be exercised to any purpose, it is obviously necessary that a corresponding liability should be imposed on private persons in case they resist the execution of those legal powers. If forest officers, for example, can demand the aid of certain persons in putting out a forest fire, it must be made penal in those persons to neglect or refuse to give such aid. If a forest officer can arrest an offender, it is penal for the offender to resist *prima facie* lawful arrest.

The penal provisions are provided in Indian Penal Code in chapter (X) under heading "of contempts of the lawful authority of Public Servants"

Under sections 172-173 are punishable, cases where a legal notice, summons, or order is to be served, and the person absconds or resists service. The latter section includes also the intentional tearing down of notices etc, legally posted, as, e.g., in cases where a summons which cannot he served personally, is attached to the door of the house where the person resides.

Under section 174 is punishable the intentional refusal to *attend* in obedience to a summons, order, etc lawfully issued. Section 175 punishes a similar *refusal* to *produce documents*.

Sections 178-79 and 180-81, refer to refusal to take oath, or answer questions, or to sign depositions and statements, and to making false statements on oath.

Section 182 may sometimes come within the practice of a forest officer. Here the offence is that of a person giving *false information* to a public officer, so that the officer may *use his power* (of arrest, search, seizure, etc) to the *injury* or *annoyance* of any person, with whom, but for the false information, the officer would never have thought of interfering.

#### 2. Resistance to Seizure or Arrest

Forest officers have in certain cases the power to seize property liable to confiscation or cattle in the act of trespassing. Resistance to seizure in such cases is punishable under section 183.

Resistance to lawful arrest of the person comes under section 224, and resistance offered to the arrest of another person, under section 225.

#### 3. Omission to give Aid or Information

More directly important to forest officers are sections 176-7, which punish the intentional omission to give information of a fire, a forest offence, etc, or the giving of false information by persons under legal obligation to give information, and of course true information, as far as they know.

Section 187 further makes it penal to refuse or neglect intentionally to give assistance in cases in which the public servant is empowered by law to require assistance.

#### 4. Obstruction in executing Public Duty

The general case of obstruction of a forest officer in the execution of his duty is punishable under section 186.

Section 189 punishes threats of injury to a public servant, with the object of inducing him to do, or forbear from doing, any official act; the threat is punishable whether it imports injury directly to the public servant, or indirectly to someone in whom the offender believes the public servant to be interested.

In another part of the Code will be found similar provisions applying to cases where the offender goes beyond threats, and actually uses force, or causes hurt, or grievous hurt, in the attempt to deter the public servant from his duty. (Sections 332, 333, and 353, Indian Penal Code)

Section 184 punishes obstruction to a lawful sale conducted by a public servant as such: and section 185 refers to illegal bids at such auctions.

Sections 170-171 punishes the personating of a public officer or wearing a garb or carrying a token similar to that used (as a matter of fact) by any class of public servants.

#### 10.8 APPLICATION OF RANBIR/INDIAN PENAL CODE TO FOREST OFFENCES

Ordinary Acts of mischief, trespass, petty theft of woods and offences against produce in transit, are generally best prosecuted under the Forest Act. But wherever the offences are of serious nature and special criminality appears to be involved, the RPC should be resorted to.

Some of the sections, which may be used while prosecuting forest offenders, are listed below. For details the RPC may be referred and in cases of very serious nature it is always advisable to appoint a pleader as no manual can be a substitute for and experienced legal practitioner.

S.No	Nature of offence	R.P.C Section	Comments
	Offences of	lirectly connecte	ed with Forest or its produce
1.	Theft or	378, 403	Theft always refers to movable property which
	misappropriation		is in possession of the person robbed which
	with its attendant		means the section can be applied when the tree
	offences		is cut and separated from ground or soil is
			taken out, fruits pulled out etc. if the log was
			lying on road side and not in possession of any
			one it is not theft but criminal misappropriation
			(s. 403)
2	Receiving stolen	410, 411,	Property possession of which transferred by
	property	413, & 414	theft, extortion or robbery or which has been
			criminally misappropriated is a stolen property
			(s. 410). Dishonestly receiving and retaining it
			is punishable u/s 411. Habitual dealing in such
			property (s. 413) and assisting in concealment
			is u/s 414. Here circumstances are important as
			receiving the property at night at a very low
			price and trying to bury it and conceal
3	Mischief	425, 427,	To prove mischief we need to prove the
		437, 430-1,	intention of the offenders to cause or
		428-9	knowledge that it is likely to cause wrongful
			loss to public or to a person. It only relates to
			property and not men. Minor mischief is
			covered u/s 426. If the damage is Rs. 50/- or
			more (s. 427) and if the damage by mischief by
			say fire is Rs. 100/- or more, it is covered u/s
L			(437)
4	Criminal	441, 413-4,	It is advisable to apply the provisions of special

Table 93: Application of RPC/IPC to Forest offences

		445-50	Act.
5	Abetment of	40, 108	Refer S. 107 to understand abetment. It is not
	offences	explanation 2,	necessary that offence is committed. S. 40
		109, 111,	explains that offences under special Acts, are
		115, 114	also included in abetment so there is no need
			for its specific mention in the RPC.
6	Attempt to commit	511	An attempt requires some penal action done
	offences		towards the commission of the offences. Its
			punishment is equal to the act itself.
			Prosecution for attempt should be considered
			only in serious offences.
	Offences in	directly connect	ed with forest Administration
1.	Unlawful assembly	141-143, 144	If five or more persons assemble with the
			object of resisting the execution of Forest law
			or by means of criminal force or show of such
			force, compel anyone to do what he is not
			bound to do or not to do what is legally entitled
			to do with the object of committing an offence
			under any law, such assembly is unlawful and
			punishable under 141-143. If the party is
			armed, S. 144 applies.
2.	Giving aid &	48 JKFA.	If a person is illegally duty bound to give
	information	176, 187,	information or render assistance in forests
		177. 201	cases u/s 48 JKFA omits intentionally to do so.
		177,201	he is punishable u/s 176 or 187 respectively. If
			the information given is false (s 177) and if
			evidence is caused to be destroyed (s 201) shall
			apply. The non-compliance of Sec. 48 IKFA is
			also punishable under Sec. 49 of IKEA
3	Giving false	191 ó 195	
5.	evidence	1910195	
4	Concealing	202	
	offenders	202	
5	Breach of trust	105 409	If the Forest Contractor rather than transporting
5.	2. cuch of trust	100, 109	timber which may be very costly burns it or
			huries it and does not use it himself (\$ 105)
			but if clerk makes away Government cash he
			is liable u/s 400
1	1	1	18 Hable U/S 409.

#### 10.9 SEIZURES

As explained above in Forest Act in Section (26) that when there is a reason to believe that a forest offence has been committed in respect of any forest produce, such produce together with all tools, arms, boats, carts, equipment, ropes, chains, machines, vehicles, cattle or any other article used in committing any such offence may be seized by a Forest Officer or Police Officer. The table below presents the statement of seizures in connection with forest offences in Pirpanjal Forest Division for the last 10 years.

Year	No. of	No. of	Timber seized	Remarks
	horses	vehicles	(cft)	
	seized	seized		
2000-01	-	13	-	
2001-02	107	25	5645.10	
2002-03	168	25	5212.76	
2003-04	186	14	9429.30	
2004-05	129	21	6009.34	
2005-06	235	15	9345.14	
2006-07	184	32	749.12	
2007-08	225	19	6826	
2008-09	257	14	4917.44	
2009-10	353	11	15431.96	
2010-11	170	01	7638.6	
2011-12	76	02	5607.05	
2012-13	59	05	3612.60	
2013-14	38	2		
Total	2187	199	80424.41	

 Table 94 : Statement showing seizure of timber & other items ending March, 2014
 Particular

#### 10.10 SPECIAL MEASURES AGAINST SMUGGLING

Smugglers, miscreants and dishonest traders organize illicit felling in the forests and carry out valuable timbers. The clandestine removal of forest produce leaves a very negative impact on forests. As a result the forests become degraded and liable for encroachment. The environment of Kashmir is very sensitive. The slight change in forest cover can significantly change the weather pattern of valley. The change in climate in Valley can bring devastation in agriculture, Horticulture and tourism sectors. Therefore, the smuggling of forest produce has to be checked.

The main reasons for heavy illicit damages in Pirpanjal forests are:-

- a) Its closeness to various towns particularly to the city of Srinagar.
- b) Easy accessibility due to easy slopes and network of roads.
- c) Presence of undulating and ravenous 'Karewa' lands which are helpful to timber smugglers for hiding and camouflaging their activities.
- d) Poverty and Lack of employment opportunities for people living in forest fringe villages.
- e) Provision of earning quick bucks from sale of illicit timber.
- f) Shortage of timber and high demand of timber in black market.
- g) Habitual involvement of people in illicit timber trade.

The infamous villages indulging in timber smuggling in Pirpanjal Forest Division are: Sutharan, Drang (Lasipora), Shangulipora, Khag, Raiyar, Kralpathri, Yarikhah, Gurvet, Kachwari, Brenwar and Nilnag.

The following suggestions are put forth to prevent the occurrence of damages in future.

- 1. The serious departmental action should be taken against the staff found guilty in forest damages. The Divisional Forest Officer & Range officer should check the guard books regularly while on inspection besides the more vulnerable areas should be put under tight watch and ward by arranging more mobile patrolling parties from control rooms.
- 2. The transfers should be neither frequent nor delayed because on the former case the fixing of responsibility of damage becomes difficult while in the latter case, the staff may develop vested interests. Also the areas of postings are tough and remote and therefore to keep up the motivational levels of frontline staff, the officials should be shuffled within reasonable periods from one place to another. The more appropriate period prescribed is:-
  - One year for Beat Guards,
  - One year for Forest Guards-I/Check-post staff and
  - > Two years for the Block Forester.

The transfer of local staff should always be avoided. The same two Forest Guards in a beat should not be posted together again at two or more different places.

- 3. Prompt action and successful prosecution will have a deterrent effect on other offenders.
- 4. Promotion, increment and cash rewards should be given to the staff who show promptness in detecting the forest offences.
- 5. Young, energetic and physically fit forest personnel should be posted in the territorial beats/blocks for performance of tough duties. Aged, unhealthy and ill personnel should not be given the protection duty. More over there should be more recruitment and all vacancies should be fulfilled.
- 6. Organized illicit felling in the forests is to be resisted by special patrolling measures. The Village Forest committees have to be strengthened and pitted for active role in protection. The Forest Protection Force constituted in the state for the sole purpose of protection of Forests has to remain more vigilant and act preemptively. The Police have to be sensitized to cooperate with forest department in issues of forest protection. Any forest produce that is detected by any military, police or other paramilitary forces has to be handed over to the nearest forest post. The table below presents the list of FIR's registered in various police stations against smugglers and no. of PSA cases registered against habitual offenders.

Table 95:	Statement sh	owing Fl	IR's & I	PSA's	registered	against	damage	e doers

YEAR	No. of FIRøs	No. of Culprits	No.	of PSA	No. of	Remarks
------	--------------	-----------------	-----	--------	--------	---------

		booked	recommended	warrants
				issued
2003-04			11	11
2004-05				
2005-06			07	07
2006-07			05	05
2007-08			13	13
2008-09			04	04
2009-10			33	8
2010-11	206	682	12	12
2011-12	128	394	28	28
2012-13	82	259	13	2
2013-14	58	191		
Total	474	1526	115	79

The following table shows the status and disposal of departmental cases, Police cases and court cases since 2001-02 in PP Forest Division.

Year	S. No	Particulars	OB as on 01-4-2001	Receipts upto 31-03-2002	Total	Disposal	Balance
2001 02	1	Departmental Cases	23502	180	23682	20	23662
2001 - 02	2	Police cases	553	18	571	0	571
	3	Court cases	884	0	884	0	884
Sub Total		Total	24939	198	25137	20	25117
Year	S. No	Particulars	OB as on 01-4-2002	Receipts upto 31-03-2003	Total	Disposal	Balance
	1	Departmental Cases	23662	41	23703	2	23701
2002-03	2	Police cases	571	1	572	0	572
	3	Court cases	884	0	884	0	884
Sub Total			25117	42	25159	2	25157
Year	S. No	Particulars	OB as on 01-4-2003	Receipts upto 31-03-2004	Total	Disposal	Balance
2002.04	1	Departmental Cases	23701	212	23913	23	23890
2003-04	2	Police cases	572	44	616	0	616
	3	Court cases	884	0	884	0	884
Sub Total			25157	256	25413	23	25390

 Table 96: Statement showing status and disposal of damage cases ending March, 2014

Year	S. No	Particulars	OB as on 01-4-2004	Receipts upto 31-03-2005	Total	Disposal	Balance
	1	Departmental Cases	23890	305	24195	1	24194
2004-05	2	Police cases	616	29	645	0	645
	3	Court cases	884	0	884	0	884
Sub Total			25390	334	25724	1	25723
Year	S. No	Particulars	OB as on 01-4-2005	Receipts upto 31-03-2006	Total	Disposal	Balance
2005.06	1	Departmental Cases	24194	307	24501	0	24501
2003-00	2	Police cases	645	53	698	0	698
	3	Court cases	884	0	884	0	884
Sub Total			25723	360	26083	0	26083
Year	S. No	Particulars	OB as on 01-4-2006	Receipts upto 31-03-2007	Total	Disposal	Balance
2006-07	1	Departmental Cases	24501	502	25003	7	24996
	2	Police cases	698	74	772	0	772
	3	Court cases	884	0	884	0	884
Sub Total			26083	576	26659	7	26652
Year	S. No	Particulars	OB as on 01-4-2007	Receipts upto 31-03-2008	Total	Disposal	Balance
2007.08	1	Departmental Cases	24996	499	25495	0	25495
2007-08	2	Police cases	772	39	811	0	811
	3	Court cases	884	48	932	0	932
Sub Total			26652	586	27238	0	27238
Year	S. No	Particulars	OB as on 01-4-2008	Receipts upto 31-03-2009	Total	Disposal	Balance
2000.00	1	Departmental Cases	25495	457	25952	23	25929
2008-09	2	Police cases	811	97	908	0	908
	3	Court cases	932	6	938	0	938
Sub Total			27238	560	27798	23	27775
Year	S. No	Particulars	OB as on 01-4-2009	Receipts upto 31-03-2010	Total	Disposal	Balance
2009-10	1	Departmental Cases	25929	317	26246	0	26246

	2	Police cases	908	136	1044	0	1044
	3	Court cases	938	2	940	0	940
Sub Total			27775	455	28230	0	28230
Year	S. No	Particulars	OB as on 01-4-2010	Receipts upto 31-03-2011	Total	Disposal	Balance
2010 11	1	Departmental Cases	26246	28	26274	18	26256
2010-11	2	Police cases	1044	175	1219	0	1219
	3	Court cases	940	21	961	0	961
Sub Total			28230	224	28454	18	28436
Year	S. No	Particulars	OB as on 01-4-2011	Receipts upto 31-03-2012	Total	Disposal	Balance
	1	Departmental Cases	4844	15	4859	16	4843
2011-12*	2	Police cases	458	99	557	0	557
	3	Court cases	66	17	83	0	83
Sub Total			5368	131	5499	16	5483
Year	S. No	Particulars	OB as on 01-4-2012	Receipts upto 31-03-2013	Total	Disposal	Balance
2012 12	1	Departmental Cases	4843	0	4843	0	4843
2012-13	2	Police cases	557	80	637	0	637
	3	Court cases	83	2	85	0	85
Sub Total			5483	82	5565	0	5565

Note: The variation of 23068 cases in OB column has arisen due to carving out of Special Forest Division Tangmarg which have been transferred to this division as the cases were pertaining to Gulmarg Range and SPSP Range which form part of this new division after reorganization.

#### **10.11 PROTECTION AGAINST FOREST FIRES**

Fires are most destructive elements. They destroy all life forms, cause serious soil erosion, kill all the microorganisms and destroy the ecosystem that had been built up over a long period of time. Repeated fires arrest progressions of vegetation by process of degradation. They also denude soil paving way for massive soil erosion and siltation of dams, besides causing atmospheric pollution. Timely prevention and suppression is the key to fire control. Guidelines for prevention and control of forest fires have been issued by Government of India in letter no 9-6/99-FPD of Ministry of Environment and Forests.

#### 1. Fire management

#### a) Objectives

- i. To promote conservation of biodiversity and arrest the degradation of forest lands.
- ii. To improve the sustainable production of timber and non timber forest produces in forest lands.
- iii. To maintain the balance of eco systems in forests and conserve rare and endemic species.
- iv. To maintain soil cover and prevent soil erosion.

Forest fire management assumes great significance as forest fires, have a profound impact on biodiversity and productivity on forestlands. Considering the permanent damage a forest fire makes to the forest and environment, even if it is on a smaller intensity, ecological and social impacts of it are hard to quantify. Hence, an attitude emphasizing total prevention of forest fire is to be evolved. Awareness on fire damages must be inculcated in the minds of the people. Often forest fires are not reported. Even if reported, the losses are under estimated. Forest Department often fails to project the actual losses due to forest fire and hence the Government is not giving sufficient funds to prevent loss due to forest fire. This, in turn, affects the efficiency of the system. Method of approach in a fire situation is to be re-vamped. It is with the above goal in view that the Department has now formulated Fire Management Plan, prescribing essential components required for the plan, based on which Division level plans have been drawn up for the project period. This working plan describes briefly the salient features of a fire plan and recommends implementing it successfully.

#### b) Time and Source

Fires in the forests start from June continuing up to the month of October every year. The interface of the forests with the human interests in enclosures and among the peripheral dwellers has increased with the increase in boundary length and these are the sources of fire. Farming, rehabilitation, Gujjar and Bakarwal settlements and regularized encroachment areas in and around the forests are the sources of most of the forest fires.

#### c) Causes of fire

Most of the fires are accidentally caused due to carelessness. These are

- i. Fires caused by trespassers and forest users by careless slinging of burning cigarette butts and matches on to the forest floor.
- ii. Fires caused by campers in forests who do not put out campfires and fires lit for cooking, before leaving.

- iii. Fires started by occupants adjacent to forests when they burn slash for land clearing.
- iv. Incendiaries fires willfully set by people for burning vegetation either for collection of NWFP or for hunting lesser animals or by the graziers for getting new flush of grass. Fires caused by the unemployed youth seeking employment as firewatchers are also common.

#### 2. Fire planning

Fire management plans are prepared for each Division. The Range should be treated as the unit for planning with support maps at 1:50000 or larger showing details of relief and features which are having a bearing on fire, details of which are enumerated in the standard format supplied.

Annual action plan should be prepared based on the strategic plan for protecting the forests from fire. Planning should be prophylactic rather than curative, the concern should be for preventing fire. More emphasis should be given to development of a preventive strategy rather than control.

Planning should be location specific, identifying clear, measurable, cost effective and achievable goals for each, specifying responsibilities as regard to detection, communication, organisation and control of fire. Planning should be done after prioritization having due regard to the resources available. Planning should be more intensive for areas, which are more fire prone.

Wherever possible, participatory fire management strategy should be evolved based on the broader guidelines issued on this aspect. No plans will be approved without this component in future. For prevention of fire and for minimizing fire damage, 'preventive burning' should be planned and strategy laid out. Undue and unwise rigidity regarding the width of fire lines should be dispensed with and a need based strategy for this prescribed for different areas. Use fire as a management tool in protection and habitat management for wildlife.

Command structure with unity of command should be specified for each strategy. Illustration of this and positioning of equipment should be annexed to the plan for quick, efficient and on the spot organisation of fire fighting teams. Data should be gathered on the sources of secondary support such as the voluntary fire fighters, NGOs, organisation etc.

Details of the resources like man power, vehicles, wireless etc available with other wings of Forest Department and also those with other departments like Fire force, Meteorology etc. should be shown in annexure to the plan to be tapped during fire season.

Fire safety measures should be described in the plan and briefing on fire should essentially include briefing on fire safety also. Unsafe and careless fire fighting strategy will not only be hazardous or even fatal to the men at the fire front, but also will impede their efficiency in fire situations resulting in more areas being destroyed by fire. Some of the instructions to be given in this regard are

- a. Wear non synthetic clothes to cover the body so as to protect it from radiant and convection heat which usually keeps the fire fighter at bay.
- b. The head gear and goggles to protect the head and eyes from radiant heat, flying embers and sparks.
- c. Use foot wear, preferably leather boots, while working in fire burnt areas.
- d. Carry enough quantity of water to guard against desiccation by heat.
- e. Keep a first aid kit with the team while going to fight fire.
- f. Even though casualties of men during forest fires are rare in Kerala, there are cases where the raging and fast moving grass fires change speed and direction with changes in wind. Therefore, in any fire situation, watch the fire intensity, spread and behavior and plan for an escape route in case of danger.
- g. Keep communication between fire fighters effective while combating fire.
- h. Remember that the air near the forest floor is heavier, cooler and fresher.
- i. In case the fire fighter is surrounded by fire, cutting off the escape route, shield the body with any non-conducting, non-burning material.

#### 3. Budget

The quantum of actual works relating to fire management activities is wholly dependent on the availability of funds in time for these works. Thrust will be given on fire prevention management and creating local awareness about the damages caused by fire through participatory fire management programmes. An annual allocation of Rs.10.00 lakhs would be required for the fire management activities.

#### 4. Participatory approach for fire protection

PFM can be adopted in areas adjacent to habitations in degraded forests to ward off the damages due to fire as described in chapter on Participatory Forest Management.

Tuble 77. Statement showing range wise jule incluences recorded in 11 Division							
Year	Dudhganga	Raithan	Sukhnag	Total			
2000-01	0	0	0	0			
2001-02	0	0	0	0			
2002-03	50	0	0	50			
2003-04	0	0	0	0			
2004-05	0	0	0	0			
2005-06	0	0	0	0			
2006-07	0	0	0	0			

 Table 97: Statement showing range wise fire incidences recorded in PP Division

2007-08	5.7	1	0	6.72
2008-09	0	0	0	0
2009-10	0	0	0	0
2010-11	0.65	0	0	0.65
2011-12	0	0	0	0
2012-13	0	0	0	0
2013-14	0	0	10	10

#### **10.11 BOUNDARY CONSOLIDATION**

Timely updating of maps, survey and demarcation of boundaries are highly essential for protection and scientific management of forests. It is very important that the forest boundaries are properly demarcated and maintained for the effective protection of forests. The total length of boundary of Pirpanjal Forest Division is more than 400 kms, out of which a very little length has been demarcated. The remaining boundary, which is very vulnerable, should be demarcated as early as possible. This work should be given top priority and completed during the present plan period itself.

10.11.1 The forest area of PirPanjal Forest Division is 480.10 Sq. Kms consisting of 2715 no. of B.P's running over a 411.91kms of mainline as recorded in Form-1 of the division.

		Name of the Demarcation	No. of	Boundary line
S.No.	Range	Block	Pillars	(Kms)
1	Doodhganga	Yusmarg	19	50.3841
2	Doodhganga	Nilnag(Lassa Kalan)	62	4.898
3	Doodhganga	Nilnag 1	84	0
4	Doodhganga	Nilnag 2	62	4.737
5	Doodhganga	Kanikat	26	3.6107
6	Doodhganga	Khaigam	86	7.8566
7	Doodhganga	Nagabal(Chirar)	111	18.0164
8	Doodhganga	Branwar	42	0
9	Doodhganga	Kachkora	49	3.8075
10	Doodhganga	Tankora	313	19.6833
11	Doodhganga	Thkra Branpathri	25	0
12	Doodhganga	Badzore	77	8.4435
13	Doodhganga	Paonar	96	8.6099
14	Doodhganga	Branpathri	38	3.7307
15	Doodhganga	Kokarkhal	105	6.2136
16	Doodhganga	Dalwan 1	48	4.0667
17	Doodhganga	Dalwan 2	52	3.4331
18	Doodhganga	Rannar	37	2.7133

 Table 98: Form-1 of Pirpanjal Forest Division

19	Doodhganga	Tilsar	41	2.7501
20	Doodhganga	Chirarkut	31	1.5136
21	Doodhganga	Baldora (Kawankut)	94	4.7291
		Sochal Kali(Damal kora		
22	Doodhganga	Hazaa dat)	166	10.4209
23	Raithan	Kachwari (Shalnar)	41	2.2301
24	Raithan	Chak shera(Raiyar)	49	4.0139
25	Raithan	Chak Qudus	14	1.2128
26	Raithan	Yari Khah(Kralpathri)	38	2.7037
27	Raithan	Donarji	19	1.1888
28	Raithan	Paripathri	16	1.1872
29	Raithan	Kaw Narji	37	2.4925
30	Raithan	Yari Khah	156	13.7532
31	Raithan	Hathor Nar	18	0.9648
32	Raithan	Panar	27	2.3613
33	Raithan	Manz saran (Trag)	17	1.3376
34	Raithan	Chhanga	63	67.8336
35	Raithan	Bismanag	19	1.496
36	Raithan	Hal-Kanyari	35	2.1389
37	Sukhnag	Khag(Comptt. S-21-	174	35.897
38	Sukhnag	Sitaharan	158	28.1128
39	Sukhnag	Sitaharan Brass	82	8.2707
40	Sukhnag	Udder Khud Laspur	24	1.6733
41	Sukhnag	Tosamaidan	64	63.4269
	3 Ranges	41 Blocks	2715	411.9132

#### **10.11.2 ENCROACHMENT**

The forests of this division are under a great pressure of encroachments. The encroachment is heavy near habitations and around the 'Chaks'. While increase in population is the root cause - of this, low productivity of agricultural fields and land hunger are the other reasons. They may be done by a single family or collectively by a group of families. In the latter case a number of villagers collectively and in open defiance of law, encroach upon some treeless and/or even land with scattered trees in forest area and start cultivating it and making their huts on it. It has been observed that this collective encroachment is usually done with the direct or indirect connivance or even encroachment of some political party.

In addition to the causes mentioned above, the other factors responsible for this encroachment upon forest land are;

- (a) The lack of proper boundary inspection and thus delay in detection of cases of encroachment.
- (b) Absence of alternative employment for landless or the people with very land.
- (c) Absence of clear policy of Govt. and other legal difficulties.

In these forests most of the encroachments are post 1947 AD. These encroachments have taken place under the garb of 'grow more food program'. Legally these areas are still forest land but the occupation has been legitimized due to supply of electric power, water supply, etc to these settlements. The Government of J & K has already decided that anybody who has the 'Girdawari' of 1971 AD for any land shall be treated as legitimate owner. Now the forest land encroachers have started getting certificates from Girdawars and Patwaris to the effect that land in question was occupied before 1971, even if the land (forest land) has been occupied recently. Thus forest department suffers in the hands of revenue department.

In 1982 AD Government has given wide ranging powers to Divisional Forest Officers, to evict the encroachers from the forest land but because of the connivance of local revenue, police and forest personal it becomes a difficult task to detect the encroachment and evict the encroachers. The eviction becomes more difficult in case the encroacher is a powerful political person. The other legal difficulty is that even after the detection of encroachment and prosecution of offender in the court of law, he continues to cultivate the land and from its earnings, keeps on pursuing the case in the court. Thus he does not lose anything even if he pursues the case for several years.

Following table shows the present position of encroachment in the division.

S.No.	Range	Area Encroached			
		In Kanals In hacs.			
1	Doodhganga	6318	315.90		
2	Raithan	4534	226.70		
3	Sukhnag	1884	94.20		
Total		12736 636.8			

 Table 99 : Statement showing recorded area encroachment in PP Forest Division

As per the stock maps of the area prepared by the field staff of this Working Plan Division the present position of encroachment is as under;

 Table 100 : Statement showing area encroachment in PP Forest Division as per stock maps

S.No.	Range	Area Encroached		
		In Kanals	In hacs.	
1	Doodhganga	9103	455.15	
2	Raithan	7343	367.15	
3	Sukhnag	6525	326.25	
Total		22971 1148.55		

From the above two statements it is clear that encroached area shown in the records of forest department is only 55.44% of the area actually

encroached in the field. This is further supplemented by the fact that compartment D-33d and D-34b of Raithan Range have been completely encroached upon. During the field work of this working plan the field staff of this division could not trace out the compartment D-33d both on map and in the field. And also some compartments like N-1a, D-20c, D-33c and S-18 have been encroached immensely over the period of last 20 years. In order to minimize the incidence of encroachment the sub-ordinate staff should inspect the boundary regularly. In case any encroachment is detected, it should be immediately reported to higher authorities so that prompt action is taken against the offender. The statement of encroachment is given in the following table.

Range	Total Forest	Block	Area	Area evicted	Area under
	Area		encroached	during	encroachment
	(in Hac)		(unit in	current year	(unit in Hacs)
			Hacs)	(unit in Hacs)	
Doodganga	16037.00	i. Yusmarg	2.50	0.00	2.50
		ii. Surusyar	9.05	0.00	9.05
		iii. Branwar	6.10	0.00	6.10
		iv. Charishrief	36.20	1.00	35.20
		v. Nilnag	79.60	0.00	79.60
		vi. Kanidajan	183.45	0.00	183.45
Sub. Total	16037.00		316.90	1.00	315.90
Raithan	14511.40	Gurwait	67.60	0.00	67.60
		Riyar	148.42	5.02	143.40
		Kachwari	15.70	0.00	15.70
Sub. Total	14511.40		231.72	5.02	226.70
Sukhnag	17527.25	Drang	63.85	0.00	63.85
		Sutharan	13.10	1.00	12.10
		Zagoo	18.25	0.00	18.25
Sub. Total	17527.25		95.20	1.00	94.20
G. Total			643.82	7.02	636.80

Tab 101: Statement showing range-wise area encroached in PP Forest Division

Range wise abstract of encroachment(in Hacs)

Doodganga	315.90
Raithan	226.70
Sukhnag	94.20
G.Total	636.80

10.11.3 A new B.P. design has been proposed with a view to increase the effectiveness of forest demarcation in the field to prevent encroachments. The specification of B.P. design are presented below:-

Component	Specification
Height (above ground)	36 inches
Width	18 inches
Thickness	6 inches
Underground Base	36 inches
Structure	Cast on spot in 12öX24öX42ö pit on steel frame
Surface	Plastered, green/red painted carved BP number and
	direction, name of forest written in white Paint.
Cost	Rs.2250 + carriage of material, cost escalation etc



#### Fig 17: BOUNDARY PILLAR DESIGN

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### CHAPTER-XI

## MISCELLANEOUS REGULATIONS

#### 11.1 WELFARE OF FOREST DWELLERS

Gujjars & Bakarwals are traditional residents of forests practicing distinct socio-cultural traditions. They form integral part of forest ecosystem. With passage of time, changes have taken place in their cultural and social life and most of the tribals who lived in remote and inaccessible forests have now become part of urban and rural population. There are various fields for improvement in a tribal area with the involvement of developmental departments. They are not entirely at the command of Forest Department. The measures suggested here are those which are within the scope of the Forest Department and hence the improvement will be partial.

#### 11.2.1 WELFARE MEASURES

- Right of collection of specified NWFPs shall be given to Schedule Tribes' societies on annual lease rent as per the terms and conditions fixed by department from time to time.
- Community welfare measures like providing drinking water, training to tribal youth and community hall and approach roads may be considered on priority basis.
- 3. Participation of tribals in JFM activities near their settlements shall be encouraged. Preference should be given to tribals in all forestry operations.
- 4. Adequate communication and medical facilities should be provided in each settlement.

- 5. Recreational facilities should be provided.
- 6. Education of children of Gujjar & Bakarwal population should be ensured through mobile schools.
- 7. Tribal cooperative societies should be formed in all settlements.
- 8. Cottage industries should be promoted and encouraged based on raw materials where MFP can be utilized.

#### 11.2 RESEARCH

Technological innovation and development are strategically the most important dimensions of Forestry in the new millennium and can be achieved only by continuous and purposeful research. Forestry critically needs research support to improve productivity, maximize utilization and augment quality and value of forest products. Research input is essential for conservation of genetic resources and transfer of technology to the users. The National Forest Policy (1988) has laid stress on research in Forestry, necessitating adequate strengthening of research base, as well as priorities for action. The impact of research depends on the extent to which its results help to solve problems. This, in turn, depends on the goal orientation and focus of research activities and the thoroughness with which it is pursued. Studies and investigations would help researchers to narrow down and /or solve the factors causing the problem. Identification of resources and development of appropriate technological knowhow and their efficient applications are often hampered by institutional impediments. Much of it, however, remains unexplained, unrecognized, underutilized and inadequately shared. Optimizing technology to the great variety and combination of situations is the real challenge of our times. Relevance of research in this regard can never be overemphasized.

The areas that have eluded research attention, and yet not late, to take up in view of their emerging significance, unending topicality and regional relevance are identified as follows.

- 1. Impact of fellings on the hydrology and watershed regime of Romshi, Dudhganga and Sukhnag nallas.
- 2. Technology package for revival of degraded forests in Pirpanjal Forest Division.
- 3. Impact of fire on different ecosystems and monitoring the recovery process in Pirpanjal Forest Division.
- 4. Natural Regeneration of Silver Fir.
- 5. Resource survey and population biology of different species of commercially important medicinal plants of Pirpanjal Forest Division.

A survey on the impact of VFC's and Tahafuz Committees in the protection of forests and awareness creation among forest dwellers may be a topic of fertile sociological survey and research. Also, developing a local volume table and exploratory floristic survey of the region can be challenging research assignments. Institutional support of SKUAST, Kashmir University, etc can be solicited if required.

#### 11.3 HUMAN RESOURCE DEVELOPMENT

Efficient manpower is the most valuable asset of any organization and development of skill, caliber and potential of any employee through appropriate training is the most rewarding investment in human resources. There can be no substitute for efficient personnel in any sector of administration, be that field or office as it applies to Forest department. The scope and urgency to impart qualitative training to staff at all levels of forest administration on account of sheer size, multiplicity of activities and complexity of tasks undertaken with changing times and demands, need not be over emphasized. Until recently training used to be a one-time career event. In service trainings will help to refresh minds, update knowledge and skills and enable staff to share the experiences of others in similar fields. Such training programmes would enable the participants to reflect on their own achievements and failures in a relaxed atmosphere and know how others are making progress. Seminars and conferences should be held for personnel at all levels to give overview of stock of present situation and opportunities in future as forestry evolves which shall go a long way in long term management process. In-house training may be arranged in diverse Forestry related programmes like application of computers in forests, natural resources conservation, participatory forest management, ecotourism, biodiversity, modern trends in environmental safeguarding, tribal welfare, wild life, legal training, watershed management, GIS etc. Study tours may be arranged both within the state and outside to give a wider vision of changing trends in forestry. As has been rightly put by human resource management experts, there is no end to training and areas of training, more so to managers of complex and priceless resource our forests are.

#### 11.4 District Environment, Education and Awareness Society-BUDGAM (DEEAS)

The District Environment Education and Conservation Society, Budgam was established in 1994-95 by then Deputy Commissioner Budgam, Shri Sundeep K. Nayak. The said society was registered under Societies Registration Act, 1980 with 10 official and 14 non-official members, with an objective of spreading environment education and awareness in the district Budgam.

The Management Body consists of following members as per order No. DDCB/ut/94-95/6410-18 dated 21.02.1995

S.No.	Designation of the Official	Remarks
1	Distt. Development commissioner, Budgam	Chairman
2	Divisional Forest Officer, Pir Panjal Forest	Member Secretary

	Division	
3	Chief Education Officer, Budgam	Member
4	DFO Social Forestry, Budgam	Member
5	District Treasury Officer, Budgam	Member
6	District Information Officer	Member

**Objective:-** The objective of the society is to create awareness among the youth and common masses about the importance of Forest and environment conservation. Besides, the society plays very active role in development and preservation of forests by encouraging local people to participate in Joint Forest Management activities.

Facilities:- The societies has following facilities

- 1. Sheikhul-ul-alam Environment Awareness Centre.
- 2. Lecture-cum Seminar facility.
- 3. Library on environment topics.

#### Source of Funds:-

1. The society charges Rs. 2000 to intending agency against the use of EAC per day.

2. Voluntary contribution by environment loving people.

Amount accrued	Voluntary	Total	Remarks		
from EAC Charges	Contribution				
	Fund as on date				
	08/02/2014				
	92,000		J K bank Acc.		
			No. 300/G3		
Note: For maintenance of Environment Awareness Centre, the					
expenditure is meted out from EAC charges.					

#### 11.5 CONTEMPORARY FORESTRY AND ENVIRONMENTAL ISSUES: REDD+

11.5.1 Deforestation and forest degradation account for nearly 20 per cent of global GHG emissions – more than the entire global transportation sector, and second only to the energy sector (UN-REDD, 2010). Forest degradation includes degradation from logging, fuelwood harvest and fire. It represents at least 20 per cent of forest carbon emissions, and acts as a catalyst for further emissions from deforestation. In its 13<sup>th</sup> Conference of Parties (COP) at Bali, United National Framework Convention on Climate Change (UNFCCC) has put forward a concept of Reducing Emissions from Deforestation and Forest Degradation (REDD). REDD is a global endeavour to create an incentive for developing countries to protect, better manage and save their forest resources, thus contributing to the global fight against

climate change. In the 15<sup>th</sup> Conference of Parties, countries including India agreed to REDD mechanism. India advocates a comprehensive approach to REDD which has been termed as REDD Plus and it goes beyond deforestation and forest degradation and envelops the role of conservation, sustainable management of forests and enhancement of forest carbon stocks in developing countries. India's national strategy aims at enhancing and improving the forest & tree cover of the country thereby enhancing the quantum of forest ecosystem services that flow to the local communities.

- 11.5.2 REDD+ is best understood as an initiative to reduce greenhouse gas (GHG) emissions associated with forest clearing, which allows "avoided deforestation" to be included in market-based carbon trading mechanisms. It is effectively a payment in exchange for actively preserving existing forests (Carbon Positive, 2010). There are a number of mechanisms associated with REDD+. The UNFCCC, which is responsible for the intergovernmental negotiations regarding the content and format of REDD+; UNREDD – which is supported by the United Nations Development Programme (UNDP), the Food and Agriculture Organization of the United Nations (FAO) and the United Nations Environment Programme (UNEP) and manages the technical and financial components of the initiative at the international and national level; and The Forest Carbon Partnership Facility (FCPF), which - via the World Bank - provides funding aimed at maintaining standing forests by encouraging biodiversity conservation and sustainable use through a range of country-level projects. National governments and non-governmental organizations (NGOs), including The Nature Conservancy, provide funds for the initiative (UN-REDD, 2010). The Forest Investment Program (FIP) is part of the World Bank's Strategic Climate Fund (SCF). FIP provides funds to specific sectors and projects to pilot new activities and build capacity in existing activities aimed a tackling climate change. It supports developing countries in their efforts to prepare for REDD+-related implementation in advance of the final outcomes of the UNFCCC negotiations. Funding of more than USD 500 million has been offered by the developed country donors including Australia, Denmark, Japan, Norway, the United Kingdom (UK) and the US (Climate Funds Update, 2010).
- 11.5.3 In the context of J&K, Reduction of Emission from Deforestation and Forest Degradation could be an effective mechanism for rehabilitation of degraded lands, ensure greater ecosystem services, mitigation of climate change visà-vis providing sustainable livelihood opportunities to the local communities. The on-going REDD+ project activity in the Pirpanjal Forest Division goes beyond the control of deforestation and forest degradation, and includes the role of conservation, sustainable management of forests, and enhancement of forest carbon stocks and upgrading of livelihoods. The low income families and the poor people inhabited surrounding the forest areas are the target groups for the project benefits. The project, in order to raise the standard of livelihood is also working on other Rural Income Generating Activities (RIGA) like; encouraging sustainable agriculture

practices, by capacity building and forming self-help groups, by introducing improved NTFPs propagation, cultivation, harvesting and management techniques and promoting hydrology & ecotourism in the selected project areas of the Pirpanjal Forest Division. This is the first project of its kind in the state of Jammu &Kashmir, India.

#### **11.5.4** Silent feature of the ongoing Pirpanjal REDD+ project are as under:

- To design a prototype forest conservation program for the forests supervised under the Joint Forest Management in this forest division.
- To conserve the native forest area by using effective natural resource management system at community level.
- To restore the degraded forest of the Pirpanjal Forest Division.
- To increase income of rural communities from forest resource management including sustainable NTFPs collection, marketing and carbon credits benefits mechanisms etc.
- To provide policy inputs to engage communities in international carbon offset markets linked land management through the provision of ecosystem services.
- To provide alternative source of income generation to the local people.
- To establish carbon baseline in order and determine the carbon storage capacity of the forest in order to harvest benefit from the REDD+ carbon credits advantages.
- To reduce the pressure on the natural forest resources of the area and improve local livelihood through the sustainable forest management.
- To determine the policy and institutional framework for engaging the communities in the better land use and forest management.

#### 11.6 CAMPA

#### 11.6.1 INTRODUCTION

Under the provisions of Jammu and Kashmir Forest (Conservation) Act 1997, (FCA, 1997) and in compliance of relevant orders of Hon'ble Supreme Court whenever any forest land is diverted for non forest use, compensations in terms of the Net Present Value (NPV), Compensatory Afforestation (CA), wildlife development and other activities are paid by the user agencies. All these monies are being collected as CAMPA fund. In order to manage these funds, the Govt. of Jammu and Kashmir has constituted State, Compensatory Afforestation Fund Management and Planning Authority (CAMPA) under SRO 354.

To make good the loss of natural resources and environmental services incurred due to removal of trees and other vegetation on account of diversion of forest land under FCA, the amount received on account of NPV, CA and other charges is to be ploughed back through compensatory afforestation, regeneration, wildlife development and other allied activities.

#### 11.6.2 AIMS AND OBJECTIVES OF CAMPA

CAMPA shall seek to promote:

a) Conservation, protection, regeneration and management of existing natural forests;

b) Conservation, protection and management of wildlife and its habitat within and outside protected area including the consolidation of the protected areas;

c) Compensatory afforestation;

d) Environmental services, which include:-

*i*.**Provision of goods** such as wood, non-timber forest products, fuel, fodder and water, and provision of services such as grazing, tourism, wildlife protection and life support.

*ii.***Regulating services** such as climate regulation, disease control, flood moderation, detoxification, carbon sequestration and health of soils, air and water regimes;

*iii*.*Non-material benefits* obtained from ecosystems, spiritual, recreational, aesthetic, inspirational, educational and symbolic; and

*iv.Supporting such other services necessary for the production of ecosystem services, biodiversity, nutrient cycling and primary production.* 

e) Research, training and capacity building.

Apart from this the other objectives will include:-

1) Protection and conservation of natural resources through active participation/involvement of people

2) Checking land degradation, depreciation and loss of bio-diversity

3) Ecological restoration, environmental conservation and eco-development

4) Improve quality of life and self sustenance aspect of people in and around forest areas

5) Prevention of land degradation by adoption of appropriate soil and water conservation measures

6) To strengthen the natural resource base of rural livelihood and create assets in rural areas

#### 11.6.3 STRATEGIES

The strategies inter-alia comprise:-

a) The highly degraded/degraded areas shall form the priority areas for taking up afforestation and allied works.

b) The areas prone to intense biotic pressure shall get preference.

c) The areas nearer the habitations and prone to encroachment shall also be given priority.

d) As far as possible, larger areas shall be taken up for treatment for a five year period of continuous working to ensure judicious use of resources and manpower.

e) Consolidation of treatment through effective project approach with proper choice of treatment measures will be ensured.

f) Emphasis will be laid on sustainability of treatment measures.

g) Focus will be to enhance development of wood, non-timber forest produce (NTFP), fodder, water, grazing, tourism, wildlife protection and life support measures.

h) Services such as climate regulation, disease control, flood moderation, carbon sequestration shall be promoted along with health of soil, air and water.

i) Due emphasis shall be laid on research, training and capacity building.

j) All buildings constructed under CAMPA shall have the provision of rainwater harvesting and incorporation of other green building technologies.

#### 11.6.4 PROJECT ACTIVITIES & COMPONENT-WISE ALLOCATION OF FUNDS

Component-wise allocation of funds is proposed as under:-

a) Plantation, soil and water conservation ..... 70% of total outlay

b) Other works, viz, forest protection, fire protection and management, communication and mobility etc.... 5%

c) Capacity-building, training, workshops, demonstrations for staff and public, cost of training material etc.... 2%

d) Infrastructure development .... 14%

e) Survey/demarcation/provision of energy saving devices etc. .... 2%

f) Monitoring and evaluation ..... 2%

g) Overhead and maintenance..... 5%

= Total 100%

#### 11.6.5 PROJECT COMPONENTS

The project components shall comprise:-

- 1. Aided Natural Regeneration
- 2. Planting with BL Species
- 3. Planting of Conifers
- 4. Sowing Dibbling Model
- 5. Silvi-pasture Development

6. Enhancement of Productivity of fringe forests (Firewood, fodder and small wood plantations)

7. Incorporating medicinal plants and other NTFP in plantation closures

8. Providing forest fringe populations with energy saving devices like solar appliances, gobar gas plants, CNG/LPG and smokeless chullas etc.

9. Awareness activities.

#### 11.6.6 COST NORMS

As prevalent in the Forest Department for various components of work as per FO No: 91 of 2005 date: 26-9-2005 *(Enclosed as Annexure)* with due provision for incorporating enhancement in the cost corresponding to increase in the labour and material costs.

#### 11.6.7 PREPARATION & SUBMISSION OF ANNUAL PLAN OF OPERATIONS

A detailed survey shall be conducted with the following objectives:-

a) To collect physical data for identifying the treatment measures

b) To identify biological resource endowment and utilities with a view to determining specific thrust areas.

c) To identify critical factors contributing to degradation of natural resources in project areas.

d) To establish benchmark for evaluation of the impact of the project with respect to selected parameters. Parameters of benchmark/key performance indicators are required to be spelt out in advance along with the mode of baseline data collection for periodical assessments.

e) To identify linkages and also infrastructural institutions to promote socioeconomic development of the area.

f) The survey must collect data on rainfall, its distribution, intensity and runoff behavior. It is, therefore, suggested that instead of venturing into individual site specific meteorological data, the data of the nearest established met station shall be utilized.

g) An inventory of physical resource should be made to identify the grass, shrub and tree species growing in the area, and of use to the local people. This inventory will also identify fodder trees and grass species which can be introduced in the area especially in forest fringe belts.

h) An inventory of successful economic activities and corresponding availability of species shall also be made

i) To have uniformity, the APOs shall be prepared in accordance with

#### 11.6.8 NURSERIES

To cater to the planting needs of afforestation under CAPMA, nurseries shall be formed in each Division with strategic location as permanent nurseries. Some of the existing underutilized nurseries can identified for the purpose. Planting stock in the nurseries shall be raised as per the planting targets of the Division for succeeding year under CAMPA with margin for beating up of casualties (BUC). As far as possible, the improved technologies such as tissue culture, clonal seedlings and root-trainers shall be encouraged. Each Division shall have at least one Model Central Nursery with improved technologies.

A separate portion in each nursery shall be delineated for raising of conifers, i.e., Deodar, Kail, Fir, Taxus and Chir species. The type and composition of the species to be raised in this nursery shall correspond to the components of afforestation included in APOs of the forthcoming year. The seed source for nursery should be genuine and certified.

#### 11.6.9 TREATMENT OF FOREST LANDS

For planting operations in hilly terrain, planting in staggard contour trenches shall be followed. Apart from this, seed shall be sown on the trench berms. In case of flat areas, pit planting with water harvesting structures shall be undertaken. The soil binder plant species along with grass species shall be preferred in eroded/land-slide areas. Soil conservation works shall be executed wherever necessary and as dictated by the ground conditions. For soil conservation works, as far as possible, the local material will be used.

Wherever there is significant threat of encroachment and biotic interference, chainlink fencing shall be used and for remaining areas, 4-strand barbed wire fence shall be preferred which shall be supplemented by brush wood to enhance its efficacy.

The achievement under CAMPA scheme since its inception in PP Forest Division is tabulated in appendix no.

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#### **CHAPTER-XII**

### **ESTABLISHEMENT AND LABOUR**

#### 12.1 ESTABLISHEMENT

The details of the sanctioned staff and the actual staff working at present in Pirpanjal Forest Division has been discussed in chapter IV. There is no much increase in the posts of staff compared to previous plan. There is a shortage of staff at each level. The present strength of the establishment is inadequate to cope up with the ever increasing workload. The work-force therefore needs to be supplemented in order to effectively manage the increased quantum of work. The table below presents the actual need to strengthen the establishment of this forest division.

S.No.	Section	Post	Rank	Requirement
1	Head of Division	Divisional Forest	IFS	1
		Officer		
2	Personal Section	Stenographer	Stenographer	1
	of DFO	Computer operator	Computer operator	1
		Orderly	Class-IV	3
		Driver	Driver	2
3	DFOøs Camp	Tour clerk	Junior Assistant	1
	Office	Orderly	Class-IV	1
		Dak runner	Class-IV	1
4	Assistant to	Assistant	SFS	1

# Table 102: Proposed establishment of the PP Forest Division.A. DIVISION OFFICE

	Head of Division	Conservator of		
		Forests		
5	ACFøs Section	Stenographer-cum-	Stenographer	1
		Computer operator		
		Orderly	Orderly	2
		Driver	Driver	1
6	Establishment	Head clerk	Senior Assistant	1
		Est. Clerk	Junior Assistant	1
		Computer Operator	Class III	1
		Orderly	Class IV	1
7	Lease	Lease Clerk	Junior Assistant	1
		Computer operator	Class III	1
8	Accounts	Division Accountant	Accountant	1
		Accounts clerk (I)	Junior Assistant	1
		Accounts clerk (II)	Forest Guard	1
		Computer operator	Class III	1
		Orderly	Class IV	1
9	Legal	Legal officer	Range officer	1
		Prosecuting officer	Forester	1
		Court clerk	Junior assistant	1
		Court assistant	Forest Guard	1
10	Receipt Dispatch	Receipt clerk	Junior assistant	1
		Dispatch clerk	Junior assistant	1
		R/D Assistant	Helper	1
		Dak Runner	Class IV	2
11	Estate	Technical officer	Pathwari	1
		FCA clerk	Junior assistant	1
		Estates assistant	Helper	1
12	Store	Store keeper	Forest Guard	1
		Photostat operator	Helper	1
		Generator operator	Helper	1
13	General	Orderly	Class IV	2
		Driver	Driver/Cleaner	1
		Mali	Mali	1
		Chowkidar	Chowkidar	3
		Farash	Farash	1
		Sweeper	Sweeper	2
		TOTAL		52

# B) RANGE OFFICE(S)

No. of	Range		Supporting staff for office					
Ranges	Officers	Range	Computer	Helper	Orderly	Dak	Chowkidar	Driver
	Required	clerk	Operator			runner		
5	5	5	5	5	5	5	10	5
Note: Ra Total= 4	Note: Range clerk should be Junior Assistant Total= 45							

# C) BLOCK OFFICERS

Description	No. of	No. of Block	Helper	Remarks
of Blocks	territorial	Officers		
	Blocks	required		
Territorial	17	17	17	
Blocks				
Soil Blocks	3	3	3	Doodganga Block,
				Shaliganga Block &
				Sukhnag Block

# D) DEPOT OFFICERS

No. of	No. of	Helper	Watcher	Total	Remarks
depots	Depot				
	Officers				
	Required				
74	74	74	74	222	

# E) FELLING INCHARGE

No. o	No. of Fell	ing Forest	Total	Remarks	
felling series	incharge Office	rs Guard			
	Required				
6	6	6	12	Dudhganga	F.S,
				Raithan F.S,	&
				Sukhnag F.S	

# F) CHECKPOSTS

No.	of	No.	of	Dy.	Forest	Helper	Total	Remarks
check		Fores	ters		Guard			
posts		Requ	ired					
21		21			21	42	84	3 officials and
								One Forester at
								each check post

# F) CITY FOREST BLOCK

No. of City Forest Blocks	No. of B.Oøs required	Forest Guard	Helper	Total	Remarks
1	1	1	1	3	Ompora city forest Karipora forest

# G) OBSERVATION POST

	No. of B.O.øs	Forest	Helper	Chowkidar	Total	Remarks
	required	Guard				
3	1	2	3	2	8	Includes DFOøs
						Office, DFOøs
						residence &
						Sheikul-Alam
						Environment
						Awareness centre

# H) CONTROL ROOM

No. of Units	No. of B.Oøs required	Forest Guard	Watcher	Driver	Total	Remarks
4	4	32	16	2	54	4 units each range wise viz Dudhganga unit, Raithan unit Sukhnag unit & Budgam Unit

# I) FOREST BEATS

No. of	Beat Guards	Forest	Watcher	Total	Remarks
Territorial	Required	Guard			
Beats					
36	36	36	72	144	One Forest Guard and
					Two Watchers to
					assist each Beat guard

# J) PLANTATION UNITS

No.	of	Malies	Total	Remarks
-----	----	--------	-------	---------

Plantation			
units			
10	10	10	One each watcher to plantation unit of 15
			hectares for minimum 13 years

### J) NURSERIES

No. of	Dy.	Malies	Total	Remarks
Nurseries Foresters				
5	5	10	15	Two each Malies to a Nursery of
				15 hectares for minimum 13 years

The table below shows the sanctioned, actual and proposed structure of executive and ministerial establishment of Pirpanjal Forest Divison.

Table103: Statement showing sanctioned, actual and proposed structure of establishment of PP Forest Division.

(A) Ex	A) Executive Staff								
S. No	Designation	Sanctioned post	Actual working	Proposed					
1	DCF	1	1	1					
2	ACF	1	1	1					
3	Range Officers-I	5	2	5					
4	Range Officer-II	2	4	1					
5	Foresters	92	10	107					
6	Dy. Foresters	23	19	26					
7	Forest guards	170	69	137					
8	Watchers	5	14	162					
9	Chowkidars	8	15	15					
10	Malies	15	18	21					
11	Farash	0	0	3					
12	Pathwari	-	-	1					

B) Ministerial staff							
S.	Designation	Sanctioned	Actual	Recommended			
No		post	working				
1	Accountant	1	1	1			
2	Head/Senior Assistant	1	1	1			

3	Junior Assistant	8	5	13
4	Stenographer	-	-	2
5	Computer Operator	-	-	9
6	Driver	2	1	11
7	Orderlies	5	7	23
8	Helper	0	34	149

(*Note:* In case, the helper post is winded up, the same post be compensated with Watchers/Chowkidars or Malies)

#### 12.2 LABOUR

Generally, the local labour is adequately available for forest working in the division. The local labour has become well versed in all types of forestry operations by the experience gained in due course of time. There is a serious shortage of labour during sowing and harvesting season because agriculture is the prime occupation of the locals. Moreover, with increasing developmental activities in the tract, the villagers are getting lured and tempted by handsome wages they get for the works of the comparatively easier nature form other departments. Besides, above the local people prefer the Govt. job. They are happy even if they are engaged as casual labourer or on muster roll basis in any Govt. departments. MGNAREGA scheme, which assures minimum 100 days wages for unemployed rural people has also drained available labour force from forestry works. In view of the above facts, the labour problem is likely to aggravate in future and only solution to the problem is the mechanization of forestry operations. The civil works are executed through contract system as well as by convenor system (Labour mate system). The contractors bring the labourers in the contract system; the local skilled, semiskilled and unskilled persons are largely engaged in the execution of departmental works. Most of the forestry works are executed through convenors (mates) under the supervision of forest officials and the payments are made to convenors that are selected from among the workers. The forestry works are of different nature. Only selected labour force can be utilized. The works are of broadly six types:-

- 1. Timber extraction works
- 2. Firewood conversion works

- 3. Nursery works
- 4. Plantation works
- 5. Fencing Works
- 6. Civil/infrastructure works

In order to prevent labour shortage in future, it is proposed that the above forestry operations be transformed into lucrative and profitable enterprises. The best way to transform this activity is to create a cooperative society of available work force of people living in forest fringes by evolving a mechanism of benefit sharing for them. The cooperative mode will keep people engaged in forestry works as flow of higher and decent returns will be assured to them which will not only generate goodwill but enhance the standard of living for forest dwellers. The civil works are proposed to be conducted through registered contractors having rich experience and sound knowhow of forestry projects.

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#### CHAPTER-XIII

### FINANCIAL FORECAST AND COST OF THE PLAN

#### 13.1 FUTURE YIELD & REVENUE

The major source of revenue is Timber. Apart from timber, firewood is also extracted and sold to religious institutions during winter. The Government has recently lifted ban on harvesting and marketing of Minor Forest Produce. A good amount of revenue is also expected to come from auctioning of such MFP's. Other sources of revenue are renewal of private timber sale depots, renewal of saw mills, compounding of forest offences etc. But except for timber, revenue from other sources is meager only.

#### **13.2 FUTURE REVENUE**

The expected timber yield from regulated working circles is presented below in the table

	v	0	0	
Working Circle	Kail	Fir	Total	Remarks
	(m <sup>3</sup> )	(m <sup>3</sup> )	(m <sup>3</sup> )	
Fir Selection Working Circle	1000	10600	11600	As calculated from Modified Brandis Method
Rehabilitation working Circle	150	2500	2650	Dry/fallen markings only (Based on

 Table 104: Expected timber yield from Regulated working circles
				average of last three years markings)
Alpine Working Circle	0	2000	2000	Fallen markings only (Based on an average of last three year markings)
Total	1150	15100	16250	

On the basis of the average rate chargeable from the State Forest Corporation for the above listed species, the total annual revenue from timber harvests is worked out as under:

#### Table 105: Expected Annual Net Revenue from Timber

Species	Volume (m <sup>3</sup> )	Rate (Rs/m <sup>3</sup> )	Amount	E: al	xtraction lied Charges	Deduct Extraction cost
Kail	1150	29378	33784,700	35	500	40,25,000,
Fir	15100	20056	302845600	35	500	52850,000
Total	16250	49434	33663030	70	000	52850000
Net profit		Net Rev	enue			
(Rs/m <sup>3</sup> )		(Rs.)	)			
25878		297597	700			
16556	249,995,600					
		279,755	,300			

#### Table 106: Expected Annual Net Revenue from Firewood

Firewood	Cost	Sale	Net Profit	Revenue
(qtl)	(Rs./qlt)	(Rs./qlt)	(Rs./qlt)	(Rs./qlt)
2000	155	190	35	210000

#### Table 107: Expected Annual Net Revenue from NTFP

NTFP	Average annual revenue (Rs.)
Medicinal plants,	1000000
Gucchies, Walnut etc	

#### Table 108: Expected Annual Net Revenue from Miscellaneous sources

Miscellaneous sources	Average annual revenue (Rs.)
Fees (Timber application	100000
fee, Renewal of Sale	
depot fee) Penalties, sale	
of plants, Compounding	
amount, etc	

The total revenue from timber, firewood, NTFPs and from other miscellaneous sources is Rs. 28.14 crores. The revenue is calculated on the

conservative side only by taking the lowest sale rate for "B" and "C" class timber.

# **13.3 FUTURE EXPENDITURE**

**13.3.1 Expenditure on account of developmental activities:** The working circle wise area proposed to be taken up annually for reforestation and rehabilitation is as under.

Table 109: Exp	ected exp	penditure	on developm	ental activitie	es = Lab. rate @1	Rs150
Plantation etc	ANR	AR	AR	Silvipasture	Medicinal plants	Total
	(ha)	Conifer	Broadleaved	SP	@2000plants/ha	
		(ha)	(ha)	(ha)	(ha)	
Target	100	100	100	50	50	400
Area/year						
Rate/norms	10173	22026	23291	16617	36039	
(Rs)						
Total cost (Rs	10.2	22.0	23.3	8.3	18.0	81.8
in lakhs)						

**13.3.2 Expenditure on account of infrastructure works** like construction/repairs of roads, bridges, paths, rest houses, Block Officers hut, Guard huts, Checkposts etc

Infrastructure	No.	Avg. Cost	Total	Remarks
		(Rs in lac.)	(Rs. in	
			lac.)	
Rest	2	30	60	Yousmarg, Sutharan
houses/Inspection				
Huts proposed				
BOøs hut	10	12	120	All territorial blocks should
				be provided accommodation
Guard Hut	15	8	120	
Check-post	7	7	49	
Roads, paths etc	34		349	

Table 110: Expected expenditure on infrastructure works

**13.3.3 Expenditure on account of Establishment:** This expenditure mainly includes salaries on establishment and other allied activities.

 Table 111: Expected expenditure on establishment

Item	Amount (Rs.)
Salary	16,85,00,000.00
Т. Е	1,00,000.00
O. E	1,00,000.00

Motor Vehicles	2,00,000.00
Miscellaneous	2,50,000.00
Total	17,23,50,000.00

The total expenditure under non-plan, therefore is projected at Rs. 17.23 crores, which approximately 94% of projected revenue.

The above said estimate is only projections. The expenditure on account of salary is bound to increase on the higher side due to DA, increment to be added every year, promotions to the next scale and expected 7<sup>th</sup> pay commission report and its impact etc. However, from the current estimate, it is clear that Pirpanjal Division could able to provide huge revenue compared to the present state in which the Division is annually providing revenue of Rs. 3 crores from the sale of timber extracted from fallen stocks and firewood and miscellaneous sources etc.

### 13.4 COST OF THE PLAN

The expenditure incurred on the revision of the working plan for Pirpanjal Forest Division is as under:-

Unit of Appropriation	Amount (Rs.)
Plan	
13 <sup>th</sup> Finance commission Award	18.15
Total	18.15

The expenditure shown above is inclusive of the amount spent on the purchase of various equipment required to carry out the working plan exercise viz., GPS, Crown Densiometer, Laser Range Finder, Calipers, computer and computer peripherals, paint stationary and stock items of field work.

The total area covered under this plan is 480.10 Sq. Kms or 48010.65 hectares. The expenditure incurred under the plan head for the revision of the Working Plan is Rs. 37.80 per hectare. This is inclusive of the assets that have been created in the Working Plan Division.

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# CHAPTER-XIV CONTROL AND RECORDS

#### 14.1 CONTROL FORMS

As the standard procedure, the following control forms are prescribed to be maintained.

### 14.1.1 Control Form A

It shall be maintained on the standard format in use, for recording the major markings (felling) and other subsidiary markings (felling) carried out in Fir Selection Working Circle. As usual, a deviation statement indicating species wise plus minus account of the actual removal (felling) viz-a-viz the prescribed yield, will be compiled at the close of every year and the same brought forward in the subsequent year and summed up (plus or minus) with the prescribed yield for that year. Control shall be exercised on the volume extracted with an Area Check.

#### 14.1.2 Control Form B

This control form shall be maintained in the standard format in use for recording the yield realized from Fir Selection Working Circle. It shall be maintained in the same way as Control Form – A, except that the excess removals, if any, during a year are to be adjusted in the subsequent year but the deficit shall lapse to the forest.

### 14.1.3 Control Form C

It will be maintained to record and monitor the progress of the regeneration works in the areas taken up for artificial regeneration. Such areas are to be written-off from this form only after they carry adequate and established regeneration.

### 14.1.4 Control Form D

This Control Form shall indicate the proposals of the territorial DFO for marking of coupes during the next three years. It is required to be submitted well in time, to the Conservator of Forests, Working Plan and Research Circle, through the concerned territorial Conservator of Forests, who will convey his approval after due scrutiny of the proposals in consultation with the Chief Conservator of Forests. The arrears in respects of Control Forms need to be completed at once and their future maintenance ensured and made purposeful.

# 14.2 COMPARTMENT HISTORIES

These are, in fact, the most important records of happenings in a forest. They must be objectively maintained and updated, both at Range as well as Division level. Entries regarding marking, extraction, plantation and development works, fire, encroachments, land transfer and any other significant event that happens in a compartment, must be made in the compartment history file at the earliest possible dispatch. In addition, the touring officers should note their observations and instructions on the compartment history files, for the purpose of control and record. It is better to write "no work done" than to leave the space blank against a particular that year. The territorial DFO is required to send the copy of compartment histories to the Conservator of Forests, Working Plan and Research Circle Srinagar, every year for incorporation there in his records.

## 14.3 DIVISIONAL JOURNAL

The maintenance of this Journal has been totally neglected in the past. It is prescribed that in future this journal shall be maintained and updated regularly because it is of immense importance to the new DFO. Who has yet to study the problems of the division. This journal should contain the information on statistics of outturn, age/vol. relationship by ring counting, frequency of seed years, sample plots, plus trees, forest fires, insect and fungal diseases, record of sale rates of timber and other minor forest produce, besides information regarding roads, bridges, buildings etc. This journal should necessarily contain the detailed information regarding regeneration operations carried out, their success/failures, reasons for the success/failure and suggestions for future working.

# 14.3 PLANTATION JOURNALS

A separate plantation journal is to be maintained for each plantation. It will include the map of the area, area fenced, type of fencing used, length of fencing in running meters, no. of fence posts, area planted each year, no. of seedlings(species-wise) planted, no. of patches(species-wise) sown, quantity of seed(species-wise) sown, and other rehabilitation works under taken besides expenditure incurred year wise. The survival percentage of the plantation should also be recorded in the said journal with the detailed reasons of failure, if any. The plantation journal will be maintained by the concerned range officer. Any officer visiting/ checking the plantation should record his observations in the plantation journal.

# 14. 4 GUARD BOOKS

By and large, the maintenance of Guard Books has remained neglected. In certain cases the Guard Books have been found lacking even the elementary data regarding description of boundaries of both, beat number and name of the compartments, beat maps, number of boundary pillars and chacks. The Guard book must be maintained properly and checked frequently by Range Officers at least once in a month and by the DFO at least once in six months.

The D.F.O should get prepared the beat books which should have the following.

- 1. Beat map
- 2. Detail of compartment in beat
- 3. List of nurseries in the beat
- 4. List of buildings in the beat
- 5. Detail of plantations and cultural operations carried out during the last 10 years.

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# **CHAPTER-XV**

# SUMMARY OF PRESCRIPTIONS

The following is the Summary of the important prescriptions of the plan:

#### **Details of prescriptions**

## **Constitution of Working Circles**

- The Fir Selection Working Circle
- The Alpine Protection Working Circle
- The Rehabilitation Working Circle
- The Plantation (Overlapping) Working Circle
- The Eco-tourism Management(Overlapping) Working Circle
- The Non-Wood Forest Produce (Overlapping) Working Circle
- The Joint Forest Management (Overlapping) Working Circle •
- The Wildlife Management (Overlapping) Working Circle
- The Forest Protection (Over lapping) Working Circle

Period	of the	Plan
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1.6

Section

1.5

Page

Fir Selection Working Circle	2.0
<ul> <li>Total Area of the Working Circle = 18459.00 Ha.</li> </ul>	2.5
• Commercial Area of the Working Circle = 11304.75 Ha.	2.5
<ul> <li>Silvicultural System : Indian Selection system</li> </ul>	2.6
Exploitable Diameter	2.7

Exploitable Diameter ٠

	Fir = 80 cms (dbh)	
-	Rall = 70 cms (dbn)	<b>२</b> 0
•	Fir/Spruce = 240 years	2.0
	Fir/spruce = 240  years	
•	Folling Cycle = 20 years	20
•	Felling Cycle – 20 years	2.9
•	reling series – One	2.10
Details	s of Prescriptions	
•	Annual yield from the Working Circle	2.13
	Kail = 1000 m.cu	
	<u>Fir = 10600 m.cu</u>	
	<u>Total = 11600 m.cu</u>	
•	Size of the annual Coupe = 565.24 Ha.	2.14
•	Allowance cut per Ha. = 20.52 m.cu.	2.15
Rehab	ilitation Working Circle	3.0
•	Objectives of management	3.3
•	Total Area of the Working Circle = 4732.65 Ha.	3.4
•	Commercial Area = 3443.7 Ha.	3.4
•	Method of Treatment	3.6
Alpine	Protection Working Circle	4.0
•	Special Objectives of management	4.3
•	Total Area of the Working Circle = 24819 Ha.	4.4
•	Commercial Area = 2686.75 Ha	4.4
•	Method of Treatment Prescribed	4.6
•	Pasture Land Development	4.8
Planta	tion (Overlapping) Working Circle	5.0
•	Objectives of management	5.3
•	Method of Treatment	5.5
•	Silvicultural System = Selection-cum-improvement felling	5.5
	System	5.6
•	Plantation Cycle = $10$ years	5.13
•	Nursery Technology	5.15
٠	Plantation Technology	5.16
Fco-to	urism Management (Overlanning) Working Circle	6.0
•	Snecial Objectives of management	63
•	Fro-tourism opportunities of Division	6.4
-	Eco-tourism Destinations	6.6
-	Trakking Routes	6.0 6.7
•	Mothod of Trootmont Droccribed	0.7 6 0
•		0.8

Non-timber Forest Produce (Overlapping) Working Circle 7.0

<ul> <li>Special Objectives of management</li> </ul>	7.3
<ul> <li>Silvicultural System = Selection system</li> </ul>	7.4
Method of treatment	7.6
<ul> <li>Important non-wood timber products</li> </ul>	7.8
Distribution of Medicinal Wealth	7.9
Important Medicinal Plants of Pir Panjal Forest Division	7.10
Joint Forest Management (Overlapping) Working Circle	8.0
Special Objectives of management	8.3
Implementation of JFM in Pir Panjal Forest Division	8.8
Strategy for Implementation	8.9
Achievements under NAP	8.10
Wildlife Management (Overlapping) Working Circle	9.0
<ul> <li>Special Objectives of management</li> </ul>	9.3
Wildlife of Pir Panjal Forest Division	9.4
Improvement of Habitat	9.10
Man Animal Conflict	9.12
Forest Protection (Overlapping) Working Circle	10.0
Special Objectives of management	10.2
Protection Enforcement System	10.3
Encroachment	40.44.0
$\circ$ Recorded = 636.8 Ha.	10.11.2
$\circ$ As per Stock Map = 1148.55 Ha.	10.11.2
Miscellaneous Regulations	11.0
Welfare of Forest Dwellers	11.1
Research	11.2
Human Resource Development	11.3
District Budgam Environment, Education and Awareness	
Society Budgam (DEEAS)	11.4
• CAMPA	11.6
Establishment and Labour	12.0
Establishment	12.1
• Labour	12.2
Financial Forecast and Cost of the Plan	13.0
Future Revenue (Rupees)	13.2
o Timber = 27,97,55,300.00	13.2
• Firewood = 2,10,000.00	13.2
• NTFP = 10,00,000.00	13.2
<ul> <li>Miscellaneous = 1,00,000.00</li> </ul>	13.2
Total = 28,10,65,300.00	

Future Expenditure	13.3
<ul> <li>On Development =</li> </ul>	
<ul> <li>On Infrastructure =</li> </ul>	
<ul> <li>On Establishment =</li> </ul>	
Total =	
Cost of the Plan	13.4
<ul> <li>Plan = 18,15,000.00</li> </ul>	
Total = 18,15,000.00	
Control and Records	14.0
Control Forms	14.1
Compartment Histories	14.2
Divisional Journal	14.3
Plantation Journals	14.4

• Guard Books 14.5

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