Government of Jammu and Kashmir
Department of Forests, Environment & Ecology
Civil Secretariat, Srinagar.
www.jkforestadm.nic.in

Subject : Sanction of Draft Working Plan of Nowshera Forest Division.
Reference: Pr.Chief Conservator of Forests No. PCCF/WPR&T/F-144/23-25 dated 20-02-2018.

Government Order No : 114 – FST of 2018
D a t e d : 27 - 03 - 2018

Sanction is, hereby accorded to the operation of the Working Plans of Nowshera Forest Division as recommended by the Principal Chief Conservator of Forests, (HoFF) J&K, Jammu after being approved by the Working Plan Committee constituted vide G.O. No. 67-FST of 2016 dated 03-03-2016.

S. No.	Division	Existing Working Plan		Revised Working Plan	
		Name of the Working Plan Officer	Period originally approved	Name of the Working Plan Officer	Period approved
1.	Nowshera	Shri. M.R. Singh	2005-06 to 2015-16	Dr. Jitendra Kumar Singh, IFS	2018-19 to 2027-2028

The above revised Working Plan is subject to the following conditions :

1. That in the event of ban on the felling of green trees in the forests of J&K being lifted, extraction of green trees will not be allowed during the extended period unless the table of felling for each working circle is approved by the Working Plan Committee; and
2. That the Divisional Forest Officer shall compile the extraction data according to the relevant control forms for the corresponding working plan periods, and the period that has elapsed thereafter, so that the same is taken into account during the extended period.
3. That no activity is permitted to be taken up in the forest area in violation of the provisions of the J&K Forest (Conservation) Act.
4. That it shall be entrusted that the provisions of the J&K Forest (Conservation) Act and guidelines issued there under are strictly followed while implementing working plan prescriptions.

5. That the standing instructions issued by the Hon'ble Supreme Court of India from time to time in Writ Petition 202/95 as well as in similar Writ Petitions shall meticulously be followed, in the letter and spirit.
6. That this approval does not *ipso facto* imply approval of any proposed for non forestry activities requiring separate clearance under J&K Forest (Conservation) Act. Such activities shall not be undertaken until separate Forest / Wildlife / Environmental clearances, as the case may be are obtained under the Act.

By order of the Government of Jammu and Kashmir.

Sd/-
(**Saurabh Bhagat**) **IAS**
Commissioner / Secretary to Government
Department of Forest, Environment & Ecology

No : FST/Land /21/2018 Dated : 27-03-2018

Copy to the :

1. Principal Chief Conservator of Forests, (HoFF) J&K Jammu.
2. Principal Chief Conservator of Forests, (Working Plan) J&K Jammu.
3. Chief Conservator of Forests, Jammu.
4. Conservator of Forests, Working Plan, J&K Jammu.
5. Dr. Jitendra Kumar Singh, IFS, DCF, Working Plan Officer, Working Plan Division-II, Rajouri.
6. Director, Archives, Archaelogy & Museums J&K Jammu.
7. Officer on Special Duty with the Hon'ble Minister for Forests, Environment & Ecology.
8. Special Assistant to Hon'ble Minister of State for Forests, Environment & Ecology.
9. Pvt. Secretary to Commissioner/Secretary to Government, Department of Forests, Environment & Ecology.
10. Government Order file/stock file.

(**Riaz-Ul-Haq**)
Under Secretary to Government
Forest, Environment & Ecology Deptt.

INTRODUCTION

This plan is the revision of Shri D. K. Ved's Plan for Nowshera Forest Division (1982-83 to 1991-92 extended to 1995-96). Earlier this plan was in the process of revision by Shri M.R. Singh for the period 2005-06 to 2015-16. However, because of his sad demise amid, the plan was not presented before the committee and hence not approved. Many changes have been made in this plan in respect of scientific system of management as compared to previous plan. A brief introduction of Nowshera Forest Division with respect to its geological features, topography, climate etc have been made. The flora and fauna of Nowshera forest Division are also described in detail.

In this plan the forests of Nowshera Forest Division have been classified into Standard forest types in accordance with the mode of classification used by Champion and Seth in the "Revised Survey of the Forest Types of India".

The quantitative assessment of growing stock has been made by the sample plot method and preparation of its inventory in this working circle has been made on the basis of data collected and analysed separately. These sample points selected at random were located surveyed and analysed in the field by adopting sample plot technique by laying of plots of 0.1 ha. in Chir area and conducting total enumeration of growing stock in those plots.

In chir areas mean values of two variables i.e number of trees per ha. and volume per ha have been separately calculated by the arithmetic averages of two variables from the data drawn from all the sample points surveyed in this working circle. These variables have been put to due statistical scrutiny and tests. From the analysis of data of average number of trees and volume falling under different dia classes. It is found that there is preponderance of trees in lower dia class upto dia class of 40-50. The commercially exploitable volume which could be extracted from higher dia classes is negligible. Due to these reasons, no commercial extraction has been prescribed, no commercial felling is to be carried out during the plan period

Effective soil conservation measures are prescribed in these areas to check erosion. For this purpose, stone or brush wood check dams should be erected in nallahs. Masonry check dams should be provided with aprons on lower side and their wing walls should be properly embedded in nallah sides. When these dams get filled up the area should be planted with *Agave*, *Ipomaea* and *Vitex negando*. Gully control measures should be taken to check gully erosion. Along with the soil conservation measures these areas are prescribed to be taken up for plantation of soil binding, hardy and useful species. The plantation should be done in contour trenches. Apart from the soil binding measures planting of species like *Agave,*

Ipomaea and *Leucaena leucocephala* and grasses like *Napier grass, Saccharum munja* are also recommended.

The degraded coniferous areas need measures for inducing natural regeneration to the extent possible. The areas where good number of healthy seed bearers are lacking should be regenerated artificially by fencing areas up to 20 hectare size in Ist phase and these areas should be extended later on depending upon success achieved in the Ist phase. However for inducing natural regeneration in the poor density chir areas, protection against grazing is the first requirement and an effective protection against fire is other important requirement for natural regeneration to come up and get established.

Resin channel survey is very necessary for keeping check on excessive resin tapping. This should be revised after every 5 years. Resin channel survey exercise was undertaken by the field parties of Nowshera Forest Division on prescribed format division during the course of this revision of the plan. A total of 165 samples were surveyed in chir areas of the Division. It clearly indicates that No. of channels / Rills already put on chir trees for resin extraction over the years is very high in all diameter classes. This also indicates and confirms the apprehension that the crop has already been over exploited and there is hardly any space left for blazes now. Heavy tapping has been done in all the dia classes. Even some trees falling in 20-30 cms and 30-40 cm dia. classes have been tapped. Many tapped trees have gone dry and more are expected to get dry. A comprehensive policy of resin tapping needs to be formulated on the basis of silvicultural aspects of chir crop and its present condition. In view of the facts given above and figures supporting these facts, it is proposed that at least $1/10^{th}$ area of crop under resin tapping should be given rest for every year so that every area gets complete rest once during the plan period from extraction and after that period review should be done.

For Oak forests, along with effective protection, it is prescribed to rehabilitate these areas by artificial regeneration works also. For this purpose area of about 20 hectares size each should be selected in suitable localities fenced up and planted with locally suitable species including *Quercus incana*

The areas on the fringes are proposed to be planted and managed in participatory mode to increase their productivity. People‘s participation is necessary for the success of these plantations. A mixture of multiple use local and fast growing species is prescribed to be planted in order to meet the above said objectives. For sub-tropical areas *khair, shisham, anardana, bamboo, drenk and kachnar* etc shall be suitable. Also grasses and legumes like *Napier, Trifolium* etc shall also be grown to meet the fodder and other requirements. Vegetative fencing by planting of species like *Agave* along the fences shall be resorted to Social

fencing i.e co-operation of people in the protection of plantations shall be the backbone of protection work. So, the people's participation is an important component of this working plan.

On wastelands, biodiesel yielding species like *Jatropha* and *Pongamia* are proposed to be planted. The primary purpose shall be to increase the green cover for carbon sequestration, and the secondary purpose shall be to gradually improve the microclimate of wastelands so that the introduction of other species is possible in these areas in the later years thereby conjointly serving the aesthetic cum environmental purposes.

Efforts shall be made to address the menace of unscientific, uncontrolled and unregulated grazing and suggest measures to sustain the local and nomadic livestock without adversely affecting the productivity of forests.

Eco tourism working circle has been constituted by including typical spots which have good potential of ecotourism. These spots are proposed to be developed with eco friendly tourism. To tap the Eco tourism Potential of Nowshera Forest Division, this working circle will cover Pir Badeswar, Bagla, Baba Khori, Jhangar, Mangala mata, Qila Dharal, Chingus and Shiv Khori etc. The objective is to enhance beautification and tourism potential of areas in the circle by establishing parks, aesthetic plantation, conservation of sacred grooves, plantation on wastelands and plantation near government schools and other buildings.

Wildlife conservation cannot be executed in isolation. A new overlapping working circle has been introduced to protect the diversity of wildlife in the Division by appropriate habitat improvement operations, ecological security of the tract and community support for wildlife conservation.

The field work for preparation of this plan was started in 2012 and completed in August 2014. It took very long time period for collection of data from field (sample plots) due to shortage of trained and skilled field staff and also due to difficult terrain and tough topography of Nowshera Forest Division. Final compilation of draft plan took long time because of frequent transfer of the Working Plan Officer/Divisional Forest officer and thus their slow response in compilation.

It is my great pleasure that I express my sincere gratitude to the persons directly or indirectly associated with preparation of Working Plan of Jammu Forest Division. I am greatly indebted ***to Sh. A. K. Singh, IFS,*** Ex-Principal Chief Conservator of Forests, for providing the opportunity to take up the revision and compilation of this Working Plan. My sincere thanks are also due to ***Sh. Ravi Kumar Kesar, IFS,*** the

present Principal Chief Conservator of Forests, for providing all expedient help and valuable suggestions during the final stage of the preparation of this working Plan.

I am highly grateful to ***Sh. J. Frankoi, IFS***, Chief Conservator of Forests, Working Plan Circle and ***Sh. P. K. Singh, IFS,*** Principal Chief Conservator of Forests, Working Plan & Training, Jammu & Kashmir for their valuable suggestions and adept guidance during the various stages of the preparation of this plan.

I place on record my special thanks to ***Sh. K. Anandh, IFS and Sh. Samuel Changkija*** *Ex-* Conservator of Forests, Working Plan Circle and **Sh. Navin Kumar Shah, IFS**, present Conservator of Forests, Working Plan Circle for their expert, technical and valuable guidance provided from time to time. Their expertise in Working Plan as well as his helpful suggestions helped me to improve the final Working Plan Draft and present it in the current format.

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The writer is highly thankful to all the Conservators of forests, West Circle, Rajouri and the Divisional Forest Officer, Nowshera Forest Division, Nowshera under whose tenure and guidance working plan exercise executed.

My sincere thanks are also due to ***Sh. Arun Gupta,*** *Range Officer****, Sh. Javaid Iqbal,*** *I/C Range Officer,* ***Sh. Madan Lal,*** *I/C Range Officer and* ***Sharaj*** **Anjum**, Forest guard for their tireless support.

During field work of plan, a lot was done by executive staff from the starting of plan work to last stage. The writer thankfully acknowledges the cooperation and contribution of all such Range officers, foresters, forest guards and helpers Nowshera Forest Division. The writer is also thankful to ministerial staff of for their valuable contribution.

-Sd-
Dr. Jitendra Kumar Singh, IFS
Working Plan Officer
Working Plan Division-II
Rajouri

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Glossary Of Trees, Shrubs And Grasses Commonly Found In The Tract

(Sorted as per common names)

Trees

Vernacular Name	*Botanical Name*	Family
Aam	***Mangifera indica***	Anacardiaceae
Amla	***Emblica officinalis***	Euphorbiaceae
Arjun	***Terminalia arjuna***	Combretaceae
Badh or Pipal	***Ficus religiosa***	Moraceae
Bahera	***Terminalia bellerica***	Combretaceae
Bans or bamboo	***Dendrocalamus strictus***	Poaceae
Ber	***Ziziphus jujube***	Rhamnaceae
Bohar	***Ficus bengalensis***	Moraceae
Chir	***Pinus roxburghii***	Pinaceae
Darhuni	***Punica granatum***	Punicaceae
Dhaman	***Grewia optiva***	Tiliaceae
Drek	***Melia azedarach***	Meliaceae
Fagora	***Ficus palmate***	Moraceae
Harar	***Terminalia chebula***	Combretaceae
Imli	***Tamarindus indica***	Leguminosae (Caesalpiniaceae)
Indian coral tree	***Erythrina indica***	Leguminosae (Papilionaceae)
Jamun	***Syzgium cumini***	Myrtaceae
Kaam	***Mitragyna parvifolia***	Rubiaceae
Kachnar	***Bauhinia variegata***	Leguminosae (Caesalpiniaceae)
Kakoa	***Flacourtia indica***	Flacourtiaceae
Kala Siris	***Albizzia lebbeck***	Leguminosae (Mimosaceae)
Kamila	***Mallotus philippensis***	Euphorbiaceae
Kembal	***Lannea coromandelica***	Anacardiaceae
Khair	***Acacia catechu***	Leguminosae (Mimosaceae)
Khajoor	***Phoenix sylvestris***	Palmae
Kikar	***Acacia nilotica***	Leguminosae (Mimosaceae)
Krangal	***Cassia fistula***	Leguminosae (Caesalpiniaceae)
Kua	***Olea cuspidate***	Oleaceae
Phulai or Fly	***Acacia modesta***	Leguminosae (Mimosaceae)
Pulah	***Butea monosperma***	Leguminosae (Papilionaceae)

Reetha	***Sapindus mukorossi***	Sapindaceae
Rumble	***Ficus recemosa***	Moraceae
Safed siris	***Albizzia procera***	Leguminosae (Mimosaceae)
Safeda	***Eucalyptus citrodora(Introduced)***	Myrtaceae
Simbal	***Bombax ceiba***	Bombacaceae
Tali	***Dalbergia sissoo***	Leguminosae (Papilionaceae)
Thor	***Euphorbia royleana***	Euphorbiaceae
Toot	***Morus alba***	Maraceae
Trimbal	***Ficus auriculata***	Moraceae
Tunu	***Cedrela toona***	Meliaceae

Shrubs And Herbs

Aakh	***Ipomaea carnea***	Convolvulaceae
Anar	***Punica granatum***	Punicaceae
Arnid	***Ricinus communis***	Euphorbiaceae
Ban tobacco	***Solanum erianthum***	Solanaceae
Bana	***Vitex negundo***	Verbenaceae
Bhang	***Cannabis sativa***	Cannabinaceae
Brenker	***Adhatoda vasica***	Acanthaceae
Chaleri Saag	***Amaranthus viridis***	Amaranthaceae
Chhitter	***Opuntia elatior***	Cactaceae
Congress Grass or Jari	***Parthenium hysterophorus***	Asteraceae
Deela	***Cyperus rotundus***	Cyperaceae
Dhain	***Woodfordia floribunda***	Lythraceae
Dhain	***Woodfordia fruticose***	Lythraceae
Dhatura	***Datura metel***	Solanaceae
Drenkeri	***Murraya koenigii***	Rutaceae
Duranta	***Duranta plumeri***	Verbenanaceae
Gandila	***Nerium indicum***	Apocynaceae
Garna	***Carissa spinarum***	Apocynaceae
Jojera	***Xanthium strumarium***	Asteraceae
Jojra	***Pupalia lappacea***	Amaranthaceae
Kayan Kothi	***Solanum nigrum***	Solanaceae
Kuad Gandal	***Aloe barbadensis***	Liliaceae
Pakhra	***Tribulus terrestris***	Zygophyllaceae

Panjphuli	***Lantana camara***	Verbenaceae
Pansar	***Wendlandia heynei***	Rubiaceae
Parkanda	***Achyranthes aspera***	Amaranthaceae
Ramban	***Agave americana***	Agavaceae
Sanali or Dussa	***Colebrookia oppositifolia***	Lamiaceae
Santha	***Dodonaea viscosa***	Sapindaceae
Seski	***Artimisia parviflora***	Asteraceae
Thor	***Euphorbia royleana***	Euphorbiaceae
Timbru	***Zanthoxylum armatum***	Rutaceae

Ground Flora, Grasses And Climbers

Anjan Grass	***Cenchrus ciliaris***	Poaceae
Amar Bel	***Cuscuta reflexa (Parasite)***	Cuscutaceae
Baloonger	***Bauhinia vahlii***	Leguminosae (Caesalpiniaceae)
Bubbeain	***Eulaliopsis binata***	Poaceae
Chameli	***Jasminum officinale***	Oleaceae
Deena nath grass	***Pennisetum pedicellatum***	Poaceae
Dheela	***Cyperus rotundus***	Cyperaceae
Doab Grass	***Cyanadon dactylon***	Poaceae
Giloe	***Tinospora cordifolia***	Menispermaceae
Junglee Palak	***Rumex hastatus***	Polygonaceae
Kai	***Saccharum spontaneum***	Poaceae
Kezun grass	***Setaria sphacelata***	Poaceae
Khar	***Saccharum munja***	Poaceae
Kharpoway	***Ipomea purpurea***	Convolvulaceae
Khas Khas	***Vetiveria zizanoides***	Poaceae
Lambagha	***Heteropogan contortus***	Poaceae
Nad	***Arundo donax***	Poaceae
Napier grass	***Pennisetum purpureum***	Poaceae
Palain	***Dichanthium annulatum***	Poaceae
Rati	***Abrus Precatorius***	Leguminosae (Papilionaceae)
Sadhun	***Dioscorea melanophyma***	Dioscoreaceae

Schedule Species (Mammals)
Jammu & Kashmir Wildlife (Protection) Act, 1978

Common Name	***Scientific Name***	**Schedule**
Common Leopard	***Panthera pardus***	Sch I (Part I)
Pangolin	***Manis crassicaudata***	Sch I (Part I)
Swamp Deer	***Rucervus duvaucelii***	Sch I (Part I)
Central Himalayan langur	***Semnopithecus schistaceus***	Sch II (Part I)
Himalayan grey langur	***Semnopithecus ajax***	Sch II (Part I)
Lesser Hill langur	***Semnopithecus hector***	Sch II (Part I)
Western Hanuman Langur	***Semnopithecus achates***	Sch II (Part I)
Himalayan crestless porcupine	***Hystrix brachyura***	Sch II (Part I)
Rhesus Macaque	***Macaca mulatta***	Sch II (Part I)
Indian Fox	***Vulpes bengalensis***	Sch II (Part I)
Asiatic Black Bear	***Ursus thibetanus***	Sch II (Part I)
Jackal	***Canis aureus***	Sch II (Part I)
Jungle Cat	***Felis chaus***	Sch II (Part I)
Common mongoose	***Herpestes edwardsii***	Sch II (Part I)
Barking deer	***Muntiacus muntjac***	Sch III
Spotted deer	***Axis axis***	Sch III
Grey goral	***Nemorhaedus goral***	Sch III
Red goral	***Nemorhaedus baileyi***	Sch III
Hog deer	***Axis porcinus***	Sch III
Hyaena	***Hyaena hyaena***	Sch III
Bluebull	***Boselaphus tragocamelus***	Sch III
Sambar	***Cervus unicolor***	Sch III
Wild Pig	***Sus scrofa***	Sch III
Five-striped palm squirrel	***Funambulus pennantii***	Sch IV
Indian hare	***Lepus nigricollis***	Sch IV
Cape hare	***Lepus capensis***	Sch IV
Indian porcupine	***Hystrix indica***	Sch IV
Lesser dog-faced fruit bat	***Cynopterus brachyotis***	Sch IV
Shot-nosed fruit bat	***Cynopterus sphinx***	Sch IV
House rat	***Rattus rattus***	Sch IV
Brown rat	***Rattus norwegicus***	Sch IV
Himalayan rat	***Rattus nitidus***	Sch IV
Soft-furred field rat	***Millardia meltada***	Sch IV

CHAPTER-I

The tract dealt with

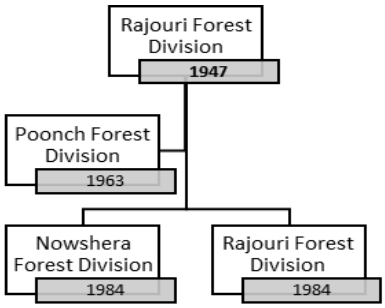
1.1 Name and Situation

1.1.1 This working plan covers the Forests of Nowshera Forest Division of Jammu West Circle. In the year 1984, Nowshera Forest Division was carved out of erstwhile Rajouri Forest Division vide Government Order No. FST/254 of 1984 Dated 23-05-1984.

1.1.2 The division comprises of three territorial ranges (Nowshera, Lamberi and Sunderbani). The division is situated between North latitude 32^0-57' and 33^0-35' and between East longitude 74^0-0' and 74^0-41'. The entire area is covered by survey of India GT sheets No. 43/K2, 43/K3, 43/K4, 43/K5, 43/K6, 43/K7, 43/K8, 43/K10, 43/K11, 43/K12, 43/L, 43/LS, 43/L9. Prior to 1947, Nowshera Forest Division was part of Mirpur Forest Division. After 1947 this Division remained part of Rajouri Forest Division. In the year 1963 Rajouri Forest Division was split into Rajouri and Poonch.

1.1.3 This division is bound on east by Reasi Forest Division and on North by Rajouri Forest Division and South East by Jammu Forest Division. On western and southern side it is bound by the line of actual control bordering POK.

1.1.4 The area of the Division falls under the civil jurisdiction of District Rajouri and part of Reasi and Jammu District.



1.2 Configuration of the Ground

1.2.1 Most of the area is mountainous and modertaly sloped hills. Between Sunderbani and Nowshera towns, landscape consists of low lying undulating hills and valleys. North-Wards topography becomes very steep and high, merging ultimately with Pir Panjal range near Ans River.

1.2.2 Whole of the division drains into Tawi, which finally join river Chenab in the plains. Main tributaries are Niari Tawi, Thandapani Wali Tawi, Kallar Kas, Jambhir Nala. All these nallas join main Rajouri Tawi which meanders through Nowshera where it turns to east up to Jhulla gorge. After crossing Jhulla gorge, river turns to south where it is popularly known as Manavar Tawi which ultimately join river Chenab.

1.2.3 Prominent peaks of the division are: Bagla, Pir Badeswar, Sujaligala etc

1.2.4 Topographically the area falls under outer Himalayan Zone. The terrain is rugged and mountainous. The area forms part of Indus basin and drainage is discharged by Nowshera Tawi. Thick river terrace deposits of sub-recent/recent age occur at a number of places.

1.3 Geology, Rock and Soil

1.3.1 Extracts of note/information supplied by Geology and Mining Department Jammu is reproduced below:

1.3.2 The division falls on the south western flank of the Pir Panjal range which is geologically a complex region. Brief lithological description in order of super positions is given hereunder. This include complete Rajouri District.

a) Dogra Slates

These occur over wide area in north Eastern part of district and comprise Micaschists, Phyllites, Quartzites, Slates and Granites.

b) Vaishno Devi/Sirban Limestone

These consists of dolomite, cherry limestone inter-stratified with non-cherry bands. On upper part the formation is covered by rocks and bauxitic series.

c) Murree Group

This group comprise lower murree formation and upper muree formation extends as a wide belt in NW-SW direction from Poonch towards Udhampur. Lower Murree comprise clay-stone, sandstone formation while upper Murree comprises mainly arenaceous.

d) Siwalik Group

This group of rocks represent the principal melas deposits of Himalayan. These are broadly divided as lower, middle and upper sub-divisions. The constitutent rocks are exposed mainly in Nowshera Tehsil.

Lower siwalik is characterized by sand stone, shale, clays and calcareous sandstone. These are exposed in core of syncline near Channi and in Limbs of Nowshera syncline.

Middle Siwalik consists of massive, soft coarse sandstone with sub-ordinate clays and shales. This is present in core of Nowshera syncline.

e) Brief account of Mineral resourses of area are as follows: -

i) Coal

Coal deposits occur in Kalakote tehsil. The coal in generaly is low moisture, low volatile, high sulphur and high ash and semianthractis in nature. The calorific value in coal varies between 11000 to 14000 calories and is mostly of non caking variety.

Main fields of region are Kalakote coal field, Metka coal field, Mohogala coal field, Magal coal fiels, Gantha-Thangrot-Khabar Bainala area.

ii) Limestone

Limestone in district are mainly associaled with two different group of rocks. Besides, impure limestone of little industrial significance at present are also found in Sirban Limestone formation and Gamir formation.

iii) Iron Ores

The erstwhile Mineral survey of J&K located Hematitic beds in Gagrot area of Budhal Tehsil. Mineral survey estimated possible reserves of five million tonnes.

iv) Clays

In the District, large Deposits of clay occur in: -

a) Murree and Siwalik group of rocks
b) Bauxite series
c) Dogra slate formation.

Murree and Siwalik group of rocks have a very wide distribution in the area. Clay occurs as inter beds in these formation. These Clay can be utilized for manufacture of bricks, potteries, tiles and cement industry. Bauxite series constitute Pisolitic bauxite, highly aluminous clay and Kaoline Dogra slate formation consists of Fuller's earth. Clay of these areas is generally white to bluish white and soft.

v) Building Stones

In the district, excellent quality building stones having strength, Durability and compactness occur in large quantities in following formulations.

a) Final grained gray to greenish grey sandstone in Murree group.

b) Medium to fine grained light grey sandstones in lower siwalik formation.

c) Fine grained dark grey to black trap in Panjal Trap.

d) Light to dark grey Nummlitic limestone in Subathu formation (used for making chips).

vi) Bauxite

Diasporic bauxite occurs as a thin strip and form of detached exposures over Sirban limestone formation especially in vicinity of Mohogala, Tryath and Gaiutha.

1.4 Climate

1.4.1 Area of the division experience typical sub-tropical climate being located in shivalik mountains with slight variation due to altitude, aspect etc. Only small portion of Division near Bagla and Peer Badesar receives snowfall in year of extreme winter. Otherwise division as a whole is free from snowfall. Pool frost is very common from month of November to February March. During these months severe hail storms are also experienced, which destroy both agricultural crops as well as young germination seedlings in forest nurseries. June and July are extremely hot and dry which create congenial conditions for forest fires all over. Monsoon rains are good. This period is utilized for planting purposes.

1.4.2 It is rather unfortunate that no reliable MAT data is available to guide different forest operations during the year. To control and monitor various plantation activities it is important that forest department installs its own MAT stations at all divisional head quarters. MAT data can provide handy tool to foresters for regulating forestry operations in different season of the year.

1.4.3 The temperature data of Nowshera obtained from SKUAST- Jammu is given in the table 1.1 below:

Months	Minimum	Maximum	Average
January	5.2	14.1	10.5
February	6.2	16.5	11.8
March	9.7	21.3	15.5
April	15.4	26.7	21.1
May	19.3	31.5	25.4
June	22.4	34.4	28.4
July	21.3	32.3	26.7
August	21.6	30.4	26.0
September	20.5	28.1	24.3
October	14.3	25.4	19.1
November	10.2	20.2	15.2
December	7.4	18.6	13.0
Average	**14.4**	**25.0**	**19.1**

Source: SKUAST Centre, Rajouri

1.5 Rainfall

1.5.1 Average annual rainfall (precipitation) at Nowshera was 131.2 mm (1957-60). The summer rainfall in Nowshera was recorded to be about 50% higher than the corresponding winter rainfall except in year 2013-14 when winter rainfall was exceptionally high due to prolonged western disturbances.

1.5.2 Following table gives average monthly rainfall at Nowshera.

Table-1.2

Month	Rainfall (mm)
January	52.2
February	46.9
March	29.6
April	25.8
May	18.7
June	60.6
July	250.4
August	248.2
September	110.9
October	40.7
November	32.8
December	35.6
Average total annual rainfall	**79.4**

Rajouri Forest Division located at north of Nowshera Forest Division receives relatively more rainfall. July and August are relatively wet as compared to other ones.

1.6 Water Supply

1.6.1 The water supply in the tract is not satisfactory. Many places in the Division do not have dependable sources of water and people have to track long distance to bring drinking water or have to store it.

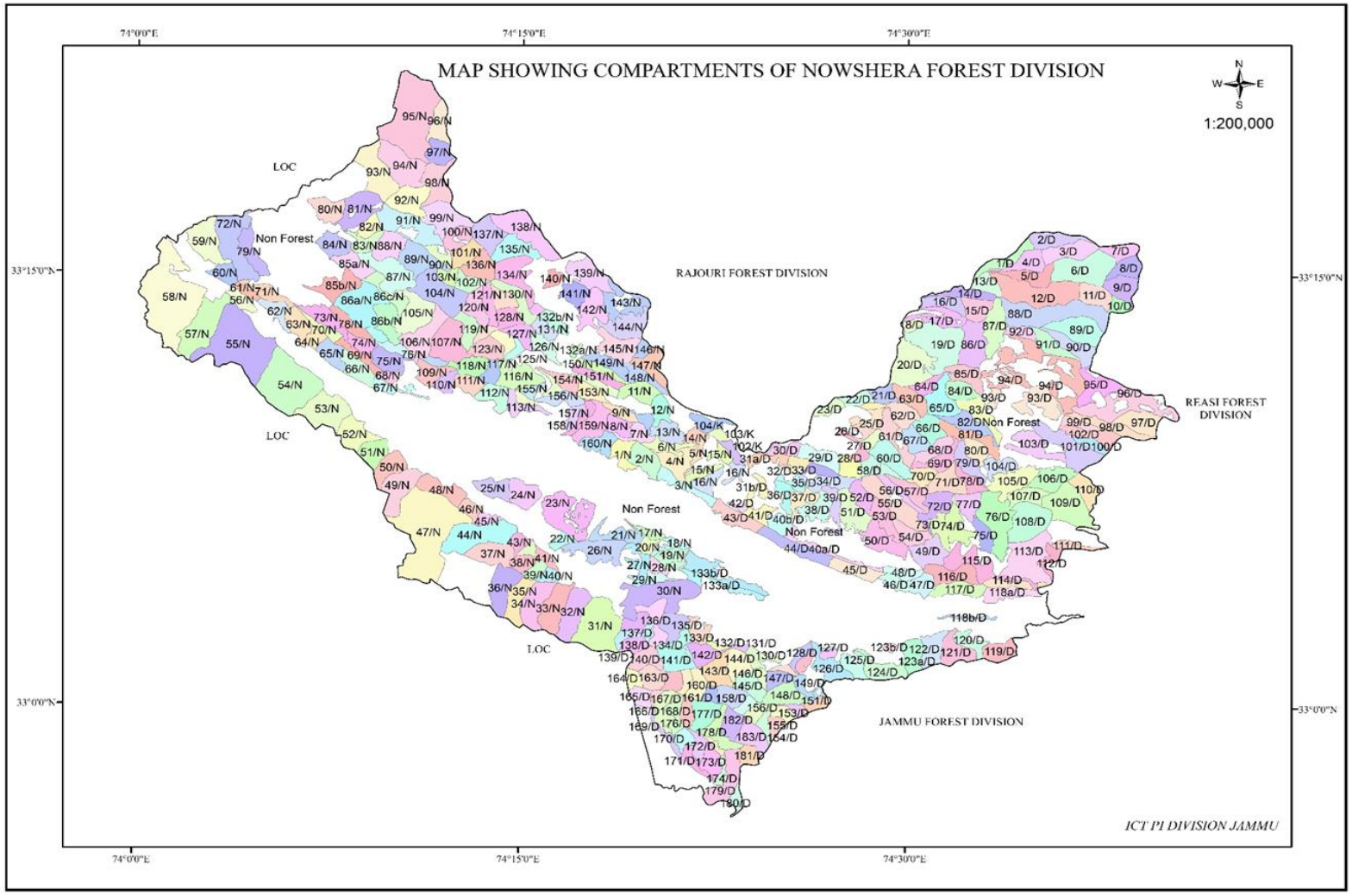
1.7 Distribution and Area

1.7.1 Majority of the area falls within the administrative jurisdiction of Nowshera and Sunderbani tehsils of Rajouri District. Treru Block of Lamberi range includes part of Kalakote Tehsil of Rajouri and Reasi Tehsil of District Reasi. The forests are honey combed with human population.

1.7.2 Nowshera Forest Division comprises of three territorial ranges and one soil conservation range. Each territorial range comprises of different blocks and beats. Soil Conservation Range overlaps all the three ranges.

TABLE : - 1.3
The Range wise distribution of area is as under:-

Range	Total No of comptt/ sub- comptts.	Area (Hectares)
Nowshera Range	97	19186.63
Lamberi Range	110	20020.53
Sunderbani Range	149	25155.53
Total	**356**	**64362.69**


MAP SHOWING COMPARTMENTS OF NOWSHERA FOREST DIVISION
1:200,000
74°0'0"E
74°15'0"E
74°30'0"E
33°15'0"N
33°0'0"N
RAJOURI FOREST DIVISION
REASI FOREST DIVISION
JAMMU FOREST DIVISION
LOC
Non Forest
ICT PI DIVISION JAMMU

The specieswise distribution of area of three territorial Ranges as compiled from individual stock maps is given below in table.

TABLE-1.4:
Range wise area distribution

Range	Commercial		Uncommercial			
	Very Dense	Moderate Dense	Open Forest	Blank	Scrub	Total Area (Ha)
Nowshera	38.2	3459.24	6678.99	8977.81	32.39	19186.63
Lamberi	615.66	6103.21	7102.73	6113.77	85.16	20020.53
Sunderbani	435.32	6961.91	10436.58	6797.74	523.98	25155.53
Total	**1089.18**	**16524.36**	**24218.30**	**21889.32**	**641.53**	**64362.69**

1.7.3 Out of above total 64362.69 Hectares, 17613.54 Hectares is under Commercial and 46749.15 Hectares is under Uncommercial.

1.7.4 These figures are based on the computation of the area from the stock maps of individual compartments using ArcGIS. These stock maps were prepared at a scale of 1:50,000 and were based on ArcGIS based estimates of the area under tree species or blanks.

1.8 State of Boundaries

1.8.1 All demarcation records of Nowshera Forest Division are not available in the Division. Furthur encroachments of forest have taken place in many places. It is very difficult to locate boundary pillars on ground and most of the time only ocular estimation is done. Therefore immediate steps are needed for identification of boundaries. Efferts has been made by replacing Kaccha boundary pillars by Pucca boundary pillars. In the year 1990-91, 130 boundary pillars were constructed around Devak Forest of Dhaleri Range. In the year 2014-15, 40 Nos boundary pillars were constructed around Qila Darhal forest, 37 boundary pillars were constructed around Dhruni Bhatta Forest and 57 Nos boundary pillars were constructed around Tanda Thichka Forest.

1.9 Legal Position

1.9.1 The government of J&K is the sole owner of Forest Lands and the management and protection of forest growing on it vests with the forest department. The berune-line forests cum-demarcated forests presently under the control of state Revenue Department continue to be ill managed with scant and depleted vegetative cover. These forests are likely to loose whatever is left with them, in case they are not transferred to the forest Department and managed on scientific lines. All the demarcated forests come under the provision of the Jammu and Kashmir Forest Act of Samvat 1987 No. II of 1987 (1930 A) as amended to date.

1.9.2 The other Acts which have been enacted by state Government for the management and protection of these forests are:-

a. The J&K Forest Act of Samvat 1987 (1930 AD) as amended upto December 1997.
b. The J&K (Sale of timber) Act 1987 (1933 AD) Act III of 1987.
c. The Kuth Act 1978 (1921 AD) Act-I of 1978.
d. The cattle trespass Act 1977
e. The J&K (Land improvement Schemes Act) 1972
f. The J&K game Preservation Act 1988 (1942 AD)
g. The J&K Kahcharai Act 2011
h. The J&K State forest Corporation Act 1978.
i. The J&K Preservation of specified trees ACT 1969.
j. The J&K Wildlife (Protection) Act 1978.
k. The J&K Public Premises (Eviction of unauthorized Occupants) Act 1969.
l. The Jammu Forest notice and Kashmir Forest notice.
m. The Saw mills (Registration and Control) Rules 2013.
n. The J&K nationalization of forest, working ordinance 1987.
o. The J&K Extraction of Resin Act, 1986.
p. Govt. order No. 24-FST of 1990 dated 15.1.1990- Restriction on commercial fellings.
q. The J&K Forest (Conservation) Act 1997
r. The J&K Rehabilitation of Degraded Forests village plantation rules 1992 (Rules for benefit sharing) SRO 61 of 1992 dated 29-03-1992.
s. The J&K Forest Protection Force act, 2001
t. The Environment Protection Act, 1986
u. The Biological Diversity Act, 2002

1.10 Rights and Concessions

1.10.1 No rights are recognized in these forests but local people including zamindars do enjoy liberal concessions from these forests under the Jammu Forest Notice. Concessionists are categorized into “A” and “B” categories for purpose of the extent of major concession granted i.e. Timber. Trees of chir are granted at highly concessional rates to the villagers residing within three miles (5 Km) of demarcated forests for their bonafide requirements. Timber may be granted free in case of fire or any other natural clamity. However the residents of towns are entitled to the supply of timber only from the depots under the conditions and rates prevailing at these depots.

1.10.2 Other concessions enjoyed by the local people are discussed briefly as under:-

i. Collection of dead fallen material for domestic use as firewood and small timber.

ii. Lopping of trees for fodder or other domestic purpose only is allowed in case of forest trees other than chir and other protected species.

iii All M.F.Ps not forbidden by any special orders and barring those covered under the Kuth Act can be collected free of charge.

iii. Green cutting and grazing except in area closed by the department.

1.10.3 The details of timber issued to concessionst during past decade are given below in the table:

TABLE-1.5:
Statement of timber issued to concessionists from the Division for past 12 years.

Year	No. of Trees	Volume in Cum
2005-06	363	889.97
2006-07	228	632.90
2007-08	367	1585.13
2008-09	405	1672.75
2009-10	398	1523.90
2010-11	458	1743.52
2011-12	414	1599.91
2012-13	440	1690.82
2013-14	495	1776.68
2014-15	510	2058.14
2015-16	81	315.36
2016-17	72	282.69

1.10.3 In pursuance to policy of Government, timber sales depots were also opened at Sunderbani and Nowshera towns to meet requirement of timber for construction purposes in town only. Timber in shape of scants is supplied to people on subsidized rates from such depots. The details of timber supplied to the people living in "MC" Zone Nowshera and Sunderbani Town is given below in table 1.6

Table:1.6
Timber supplied to people living in "MC" zone of Nowshera and Sunderbani towns from past 12 years

Year	Number of scants Supplied		
	Nowshera Town	Sunderbani Town	Total
2005-06	204	200	404
2006-07	0	40	40
2007-08	0	0	0
2008-09	0	55	55
2009-10	429	414	843
2010-11	246	480	726
2011-12	396	547	943
2012-13	918	834	1752
2013-14	1222	1588	2810
2014-15	1127	1224	2351
2015-16	676	449	1125
2016-17	130	234	364
G.Total	**5348**	**6065**	**11413**

1.11 Grazing

1.11.1 This area is a great attraction for nomadic herds for grazing and browing in winter months, more particularly the goat. This land is rightly named as Goat and Garna (*Carrisa spinarium*) country.

1.11.2 In winter months almost every compartment is occupied by deras of Bakerwals whose herds nibble almost in every leaf of bushes. Sometimes even twigs of *Accacia modesta* and *Euphorbia* bushes are also not spared. Over-grazing is a great menace in the forests of this Division. Sheep Husbandry Department is giving all facilities to nomads to increase their sheep and goat population at the cost of forests. The pressure of grazing on the forests is increasing day by day with the rapid incase in livestock population and fast disappearance of grazing grounds outside the demarcated forests. This unscientific and unregulated grazing beyond the carrying capacity of the forests is mainly responsible for failure of regeneration to establish itself and consequent degradation of many good forests. There are no restrictions on grazing except realization of fluctuating "Kachcharai" at nominal scheduled rates from the owners in terms of "Kachcharai Act".

1.11.3 The detail of annual grazing fee recovered by the Division for the last decades is given below in table -1.7.

TABLE : - 1.7
Grazing data of Nowshera Forest Division for the period of 2005-06 to 2016-17

S. No.	Year	Amount recovered (Rs)
1	2005-06	Rs 9132.05
2	2006-07	Rs 17948.35
3	2007-08	Rs 15294.00
4	2008-09	Rs 16122.00
5	2009-10	Rs 11754.00
6	2010-11	Rs 10913.00
7	2011-12	Rs 12844.00
8	2012-13	Rs 17218.00
9	2013-14	Rs 15173.00
10	2014-15	Rs 14918.00
11	2015-16	Rs 14463.00
12	2016-17	Rs 16273.00

1.11.4. The livestock population of sub-Division Nowshera is as under:-

Table-1.8:
Showing the livestock Population of Nowshera

Category	**Population**												
	2004-05	**2005-06**	**2006-07**	**2007-08**	**2008-09**	**2009-10**	**2010-11**	**2011-12**	**2012-13**	**2013-14**	**2014-15**	**2015-16**	**2016-17**
Cattle	3730	--	--	--	--	--	--	--	--	0	0	10298	11407
Buffaloes	1922	25	15	17	29	13	35	14	04	01	18	9363	9525
Sheep	7930	7958	29053	--	10000	12000	10400	28450	49158	28188	18900	12545	15999
Goat	15677	15557	20000	36800	17945	13450	14463	1126	323	16906	14632	18154	22949
Horse	83	0	4	0	3167	1020	1280	01	0	12	24	1666	1936
Others	--	0	0	0	0	0	0	0	0	0	2	385	370
Total	**29342**	**23540**	**49072**	**36817**	**31141**	**26483**	**26178**	**29591**	**49485**	**45107**	**33576**	**52411**	**62186**

CHAPTER-II

The forest flora and fauna

Part A Forest Flora

2.1 Composition and Condition of the Crop

2.1.1 The Forests of Nowshera Forest Division represent typical sub-tropical vegetation. Principal species in the forests of Nowshera Forest Division is Chir Pine (*Pinus roxburghii*). Besides Chir Pine, there are several other sub-tropical dry deciduous species.

2.1.2 The shrubs found in lower part of this Division are dense which includes *Carrisa spinarum, Dedonea viscosa, Adhathoda vasica, Nerium indicum, Ipomea fistula* etc.

2.1.3 These shrubs are mostly mixed with scattered broadleaved trees which includes *Acacia nilotica, Acacia modesta, Albizzia lebbeck, Butea monosperma, Bomax ceiba, Cassia fistula, Dalbergia sissoo, Emblica officinalis, Mallotus phillipinensis, Syzygium cumini, Ziziphus spp*. Etc.

2.2 Occurance and Distribution of species

2.2.1 Nowshera Range is dominated by chir except for lower parts which are dominated by shrubs and mixed with broadleaved species and its associates.

2.2.2 Rajal and Treru block of Lamberi Range are dominated with chir in pure form and mixed with broadleaved trees in depressions and slops facing north.

2.2.3 Sunderbani Range is dominated by chir and mixed with broadleave trees. Re-generation status is better in depressesion.

2.3 Forest zone of vegetation

2.3.1. The forests of this Division may be divided under following district zone of vegetation.

i) Sub-Tropical pine forests

ii) STDD & STDE forests

iii) Banj Oak forests

2.3.2 **Sub-Tropical pine forests**

Major tract of the division is occupied by *Pinus roxburghii*. It covers all the three forest ranges of the division. Chir Forests are pure in nature but at places (as per locality factors) admixture of other broad leaved species is also found especially at lower altitudes.

2.3.3 Sub-Tropical Dry Deciduous and Sub-Tropical Dry Evergreen Forests

All the country side of Nowshera, Lamberi and Sunderbani ranges comprise these forests. This zone is the main habitat of wild life and also great attraction to nomadic herds of Bakerwals. Subtropical broadleaved deciduous forests are common at low altitudes mostly with eroded soil and are confined to elevation of 900-1600m.Chir is dominant species and at lower altitude is associated with other species. Common species are:-

*Dalbergia sissoo, Acacia catechu, Acacia modesta, Olea cuspidata, Pistacia integerimia, Punica granatum, Emblica officinalis, Zizyphus species, Cassia fistula, Cassia tomentosa, Ficus species, Grewia optiva, Terminalia ballerica, Ougeinia dalbergoides, Mallotus phillipinensis, Lannea grandis, Euphorbia royleana, Pyrus pashia. The c*ommon Shrubs are *Adhathoda vasica, Dedonea viscosa, Carrisa spinarum, Woodfordia fruticosa, Indigofera heterantha etc.* This is transition zone where angiosperm dominated subtropical forests are replaced by gymnosperm dominated chir forests. Gymnosperms in these forests include *Carrisa opaca, Woodfordia fruticosa, Berberis lyceum etc.*

2.3.4 Banj Oak Forests

Within the sub-tropical pine zone, belts of oak forests occur in Treru block and in small patches around Pir Badeshwar peak and Bagla Challas ridge. Since, these forests have been subjected to heavy lopping in the past and at places cleared for cultivation, relicit patches gives an impression of once luxuriant growth of oak forests. Similarly in Treru also, where still some good forests of Banj Oak exist, ruthless hacking by Gujjar and Bakerwals for fodder purposes is reducing tree line day by day. The Forests are poorly stocked, over grazed and frequently subjected to forest fires.

2.4 General Description of the Forest Types:

2.4.1 The forests of this Division can be classified into the following forest types in accordance with the “Revision survey of forest types of India” by Champion and Seth type 9/c1 Himaliyan Sub-tropical pine forests.

2.4.2 Lower Siwalik Chir Pine Forest 9/C1a

The principal species is chir which is found in pine patches towards the higher altitudes & mixed with broadleaved species and shrup towards lower altitudes. These forests are heavely grazed trampled by permanent or migratory livestock population adversely effecting the ground flora and regeneration of chir in these areas reoccurance of fire in a common phenomenon in these forests.

General floristics are as under:-

Pinus roxburghii, Acacia catechu, Mallotus philipinensis, Dalbergia sissoo, Lannea coromandelica, Acacia modesta, Cassia fistula, Syzygium cumini, Emblica officinalis, Butea monosperma, Ficus roxburghii, Pistacia integerrima, Terminalia balerica, Terminalia chebula, Flacourtia ramontchii, Casearia tomentosa, Carissa spinarum, Dodenia viscosa, Woodfordia fruticosa, Adhatoda vasica, Berberis lycium, Rubus ellipticus, colebrookia oppositifolia, Myrsine Africana, Punica granatum, Xanthoxylum alatum, Ziziphus mauritiana, Vitex negundo, Nerium indicum, Rumex hastatus, Plantago spp., Echinops echinatus, Cymbopogan spp., Cenchrus ciliaris, Peuraria tuberose.

2.4.3 Upper or Himalayan Chir Pine Forest (9/C1b)

General floristics are as under:-

Pinus roxburghii, Quercus incana, Lyonia ovalifolia, Syzygium cumini, Ficus roxburghii, Olea cuspidate, Pyrus pashia, Emblica officinalis, Pistacia integerrima, Xanthoxylum alatum, Colebrookia oppositifolia, Berberis lyceum, Rubus ellipticus, Rubus lasiocarpus, Woodfordia fruticosa, Myrsine africana, Prinsepia utilis, Rumex hestatus, Tarazacum officinale, Myosotis mycrantha, Cynodon dactylon, Cymbopogan spp., Cenchrus ciliaris, Rosa moschata.

2.4.4 Himalayan Sub-Tropical Scrub 9/C1/DS1)

In this forest type, the overwood is completely absent and has been either destroyed or perhaps has not been able to develop owing to excessively dry and shallow soil. The predominant shrubby growth consists of *Carissa spinarum* and *Dodonea viscosa* alongwith scattered shrubs of *Adhatoda vasica, Berberis lycium, Woodfordia fruticosa* etc.

2.4.5 Himalyan Sub-Tropical Euphoria Scrub 9/C1/DS2

Euphorbia royleana forms conociarious in small patches on dry and rocky sites and these subjected to heavy biotic pressure. They indicate xerophytic conditions. This type occupy negligibly small patches.

2.4.6 Lower Western Banz Oak (*Quercus incana*) Forest 12/C1a

General floristics are as under:-

I & II. *Quercus incana, Rhododendron arboereum, Lyonia ovalifolia, Pyrus pashia, Machilus duthei, Pistacia intergerrima, Ilex obpyrena.*

III *Rubus lasiocarpus, Prinsepia utilis, Berberis asistata, Viburnum spp., Desmodium tilliaefolium, Berberis lyceum, Rubus ellipticus, Myrsine Africana, Indigofera spp., Rhus cotinus.*

IV *(A) Rumex hestatus, Myosotis mycrantha, Plectranthus rugosus.*
(B) Thun grass

V *Vitis himalayana, Headera helix, Rosa moschata*.

2.5 Injuries to Which the Crop is Liable

2.5.1 The various agents causing direct or indirect injuries to crop of the forest are enlisted below:-

i) Man and his animals.
ii) Fires
iii) Wild animals
iv) Insects, Fungi and parasites.
v) Natural & Climatic causes

2.6 Man and His Animals:

Man and its animals cause most extinguish damage to these forests.

2.6.1 Uncontrolled and unrestricted grazing by all types of animals, (including Sheep and goat) is going on in this Division. There is no restriction regarding the number or category of animals grazing in these forests. This excessive grazing causes a lot of damage to the fresh regeneration, especialy on areas facing southern aspects.

The recruits and seedlings are crushed or grazed and the soil becomes too compact. Because of these reasons, the overall condition of regeneration in forest of this Division is not satisfactory.

2.6.2 Lopping is done specially in Ban Oak forests to fulfill their requirement of firewood and fodder. This has caused considerable damage to the oak forests and many of the erstwhile oak forests have deteriorated into “Oak scrub” Chir trees are lopped for fuelwood and pine needles.

2.6.3 Torch wood extraction is done by the villagers from the standing chir trees. As a result chir tree get damaged and weakened and can get broken near the ground level due to storm winds.

2.6.3 Resin tapping is also damaging the crop of chir forests, Irregularities in respect of resin tapping are found in all the areas of chir forests, under tapping. The prescribed norms are not followed in respect of tapping and sizes of blazes. These excesses (Old Cup and Lip Method) have weakened the younger crop which tends to get damaged by strong winds, especially along spurs and ridges. The lower limits of dia (for tapping) has not been strictly followed in practice and many younger tree have also been tapped in the forests

2.6.4 Illicit damage is also an important factor for the damage of our forests, People indulge in illicit felling of trees to meet their requirement of timber and firewood.

2.6.5 Encroachment of forest land is the most formidable cause to destruction of the forests, these encroachments which are on increase need to be immediately brought to halt in order to save the forest from further destruction.

2.7 Forest Fires

2.7.1 These forests suffer considerably because of frequent fires. One of the major problems of managing the chir forest is to provide effective fire protection to the younger chir crop (regeneration) till it achieves to height of at least three meters. In chir areas, ground fires cause considerable damage to one year old plants and may even damage 3 to 4 year old plants. Even bigger trees also sometimes get damaged by these heavy forest fires and get dried up in one or two years. The chir areas kept under a very strict fire control/protection, tend to accumulate excess of inflammable material and when fire takes place in such areas, the damage is very serious and extensive especially in areas where resin tapping has been done.

2.7.2 If the forests are subject to fires, whether in the form of controlled burning or uncontrolled burning frequently, it can lead to the soil becoming drier and also to a decline in the fertility of soil. This tends to lower the site quality of the area.

2.7.3 The oak forests adjoining chir forests are also effected by the fires. Mostly these fires are likely to travel into oak forests from the adjoining chir forests. The villagers and nomadic graziers also set fire to the forest area to get fresh flush of grasses and to extend their grazing grounds/encroachments.

Following statement shows the number of forest fires reported and the area burn in the Division.

Statement of fire burnt forest area of Nowshera Forest division during 2005-06 to 2016-17

S. No.	Year	Number of Cases	Area Burnt (Ha)
1	2005-06	82	243
2	2006-07	72	183.4
3	2007-08	71	131.4
4	2008-09	29	57.41
5	2009-10	168	503
6	2010-11	23	155
7	2011-12	40	60.80
8	2012-13	102	222
9	2013-14	17	21.00
10	2014-15	33	53.80
11	2015-16	29	46.00
12	2016-17	82	122.56
General Total		**748**	**1799.37**

2.8 Wild Animals

2.8.1 Injuries caused by wild animals, to the forests, are negligible as compared to the damage done by man and his animals. Bears damage the younger trees of chir, Oak etc. by removing their bark but such damage is of negligible extent.

Porcupine uproots and chews the seedlings of chir and broadleaved trtee species. Monkeys Langurs and wild pigs also damage the seedlings of Oak and chir.

2.9 Parasites, Pests and Pathogens

2.9.1 Generally healthy standing trees are not damaged by the insects. Only injured, damaged, exposed and fallen trees are attacked by these. Injury, due to the fungus, is very little and almost negligible in this Division and generally takes place during humid season.

2.10 Natural and Climatic causes

2.10.1 **Drought:** retards the growth of trees, especially younger regeneration and damage the seedlings and saplings. The damage is higher on hotter southern aspects. Drought affected trees become less resistant/tolerant towards fires.

2.10.2 **Floods:** lead to land slides and erosion of soil and may lead to the uprooting of trees.

2.10.3 **Strong winds:** and storms damage the chir forests, especially chir trees under tapping. Every Year a many trees are stuck by the lightening and these die-out eventually.

(B) The Fauna

2.11 General Description

2.11.1 The Division consists of low lying hills which experiences sub-tropical climate. There is variety of fauna found in the treact. The sub-tropical zone is now well connected with roads and is littered with villages and "chaks". The ever increasing pressure of human population has definitely lead to a sharp decline in the population of fauna, especially game animals and birds in this region. Apart from large scale killing of game animals and birds by man, the deforestation has lead to sharp decline in the habitat of wildlife and consequent reduction in number.

2.11.2 Some of the wildlife species inhabitating the tract are:-

Class-Mammalia
I-Carnivora

(a) ***Leopard (Panthera pardus)***

It is locally known a "Chita" or "Chitra" Range of occurance covers entire tract of the Division but its number is very low. Many a time it kills domestic cattle for food due to shortage of wild preys.

(b) Jackal (*Canis aureus*)

This is very common animal found frequently around human settlements throughout the tract. Their habits are mostly nocturnal. They are nature's

scavengers. Jackal has been declared a vermin as per the Jammu and Kashmir wild life (Protection) Act 1978.

(c) The common fox (*Vulpes bengalensis*)

This is the common Indian fox of the plains and is encountered in sub-tropical zone of the area. It has been declared a vermin as per the J&K wild life (Protection) Act 1978.

(d) The grey musk shrew (*Suncus murinus*)

The pointed snout, depressed ears and teeth at once, distinguish these shrews from rats, with which the species is commonly confusd. The are found quite commonly throughout this tract.

II-Chiroptera

(a) The Fulvous fruit bat (*Rausettus leschenaulti*)

This medium sized bat is commonly seen almost all over this tract and mostly lives amongst rocks and caves. These can be seen roosting in noisy colonies, in caves and man made structures such as tunnels, wells etc.

III-Rodentia

(a) The fivestriped palm squirrel *(Funambilus pennant)*

This is perhaps the commonest and most familiar of all Indian Wild animals. It is not found in forest but has forsaken forests to live with man in and about his dwellings and field and is seen almost all the area.

(b) The Indian Porcupine *(Hustrix indica)*

Its hair are more or less completely modified into spines. Its neck and shoulders are crowned with a crest of birstles 15 to 30 long. The quills on the back are very profuse. Each quill is ornamented with deep brown or black and white rings. It favours rocky hill sides and can be encountered almost over the tract. It can be quite damaging to the nurseries and young plantations.

(c) The indian hare *(Lepus nigriculis)*

These are commonly found in the division and generally weigh between 2 to 3 kgs when full grown up and feed on grass.

V-Ungulata

(a) The hog-deer *(Axis porcinus)*

It is locally known as “para” and its English name “Hog deer” is probably due to its squat pig like appearance and due to its hog loke movements. When running it

keeps its head low down and moves without that bounding action so characteristic in deer. The small antlers are set upon very long bony pedicels. Through its number is small now, these are found almost all over this tract and are hunted as a big game.

(b) The Indian wild Boar *(Sus scrofa)*

It is found almost all overthias tract through its number if fast declining now. It forms as important game of this area. These animals are omnivorous, living on crops, roots, tubers, insects, snakes etc. the animal is more distributive to crop and cultivated areas. It is not possible to make plea for its protection.

VI-Primates

(a) The Rhesus Macaque *(Maccac mulatta*)

This is the common monkey of Northern India and is found all over the Tract of this division. Troops of this species have observed to be engaged in uprooting and chewing the chir seedlings in the chir forests.

(b) The common langur (*Presbytis entellus*)

This is the long limbed, long tailed back faced monkey seen as much about habitations as in the forests. They inhabit various altitudes of the division and in general more arboreal in habits than macaques.

Class-Aves

Detail of important game birds as as under: -

The white crested Kaleej pheasant (*Gennaeus ramiltoni*)

Size + domestic fowl. A bird with long sickle shaped back tail, whitish rump and black above having bare scarlet path round the eyes. Found mostly in the banj oak forests.

The red Jungle fowl (*Gallus gallus*)

Size + village hen. Found almost all over in the chir zone.

The Chukor (*Alectories graeca*)

A beautiful pinkish gray bown partridge. Found in oak forests.

The gray partridge (*Francolinus pondicerianus*)

Size that of half grown domestic hen. Very commonly found almost over the division.

The Black partridge (*Francolinus francolinus*)

Size same as above. Very commonly found all over the division.

The common or grey quail (*conturnix coturnix*)

Size that of Dove. An almost taillessn bird mainly found in the entire lower portions of Nowshera and Dhalari Ranges.

Detail of other birds found in the division are as under:

White backed or Bengal Vulture (*Pseudogyps bengalensis*)

Size + Peacock. A dirty blackish brown vulture with naked head and neck and white back. Found all over this division.

Common Pariahkite (*Milvus migrans*)

A large brown hawk with forked tail found all over the division and often seen flying over the head.

Common peafowl (*Pavo cristatus*)

A long tailed bird with beautiful crest found in sub-tropical zone. Included in schedule 1 of J&K Wild life (protection) Act 1978 and its hunting is totally prohibited.

The shahin falcon (*Falcoperegrinus peregrinator*)

Somewhat larger than the ouse crow. A falcon with slaty black head andrusty red under parts. Found all most all over the division.

Shikara (*Accipiter badius*)

A hawk wiith a shy blue gray colour above and white below. Found every where in division. Size + pigeons.

Kestrel (*Falco tinnunculus*)

Size + pigeon. A small falcon often seen checking itself in flight, time and again and remains stationery in mid air. Found almost over the division.

Jungle Crow (*Corvu macrorhynchos*)

Size house +. A grossy jet back crow found all most over the division

House Crow (*Corvus splendeds*)

This is the common crow found all over the specially along habitations.

Red wattled lapwing (*Vanellus indicue*)

Size + partridge. A bird with the black breast, head and neck, white below brown above and a crimson fleshy wattle in front of each eye. Found in pair almost all over the area near small ponds and puddles.

Roller or Blue jay (*Coracias bengalensis*)

Size + Pigeon of the lower portion of the division and generally found perched singly on poles around cultivations.

Common hawk cuckoo or Brain fever bird (*Cuculus-various*)

Size + pigeon. Superficially very much like Shikara hawk and found almost all over the division.

Koel (*Eudymanys scolopaces*)

Size + house crow. Found in sub tropical zone. Remains silent in winter and becomes increasingly noisy with the advance of hot weather.

Red billed blue (*Urocissa Erythrorhyncha*)

Size + pigeon. A long tailed (15" – 17") blue bird with black head, neck and breast, greyish white under parts crimson bill and legs and long graduated tail. Found all over the division

Indian Myna (*Acridotheres tristes*) Size + Bulbul. A dark brown bird with bright yellow bill and legs and bare skin round the eyes.

Brahminy or Black headed Myna (*Sturnus pagodarun*)

Size smaller then above. Grey above, redisg below with glossy black crown, seasonally found in the lower area of the division.

Jungle Mynah (*Acridotheres fuscus*)
Similar to Indian myna but more greyish brown overall devoid of yellow skin round the eyes. Found almost all over in the division.

Small yellow maped wood pecker (*Picus chlorolophus*)

Size + Myna. A yellow green wood pecker with golden yellow crest.

Golden Backed wood pecker (*Dinopium bengalensis*)

Size = Myna. A wood peacker with upper plumage golden yellow and black and crimson crown and occipital crest. Found in sub-tropical zone.

Hooper (*Upupa epops*)

Size + Myna. A bird with zebra like black and white markings on back and fanshaped crest.

Pied crested cuckoo (*Clamator jacobinus*)

Size+ Myna with longer tail. A handsome crested black and white cucokoo with white tips of tail feather.

Ring dove (S*treptopelia decaocteo*)

A pineon sized dove with a narrow black half ring on the hind neck. Found in the area seasonally.

Spotted dove (*Streptopelia chinensis*)

Size between myna and pigeon. A dive with whited spotted pinkish brown and grey upper part and white and black chess board on hindneck. Found in lower open areas.

Rose ringed parakeet (*Psittaculus krameri*)

A grassy bird with a long pointed tail, red beak and red rings on the hindneck. Found in sub-tropical zone.

Blossom headed parakeet (*Psittachula cyanocephala*)

A grassy green bird with bluish red head and maroom shoulder patch.

Himalayan whistling (*Myiophoneus caeruleus*)

A blue black bird found all over in the division.

White breasted king-fisher (*Halcyon smyrnensis*)

A bird with deep chocolate brown head neck and upper parts, a white breast and long red bill. Found near ponds, streams and water ditches.

Small blue king-fisher (*Alcedo atthis*)

A blue and green little king-fisher with rust coloured under parts, short stumpy tail and long bill. Found near streams and ponds.

Common Babbler (*Turdoides caudatus*)

A brownish babler with long graduated tail found in the lower portions.

Jungle Babbler (*Turdoides striatus*)

Sige + Myna found all over Division.

Baya or weaver bird (*Ploceus phillipinus*)

Size of sparrow. It builds a swinging retort shaped nest.

The spotted fork tail (*Encicurus maculatus*)

Size + Myna. A spotted black and white bird with long and deeply forked tail, found near streams.

Grey wagtail (*Motachilla caspica*)

Size = sparrow. A long tailed bird found near rocky streams all over area mostly in winter.

White wagtail (*Motacilla alba*)

A white bird found near rivers and streams of area, mostly in winter.

Yellow wagtail (*Motacilla flava*)

Chiedly yellowish in colour and keeps wagging its tail like other like other wagtails. Found in winters.

Little egret (*Egretta grazetta*)

A lanky snow-white marshy bird with back bill, long dropping crest and long legs. Found near streams and ponds.

Cattle egret (*Bubulcus ibis*)

A white bird in its non breeding plumage. Like the little egret but with yellow bill. Found accompanying the grazing cattle.

Paddy bird or pond heron (*Acdecla grayii*)

An egret like bird, earthy brown at rest, with while wings. Found near ponds, paddy fields, rivers etc.

Gold fronted chloropsis (*Chloropsis aurifrons*)

A grass green bird with bright golden fore head, purple and black chin and throat, found mostly in the lower portions of this division.

White checked bulbul (*Pycnonotus leucogenys*)

A brownish bulbul with back head, white cheeks and yellow under root of tail. Found almost all over the area.

Redvented Bulbul (*Pyeonotus cafe*)

A bulbul with partially crested black head and crimson patch below root of tail and a white rump. Found all over the area.

The west himaliayan white threated lauging thrush (*Garrulax whistleri*)

Crestless olive brown and rust coloured bird with white cheeks and throat.

The Himalayan barred with whitish above and with white patch on throat, found in chir forests.

The spotted owlet (*Athena brama*)

A squate, white spotted greyish brown little owl with large round head and bulged yellow eyes.

Common swallow (*Hirundo ruslica*)

A purplish blue swallow with pinkiish white under parts and forket tail.

Wire tailed swallow (*Hirundos smithii*)

Bluish bird with chestnut cap white under parts and two longs “wires” in the tail.

The Crested Bunting (*Melophus Lathami*)

A sparrow sized black and chestnut crested bird found allover in the division.

Small green bee-eater (*Merops orientalls*)

A sparrow sized green bird tinged with reddish brown on head and neck and long pin loke pair of feathers.

The Grey Shrike (*Lanius excubitor*)

A myna size silver grey bird with longish black and white tail, black stripe from bill backward through eye.

Rufous backed shrike (*Lanius schach*)

A bulbul sized shike with a black band through the eyes and forehead, grey head and bright rufous lower back and rump.

Black drongo (King Crow) (*Dicrtrts adsimilis*)

A glossy black bird with long deeply forked tail, found all over division.

House Sparrow (*Passer domesticus*)

This is common sparrow associated with human habitations and is found all over near habitations.

Pide bushchat (*Saxicola caprata*)

A sparun size black (female earthy brown) bird with white patches on rump, abdomed and wings. Found all over.

Indian robin (*Saxicoloides fulicata*)

A blackish bird with a white patch on wing, rusty red under roots of cocked tail.

Tailor bird (*Orthotomus sutorius*)

A small restless olive green bird with whitish under parts, rust colored crown and two long pointed feathers in the cocked tail.

Grey tit (*Parus major*)

A sparrow sized bird with glossy black head with cheek patches, grey back and whitish under parts.

Paradise flycatcher (*Terpsiphone paradise*)

A bulbul sized silvevery white bird with metallic black crested head and two very long, narrow ribbon like curved feathers in tail.

White spotted fantail flycatcher (*Rhipidura albicollis*)

Cherry, restless smoke brown bird with white eye brows, white spotted breast and flanks, whitish abdomen and fanned out tail, drooping wings.

Golden oriole (*Oriolous oriolous*)

A myna sized bright golden yellow bird with blackish wings and tail and black streak through the eyes.

Common or Black redstart (*Phoenicurus ochruros*)

A slim active black and orange chest nut bird constatntly shivering its tail and dipping fore part of body.

White capped redstart (*Chaimarrornis leuccephalus*)

A ribin loke bird, black above, chestnut below with snow white cape and bright chestnut tail ending in a black band. Found near streams.

Himalayan nut cracker (*Nucifraga caryocatoctes*)

A chocolate brown and umbler brown bird spotted with white above and below and having wedge shaped bill. Found in chir forests.

2.12 Injuries to Which the Fauna is Liable

2.12.1 The fauna of the forests is liable to injuries by man, wild animakls, Epidemics, Fired and Atmospheric influences.

2.12.2 Man

Man undoubtedly is the biggest enemy of the fauns (wildlife). Hunting of the wild animals and birds has always been game for the man. Man has continued to undetrtake planned and sustained efforts to hunt and destroy the wildlife. Wild animals and birds are hunted for their valuable skin, fur and horns etc. large thus destroying the habitst for the wildlife and consequently the wildlife. For this destruction, man is solely responsible.

2.12.3 Wild Animals

Many forms of the wildlife live on other forms of the wildlife. In this way "nature" maintains the balance through food chain and all forms of wildlife continue to co-exist and live without disturbing the ecological balance.

2.12.4 Epidemics

Epidemics all not commin among the wild animals or birds but some times contagious diseases are spread among the wild animals also by domesticated animals grazing inside the forests.

2.12.5 Fires

Sometimes the wild animals get trapped in the forest fires and are killed but this happens very rarely. Generally these wild animals have very keen sense and are capable of escaping away, well in time, from such dangers.

2.12.6 Atmospheric Influences

Wild life has generally an in built strength to survive the extremities of nature. Only the young once of wild animals and birds are effected by heavy snow, frost etc. Birds are the chief suffers from heavy snow fall, rain and storms as the young birds and the eggs are destroyed by these atmospheric influences.

CHAPTER-III

Utilization of the produce

3.1 Agricultural Customs and Wants of the Population

3.1.1 The total population of the District Rajouri was 642415 (Male-345351 & female-297064) as per census of 2011 out of which 91.86 % live in rural areas. The population of district Rajouri has shown growth of 32.93% from 2001 onwards as per census 2011.

3.1.2 The population of the tract comprising Nowshera Forest Division which includes Nowshera, Sunderbani and Part of Rajouri and Kalakote Tehsil of Rajouri District, besides small parts of Reasi Tehsil of Reasi District and Akhnoor tehsil of Jammu District is increasing at alarming rate.

3.1.3 The population consists of mainly Hindus predominate in Sunderbani and Nowshera Tehsils. Leaving aside the trading classes (localized in township of Nowshera and Sunderbani, the population is mainly agricultural. People speak local dialect like dogri, pahari, Punjabi, gojri etc.

3.1.4 Most of the rural population is largely dependent upon the forests for meeting their timber requirements for agriculture implements, house building and repairs and for firewood as well as for grass, grazing and leaf fodder for their cattle. In addition to these requirements of rural population, the timber and firewood requirements of the urban population and also that of Army are to be met with from these forests.

3.1.5 There are few Brick Kilns in Lamberi, Jhanger and Lam areas of the Division to cater to the increasing constructional activities in the tract although majority of people depend upon Brick Kilns of Jammu, Reasi Districts because of better quality.

3.1.6 No record of rural consumption of firewood obtained from these forests is available in the form of any survey/study. Fuel wood has been supplied for cremation purposes and to Town area Committee. The forests of Division have to provide large quality of fuel wood to rural population.

TABLE 3.1

Fuelwood supplied to towns in Nowshera Forest Division:

S.N.	Year	Firewood (Quintal)
1	2005-06	269
2	2006-07	230
3	2007-08	290
4	2008-09	194
5	2009-10	268
6	2010-11	400
7	2011-12	416
8	2012-13	314

9	2013-14	346
10	2014-15	1308
11	2015-16	303.40
12	2016-17	274.30

TABLE-3.2

Detail of Firewood Extraction for Last 12 Years

S.N.	Year	Species	Quantity extracted(Qtl)
1	2005-06	Chir dry fallen	731
2	2006-07	Chir dry fallen	348
3	2007-08	Chir dry fallen	318.15
4	2008-09	Chir dry fallen	300
5	2009-10	Chir dry fallen	290
6	2010-11	Chir dry fallen	508
7	2011-12	Chir dry fallen	864
8	2012-13	Chir dry fallen	1700
9	2013-14	Chir dry fallen	520
10	2014-15	Chir dry fallen	801.20
11	2015-16	Chir dry fallen	745
12	2016-17	Chir dry fallen	998.50

3.1.8 Timber actually issued to rural concessionists over the last 12 years is as under:-

TABLE-3.3

Detail of Timber Issued to Concessionists of Nowshera Forest Divison

S. No.	Year	Species	Timber to Concessionists	
			Trees/poles	Volume(cft)
1	2005-06	Chir dry fallen	363	31423
2	2006-07	Do	228	22348
3	2007-08	Do	401	58112
4	2008-09	Do	405	59065
5	2009-10	Do	398	53809
6	2010-11	Do	458	61564
7	2011-12	Do	414	56493
8	2012-13	Do	440	59703
9	2013-14	Do	495	62743
10	2014-15	Do	510	72682.62
11	2015-16	Do	81	31536
12	2016-17	Do	72	10183

3.1.9 Additional subsidized rate timber supplied to people from Nowshera Forest Division as under:-

Table-3.4

Statement Showing the Subsidized Rate Timber Supplied to people

S.N.	Year	No. of Scants Supplied		
		Nowshera Town	Sunderbani Town	Total scants
1	2005-06	204	200	404
2	2006-07	0	40	40
3	2007-08	0	0	0
4	2008-09	0	55	55
5	2009-10	429	414	843
6	2010-11	246	480	726

7	2011-12	396	547	943
8	2012-13	918	834	1752
9	2013-14	1222	1588	2810
10	2014-15	1127	1224	2351
11	2015-16	676	449	1125
12	2016-17	130	234	364

3.1.10 Apart from these requirements of timber and fuel wood of local population, being met with from these forests. The requirements of grass, grazing and fodder for their cattle is also chiefly fulfilled from these forests only.

3.2 Market and Marketable Products

3.2.1 At present the chief marketable timber is chir, major portion is required to meet local demands. Commercial exploitation of chir, is done by SFC and timber extracted in form of sleepers, scantlings and even smaller sizes is exported to Jammu and other places for further sale by SFC

3.2.1 Out of minor forest products, "Resin" is the most important marketable product as most of the area of Division is under chir crop. In fact it has gained importance than timber because revenue being earned by Division (from extraction/sale of resin) is quite appreciable. Now the extraction of timber is very low but resin is being allowed to be extracted and thus attainss status of very important MFP of Division.

TABLE-3.5
Details of Extraction of Resin in Nowshera Forest Division from 2005-06 to 2015-16

S. No.	Year	Total No of blazes	Production		Revenue generated
			No. of Tins	App. Weight (In M.T.)	
1	2005-06	761125	135304	2420.10	66498549.00
2	2006-07	533856	101626	1818.00	21286001.65
3	2007-08	581148	95065	1686.00	41647625.36
4	2008-09	283081	40303	721.00	30617832.00
5	2009-10	146988	23592	422.17	15242223
6	2010-11	130970	25825	462.00	37250819.00
7	2011-12	93910	14886	266.30	16798696.00
8	2012-13	163028	21456	383.68	13896040.00
9	2013-14	205200	27596	488.08	35498470.00
10	2014-15	20900	36597	652.63	39419304.00
11	2015-16	185000	36350	636.12	559373.00

3.2.2 Other major MFP of Division is Khair. In 2016-17 ban on khair extraction from the private land has been uplifted on the direction of Hon'ble Supreme Court of India. The ten years Khair felling programme has been given in Annexure-XVIII.

3.3 Lines of Export

3.3.1 The chief line of export for timber is only "road". Being provided with good network of roads, the mode of extraction is not costly or different. The main roads covering the Division are:-

(i) Jammu Poonch National Highway.
(ii) Sunderbani Nowshera via Beripattan.
(iii) Nowshera Jhanger Lam road.
(iv) Siot Kalakote road.
(v) Sunderbani, Teryath, Kalakote Road
(vi) Chatyari Bagla, Nadyala Road.

3.2.3 Crude resin filled tins extracted from chir forests are delivered by the contractors at various road side depots from where the department arranges its carriage to various destination through "road".

Methods of Exploitation

3.4.1 Forests are exploited by the State Forest Corporation Timber is converted into sleepers/scantling in the forest itself. The Sawn timber is carried as head loads to roadside. No other agency is allowed for extraction of timber. Trees are felled by employing saws and axes practically near ground level and then mostly converted into sleepers/scantlings by hand saw. Extraction of chir timber in log form is also done by SFC as these forests are easily accessible and log can be brought to road side without much difficulty.

3.4.2 Crude resin is extracted from chir forests through contractors and is received in various depots in tins. Resin areas are set first grouped into various lots and then each lot is auctioned to contractors for extraction of resin from chir trees and its carriage and delivery at the depots fixed for receiving these tins. All operations for resin tapping are carried out by the labour engaged by the registered contractors who enter into an agreement with the department before actually taking up the resin extraction activity in their allotted lots.

3.5 Past and Current Prices

3.5.1 The details regarding prices of sawn timber (2014-15) in Zone C as supplied by DM Sales SFC is given as under:

Species	C class per cft
Chir	235=00
Fir	235=00
Kail	390=00
Deodar	543=00

CHAPTER-IV
Activities of state forest corporation

4.1. Jammu & Kashmir State Forest Corporation

4.1.1 The J&K SFC was created by the act of legislation, namely The Jammu and Kashmir State Forest Act, 1978 and rules were framed in 1981. The forests were worked out by leases in the older days and later the forest working was nationalised by The Jammu and Kashmir Nationalisation of Forest Working Act, 1987.

4.1.2 The Forest Department hands over the coupes to SFC and levies the royalty. Before the ban of green felling of trees, the SFC was handling huge volume of timber every year. Due to the imposition of ban on green felling by the State Government and the various directives issued by the Hon'ble Supreme Court of India regarding felling, resulted in least quantum of timber extraction by SFC. Later, the Hon'ble Supreme Court of India endorsed the Qualitative and Quantitative norms (popularly called as Q&Q Norms), proposed by the State. As per the Q&Q norms, 80 lakh cft of standing volume of conifer trees (dry, fallen; basically hygienic markings) can be cleared in the State for extraction every year, but except few years, the limit of 80 lakh cft was never touched hence it resulted in financial crunch to the corporation.

4.1.3 The State Forest Corporation suggests the available volumes from different compartments. If the compartment fits to be worked out as per the conditions imposed by Q&Q norms, then it is enumerated for dry/ fallen trees. After the issue of technical sanction and Administrative Approval, then the marking in the compartment is handed over to the SFC for extraction.

TABLE- 4.1

StatementShowing the Compartments of Nowshera Forest Division Worked By SFC From 2005-06 to 2015-16

S. No.	Year	Compartments worked by SFC
1	2005-06	Nil
2	2006-07	Nil
3	2007-08	114/N,116/N,117/N
4	2008-09	Nil
5	2009-10	43/N,45/N,69/N,119/N,122/N,115/D,126/D
6	2010-11	103/N,104/N,118/N
7	2011-12	Nil
8	2012-13	Nil
9	2013-14	Nil
10	2014-15	40/D and 43/D
11	2015-16	107/N, 113/D, 112/D, 108/D, 107/D, 105/D, 104/D, 82/D, 65/D, 64/D and 20/D

4.1.4 The SFC prepares the estimate for the timber operation, based on the expected out turn and calculates the financial cost for extraction and transportation of

timber upto its central depots. Then the SFC allocates the work to the contractors for execution of timber operation based on competitive bids. When the timber is dumped in the road head, the transportation of timber is permitted by either CF or the CCF (Territorial), after due verification of the stocks.

4.1.5 The entire operation of timber extraction and transportation shall be very closely monitored by the territorial field staff. From the starting of felling operation upto the disposal of debries and handing over the compartment back to the forest department, it should be monitored properly. The felling of marked trees shall start only after the proper handing over of the marking to the SFC. The felling shall always be on the Hill side; in rarest cases it is along the contour and never on the down side. The falling tree shall never injure the other standing trees. Likewise there are many conditions. The SFC shall report to the territorial department about the progress of the felling operation every month.

4.1.6 The felled tree is delimbed and logs of standard sizes are cut. The logs are debarked and rolled down to road head for further transportation in Kashmir valley, but extracted into scants in Jammu province. The 10'X10"X5" wooden sleepers are called as BG sleepers as it was meant for Broad Gauge Railway Sleepers. Apart from BG, the terms used by local people meant for under sized sleepers are *Pasale, Chakkoor* and *Dimdima*. The extracted scants are brought to road head either by head load, *Pathru* or aerial ropeway (*tar* span). The pathru is used when the extracted stuff is more than 30000 sleepers and intended to be transported from the higher elevation point to the lower destination through steeper path. When the sleepers have to cross longer distance and many deep valleys, the aerial ropeways are used. When the sleepers moves under the force of gravity, no extra mechanical power is required. If it has to move against the gravity, the diesel engines are used to power the lifting of scants against the gravity. If smooth moving water channel is available, the from the origin upto the destination, the scants are launched in water body and caught at the *boom* erected at the destination. From the road head the scants are loaded in trucks and transported. Form -25 (Transport permit) is issued by territorial division for monitoring the land transportation of forest produces.

4.1.7 Mostly, the timber is sold in open auction by SFC.

TABLE 4.2

The rates in vogue in SFC for timber operations during 2015-16 are as follows.

#	Activity	Category (norm rate in Rupees)			
	SAWN FORM	**D**	**C**	**B**	**A**
(a)	**Extraction (on FMM)**				
1	Felling (per cft)	3.37	2.82	2.56	2.01
2	Hand Sawing – under/odd size (per cft)	44.66	40.80	37.79	34.37
b. Hand Sawing – standard size (per cft)		51.04	46.63	43.18	39.28
(b)	**Off–road Transportation (on DMM)**				
3	Pathroo (per cft/Km of 33 chain)	7.46	7.26	7.07	6.88
4	Pacci nail (per Cft/Km of 33 chain)	2.79	2.51	2.51	2.41
5	Tarspan (per span/cft)	6.30	5.99	5.99	5.99
6	S.N Mahan (per cft per km of 33 chain)	1.96	1.85	1.85	1.71
7	Main Nallah Mahan (cft/Km)	1.71	1.71	1.71	1.71
8	Head carriage (forests) (per cft/chain)	0.55	0.55	0.55	0.55
9	Crane (per cft/Km)	9.44	8.97	8.97	8.97
10	H/C after nikkasi (per cft/chain)	0.58	0.58	0.58	0.58
(c)	**Minor Related Activity (on DMM)**				
11	Launching (S.N Mahaning) / Cft	0.41			
12	Nikassi (per cft)	0.83			
13	Stacking (per cft)	0.78			
	LOG FORM				
(d)	**A. EXTRACTION (A1 +A3)**	7.55			
	A1 CONVERSION	5.03			
14	A1.1 Debranching &Debarking /cft	1.03			
15	A1.2 Sawing &log marking/cft	4.01			
16	A3 Felling (per cft)	2.52			
17	Loading logs (per cft)	4.55			
18	Un- loading Logs (per cft)	0.06			

(e) Log Rolling

#	**Log rolling upto Kutcha Loading Point (Per cft chain)**	**Norms Rate in Rupees**
1	Category A (0-20 degrees)	0.93
2	Category B (20-30 degrees)	0.67
3	Category C (30-40 degrees)	0.49
4	Category D (> 40 degrees)	0.22

(f) Kutcha Road Transportation (Log Form)

(Figures in Rupees)

Volume Slab Cft	**Distance slab**			
	0-50 km	**6-10 km**	**11-20 km**	**Above 21 km**
Upto 5000	2.69	2.06	1.61	1.26
5001-10000	2.64	1.91	1.35	0.93
10001-20000	2.51	1.86	1.32	0.91
20001-40000	2.39	1.76	1.25	0.86
40001-80000	2.26	1.63	1.14	0.76
Above 80001	2.13	1.53	1.07	0.71

(g) Pucca Road Transportation (Log Form) (Fig. in Rs.)

#	Distance slab in Km	Rate(in Rs/cft/Km)	Rate with 15% Contractor's profit (Rs/cft/km)
1	0-20	0.27	0.31
2	20-40	0.24	0.27
3	40-70	0.22	0.25
4	Above 70	0.19	0.22

(h) Pucca Road Transportation (Sawn Form) National Highways

(Fig. in Rs.)

#	Distance slab in Km	Rate (in Rs/ cft/Km)	Rate with 15% Contractor's profit (Rs/cft/km)
1	0-50	0.14	0.16
2	51-100	0.13	0.15
3	101-150	0.12	0.13
4	Above 151	0.11	0.12

(i) Road Transportation (Sawn form)
Other than National Highways = Rs. 0.17/ cft/ km

(j) Loading charges (sawn timber) = Rs. 1.14/ cft

(k) Extraction in log form on old NPC procedure

Activity	Rate
Extraction including felling, conversion rolling etc. (all operations) upto KLP	At the average rate of Rs. 191 per labour per day as per NPC procedure

4.1.9. Rates of firewood extraction by SFC.

Table No. 4.2 Rates in vogue in SFC for Extraction and Transportation of Firewood During 2016-17.

S.No.	Item of work	Unit	Revised rate for 2016-17 by SFC (in Rs)
1	Extraction	Quintal	105.57
2	Weighment	Quintal	03.12
3	Loading	Quintal	10.97
4	Unloading	Quintal	3.12
5	Depot Handling	Quintal	2.31
6	Other miscellaneous	Quintal	1.96
	Total		127.05
7	Transportation up to 40 Km and Beyond 40 Km	Quintal/Km	1.9 1.38
8	Additional Loading and Unloading (*)	Quintal	14.09
*****Only allowed in exceptional Circumstances subject to authentication/verification and consideration shall be on case to case basis and as per actual.			

CHAPTER-V
Staff and labour supply

5.1 Staff

5.1.1 There is no much change in the overall establishment since inception of last plan. The present strength is just inadequate for smooth functioning of department.

5.1.2 The following establishment remained as pay roll of the Division during 2015-16

TABLE-5.1
Statement Showing List of Staff Working in Nowshera Forest Division During 2015-16

S. No.	Designation	Sanctioned Strength	Actual Working
1	DCF	01	01
2	ACF	01	01
3	RO Grade-I	05	01
4	Forester	19	15
5	Dy. Forester	07	06
6	Forest Guard	73	46
7	Driver	02	01
8	Cleaner	01	00
9	Sr. Assistant	01	01
10	Jr. Assistant	03	02
11	Orderlies	03	06
12	Malies	03	12
13	Watchers	0	78
14	Chowkidars	0	07
Total		**119**	**177**

5.1.3 Total salary paid to staff during financial year 2015-16 was Rs. 635.13 Lacs out of total allotment of Rs. 640.0 lacs.

5.2 Labour Supply

5.2.1 The labour employed on forest working is primarily local as well as some labours are also from Poonch, Kashmir, doda, Kistwar and Nepal. However the availability of local labour in the division declines drastically during the sowing as well as harvesting seasons of agricultural crops. Often local labour has shown little hesitation in taking up the resin extraction work because of availability of other jobs with comparitibly more wages. Local labour is also not available during the grass cuttings period after monsoon. This grass cutting period is celebrated in from of festival popularly known as “Lateri” in the local dialect.

CHAPTER-VI
Past system of management

6.1 Past History

6.1.1 The present Nowshera Forest Division was a part of the old Mirpur Division till 1947 A.D. The old Mirpur Division was constituted in 1919 A.D. and continued with minor changes here and there, till the disturbances of 1947. When normaly was restored after disturbances of 1947, Rajouri division was created which included portions of the old Mirpur Division and a part of old Poonch Jagir. This division was again bifurcated into Poonch and Rajouri Forest Division respectively when these portions which were earlier part of old mirpur division were retained in Rajouri Forest Division & the portions which were earlier part (before 1947 A) of old Poonch Jagir were formed into Poonch Division. Very little information is available about the early history of the forests which fell under Rajouri Division. In Samvat 1940, Ain-I-Janglat was introduced but proper forest conservancy commenced in Samvat 1948 only when Dewan requisitioned the services of Mr. Mac Donell as the first Conservator of Forests.

6.1.2 In the year 1984, Nowshera Forest Division was carved out of erstwhile Rajouri Forest Division vide Govt. Order No. FST/254 of 1984 dated 23-05-1984.

6.2 Past Management

6.2.1 In its past, there was no restriction on the exploitation of various species in respect of size and number of trees to be felled. All accessible valuable species (in respect of the size and number of trees to be felled) were almost wiped out. Acacia catechu and Dalbergia sisoo, almost became extinct. Most of mature staff in chir was presumably removed leaving only the malformed trees or younger trees. This has resulted is marked deficiency of higher diameter classes.

6.3 Dhar's Plan (1934)

6.3.1 The first attempt to prepare a working plan for these forests seems to have been made in 1934 by Sh. S. D. Dhar. Only areas under chir were covered by this plan.

Following working circles were constituted:-

(i) Chir Working Circle.

(ii) Un-regulated Working Circle.

Chir Working Circle

6.3.2 This included all commercial chir areas. These were to be worked under uniform system with a rotation of 120 year, corresponding to an exploitable dia-meter of 24" d.b.h. Regeneration period was fixed at 30 years. Only PBI was allotted and the rest of the area was un-allotted. Allotment to PBI was done in such a way so as to safeguard the future yield. Two felling series were formed, complete enumeration of

trees 18" dia and over were done in PBI. The yield was calculated for PBI alone and spread over a period of 30 years (coinciding with regeneration period).

Y = V/N where

V = Volume of trees above 18" dbh in PBI.

N = 30 years (regeneration period)

The yield prescribed was as follows:-

1. Felling series I-2,31,000 cft
2. Felling series II-2,35,000 cft.

Total for PBI of the entire working circle 4,66,000 cft.

6.3.3 The intensity, frequency and conduct of regeneration felling in PBI was left to the discretion of DFO. No operation were, however, prescribed for the rest of the working circle, because of unfavourable market conditions for cheap timber like chir at that time. Requirement of local consumers, concessionist and government departments was to be met with from this area.

Un-regulated Working Circle

6.3.4 This included all the un-commercial forests and those not included in chir working circle. No operation was prescribed for this working circle, except to meet the demands of concessionist etc.

Results

6.3.5 It will be fruitless and un-necessary to go into the merits or demerits of this plan or weigh the achievements or failings of the prescription carried out then on account of the disturbances of 1947 and subsequent events. Unusual circumstances resulting from the disturbances in the western borders of this area taxed these forests beyond measures. Even after normalcy was achieved, the heavy demand of the army had to be met. This was perhaps done in a very crude fashion, resulting in a terrible depletion of the valuable growing stock.

6.4 Dullu's Plan (1960-61 to 1980-81)

6.4.1 Because of reasons enlisted above Sh. J. N. Dullu's Working Plan for the period 1960-61 to 1980-81 has been treated as first working plan for these forests and not as a revision of the earlier Dhar's Plan (1937-38 to 1946-47 A.D.) (The plan covered the forests under the present Poonch Division also).

6.4.2 Shri Dullu's plan was assumed to have been extended upto 1981-82 as the next revision was ready only by mid 1982 AD.

6.4.3 The forests of the then Rajouri Division were constituted into, following working circles in Sh. Dullu's Plan.

(i) Chir interim Working Circle

(ii) Fir Selection Working Circle

(iii) Un-regulated and Uncommercial Working Circle

(i) Chir Interim Working Circle

6.4.4 The Working Circle contained all commercial chir forests of the tract. It was observed that the percentage of mature and over-mature trees of chir in comparison to the rest of the age classes is very low and there is preponderance of younger and middle aged trees. It was therefore felt that it can't be allotted to any regular working circle, as allotment to any regular working circle would make it difficult for realizing any yield from PBI area over a period of 20 years on sustained basis.

6.4.5 It was argued that bulk of crop in this working circle was of 16"-18" dbh 18"-24" dia group with adequate young crop elsewhere. Uniform or any regular system of working would envisage a considerable reduction of the "exploitable diameter" as well as the rotation. It was therefore proposed to manage the species under an interim management till bulk of the crop in approach class pass on to the exploitable size.

6.4.6 The average dia of the crop in this working circle was assumed at 16" dbh (ob) and 52 years time was assumed to be required for an average dia of 16" to reach exploitable dia of 24" dbh. Therefore it was proposed to go over the entire working circle in these 52 years (Felling cycle). Exploitable size is 24" and rotation 120 years.

6.4.7 Following is the summary of important prescription of the working circle

(i) Silvipasture system adopted:- No regular system but an interim type of management.

(ii) Rotation :- 120 years corresponding to 24" dbh.

(iii) Felling cycle - 52 years.

(iv) Type of marking prescribed –selection cum improvement felling in allotted area and thinning cum improvement felling in un-allotted areas of this working circle.

6.4.8 For the assessment of growing stock of this working circle, partial enumeration down to 12" dbh to the extent of about 16% of total commercial area only was done and enumeration results were amplified by simple proportion. From these enumeration figures, it is observed that the percentage of mature trees (24" dbh-60cm) was about 10% amongst the crop of this working circle (of trees 12" dbh and above).

6.4.9 During the period of the plan (20 years), 20/52th of total reduced commericial area was allotted for working. This worked out to 24389.50 acres (reduced) and the normal annual coups worked out to 1219.50 acres reduced to density one. Annual coupe as per allotment of compartment on priority for the first 10 years period of plan was fixed at 1217.50 acres (reduced) and that for 2nd 10 years of plan was fixed at 1221.50 acres (reduced).

6.4.10 The working circle was divided into two felling series viz:-

(i) Mendhar –Nowshera felling series.

(ii) Rajouri-Dhaleri felling series.

6.4.11 The yield was prescribed to be realized and controlled by area. An indication of volume likely to be available annually from the allotted area was worked out by using Brandis Methods as 15,00,000 cft.

Results

6.4.12 Taking into account only that area of working circle which was part of Rajouri Division, the allotted area was 1081.80 acres (reduced) annually for first ten years and 1085.90 acres annually for the 2nd ten years. During the period of plan total of 21677 acres (reduced) of commercial chir area was to be covered whereas only 12675 acres reduced has actually been gone over.

6.4.13 Annual yield in terms of volume was expected to the tune of 15 lacs cft. Obviously the annual yield was expected from annual coupe of 1219.50 acres. Thus the yield expectation was 1230 cft/acre (reduced) from the area gone over for major marking in the allotted area of this working circle. However, actual yield based in the average for all the areas gone over in allotted block-worked out only 614.40 acre. (reduced)

6.4.14 The total commercial area of the un-allotted block (80656 acres) corresponding to 39028.30 acres (reduced) was proposed to be gone over in 25 years. Yield was to be regulated by area and annual coupe was fixed at 3226.44 acers (gross) or 1561.13 gone over in 20 years was 27722.50 acres (reduced) or 57877 (gross). However the area actually gone over is only 3975.50 acres reduced.

Fir selection working circle

6.4.15 Not applicable in case of Nowshera Forest Division.

(iv) Un-Regulated and Un-commercial Working Circle

6.4.16 This working circle included all forest areas that were not found fit for any systematic working on account of the nature of the crop, poor stocking, uneconomically long leads and/or being situated on precipitous grounds and higher altitudes. It included treeless blanks of considerable expense and above all some well stocked chir forests situated very near the cease fire line.

6.4.17 In the then Rajouri Forest Division, the total area allotted was 162986 acres. Therefore, about 50% of the total area under this Division was allotted to this working circle.

6.4.18 For the purpose of method of treatment, the area of the working circle was grouped into two series:-

(1) Protection areas.

(2) Miscellaneous series.

6.4.19 In the areas allotted to the "protection series" very conservative fellings under "Selection cum Improvement Fellings" were prescribed in trees 30" dbh only to meet the petty demands of the concessionists and no felling were to be carried out for financial considerations:-

6.4.20 The "Miscellaneous series" included area of the following categories.

(i) Oak and miscellaneous broad leaved species.

(ii) Blanks

(iii) Well stacked chir forests on or near cease fire line.

6.4.21 In respect of category (i) only area under "Banj oak and its associates" were proposed to be worked out to meet the fuel requirements of the people in important towns. The markings in such oak bearing compartments were to conform to improvement felling and ordinary thinning in congested young crop.

6.4.22 In respect of category (ii) i.e. blank, the following was suggested.

(a) The "unstable blanks" along with dry farm lands and village waste lands outside the demarcated forest, not coming within scope of that plan, where to be taken up for a 10 years integrated soil conservation scheme and the extent of area depended upon funds available. These blanks were to be closed and artificially stocked with fast growing economic species. However no action on these suggested lines seemed to have been taken during the plan period.

(b) The "stable blanks" were to be protected as effectively as possible from the wanton lopping, browsing and grazing by cattle.

6.4.23 In respect of category (iii) it was prescribed that the department needs could be met with from these forests as and when feasible with the previous sanction and approval of CCF Marking in such case were to conform to these prescribed for chir in Chir Interim working circle.

6.5 D.K. Ved's Plan (1982-83 To 1991-92 Extended to 1995-96)

6.5.1 The first regular working plan of this division was prepared by Sh. D.K. Ved. As per this working plan the forests which now form the Nowshera Forest Division, were divided into following circles, for management:-

(i) Chir Working Circle

(ii) Protection Working Circle

(iii) Improvement working Circle

(iv) Resin overlapping working circle

(i) Chir Working Circle

6.5.2 All the commercial chir forests including those of Rajouri division was allotted to this working circle. It was pointed out that the bulk of the crop in this working circle was 30 cm -40cm, 40cm-50cm and 50cm-60 cm class with adequate pole crop elsewhere and therefore its allotment to any regular working circle would make it difficult of realizing any yield from PBI areas over a period of 10 years (the plan period) on sustained basis. Uniform or any regular system of working would envisage a considerable reduction of the exploitation dia as well as rotation and since the timber of that size will not be acceptable in the market, it was essential that these forests should be worked under some sort of an interim management so that by the time the trees in "approach class" 18"-24" dia pass on to the "exploitable size (24"-dia), the forests receive the thinning and improvement operations as if worked under the regular system and removal of over-wood as if worked under the selection system.

6.5.3 This type of management was to be continued in respect of chir forest allotted to this working circle, keeping in view the paucity of exploitable size trees and difficulties in attempting conversion to uniformity at this stage.

6.5.4 Exploitable size was fixed at 60 cm dbh and a rotation of 120 years was adopted. A felling cycle of 50 years was adopted to correspond to the transitional period in which the entire area of working circle was to be gone over. This transition period of 40 years was arrived and by assuming that the average crop dia of chir of the working circle was 40 cm and it would take 40 years for this dia to reach exploitable dia of 60 cm dbh. This working circle was allotted to only one felling series comprising of all the commercial chir areas if this working circle.

(i) Area Allotted for Working /Alloted Block

6.5.5 During the plan period an area of 450 hectares (reduced) was allotted for working under the "Allotted Block". The yield was prescribed to be realized and controlled strictly on area basis and normal coupe was worked out to 450 hectares (reduced to density one). The annual availability of volume –which was to serve only as a guideline- was however worked out using Brandis Method and was fixed on 21000 M^3. This was to serve only as a guideline as yield was to be controlled strictly on area basis.

(ii) Un-Allotted Block

6.5.6 The remaining commercial area of the working circle under chir was kept under this un-allotted block (30641 hectares gross corresponding to 18022 hectares reduced). In constitution of the crop it differed from the allotted block in as much as the extent of mature and semi-mature stand was comparatively less and that of middle aged and pole a little more. The whole area was proposed to be gone over in 20 years which was to correspond to the thinning cycle for ordinary thinnings. Yield was again to be regulated on area basis and annual coupe was 901 hectares (reduced).

Results

6.5.7 At the time when Mr. Ved's plan was prepared almost all Chir Forests of the division were under resin tapping. The resin extraction was given preference to major fellings in the compartments, which were allotted for fellings. During the plan period of 10 years, it was prescribed to go over 4500 hac (reduced area). However, this prescription was not followed. Since the stress was laid only on resin tapping, the excessive tapping by cup and lip method proved very harmful for the chir trees. It resulted in drying of many trees as also deep cuts of cup and lip method made the tree trunks weak, thereby breaking them easily by wind. This is proved by the fact that from 1982-83 to 1995-96, dry chir markings to be tune of 4801 trees corresponding to 324298 cft were handed over to SFC by the present Rajouri Forest division.

(ii) Protection Working Circle

6.5.8 The working circle included all forests that were of following categories:-

(a) Those located on steep slopes and high altitudes-including areas under alpine pastures and forming important catchment areas.

(b) Those located in closed proximity of "line of actual control" and therefore rendered commercially unexploitable and unapproachable for the most part for any treatment because of presence and activities of defence forces. These forests were mostly well stocked chir forests. The chief reason for their good stocking was the protection those areas had receiving from excessive biotic interference.

6.5.9 The total area allotted to this working circle (for Nowshera and Dhaleri Ranges) was 5151 hectares.

6.5.10 No quantitative assessment of the growing stock was undertaken in the areas allotted to the working circle either by point sampling or by partial/complete enumeration. The forest area of category (a) formed the catchment area of water resources of the lower area of this regin and the main objective of management for these areas is to effectively protect and preserve the vegetative cover. When as in respect of forest area of category (b), the main objective of management was to continue to protect these area till there become available for working in hole or in parts sometime in future.

6.5.11 No felling of whatsoever nature were allowed in respect of forest area falling under category (a) above. It was proposed to take measures for control against fires, illicit damage and excessive grazing in this category. However in respect of category (b) and when feasible, departmental requirement was to be met with from well stocked chir forests and marking in such cases was to conform to those prescribed for chir under chir working circle.

(iii) Improvement Working Circle

6.5.12 All the remaining forest was of this division which were not allotted to any of the three working circle described so far, were included in this working circle. The forest areas included in this working circle, were categorized as under:-

1. The forest area chiefly under the broad leaved species (including banj oak) or completely blank or bearing only shrubby growth.

2. The degraded forest areas which were potentially productive but had become under stocked and without adequate tree cover because of the maltreatment in the past like illicit damage, excessive lopping and grazing etc and where the coniferous growth left is either in the form of low density crop or in the form of smaller patches.

3. The productive forest areas although adequately stocked with fir but considered unfit for commercial exploitation taking into account the heavy pressure of local demand for timber because of their locations near large human population (e.g. Fir forest lying close to Thanna Mandi, Darhal and Budhal in Rajouri Forest Division).

6.5.13 Most of the forests allotted to this working circle were from the uncommercial and unregulated working circle of Sh. Dullu's Plan and number of compartments were taken out from "Fir Selection Working Circle" and some were taken from "Chir Interim Working Circle" of Sh. Dullu's Plan. The area allotted to this working circle (Nowshera and Dhaleri ranges) was 21710 hectares.

6.5.14 Special objects of management were to:-

i. Improve the condition of the forest crop by protecting the existing vegetation and undertaking measures to rehabilitate degraded forests.

ii. In consonance with above objectives, to fulfil the genuine petty demands of concessionists to the extent possible methods of treatment. Methods of treatment preserbed for the purpose of treatment, the areas allotted to this working circle were classified into following categories.

A. Areas bearing mainly banj oak and broad leaved species.

Along with effective protection, attempt was made to rehabilitate these areas by artificial regeneration works also. For this purpose area of about 20 hectares size each was to be selected in suitable localities fenced up and planted with locally suitable species including *Quercus incana*

B. Areas almost completely devoid of tree cover i.e. areas which were blank or had scrub forest over a major portion.

All these areas were to be protected against excessive grazing and measures were to be taken to stock these by artificial regeneration work. For this purpose again suitable areas of about 20 Ha. size each were to be fenced and planted up with suitable species. Keeping in view the location of the site etc. to start with then extended later on when encouraging success was noticed

C. Areas bearing degraded coniferous crop of chir.

Areas where healthy trees (as seed source) of these coniferous species of chir were lacking-were to be taken up for artificial natural regeneration works. For including natural regeneration in the poor density coniferous areas, fencing was the first requirement. In most of the chir areas, this measure alongwith the effective protection against fire was sufficient to induce the natural regeneration to come up and get established.

D. Areas having adequately stocked and accessible fir forests (though mostly without young and fresh regeneration) but heavy pressure for fulfilment of the timber and other requirements of the large population.

These areas were recommended to be protected against excessive lopping and illicit damage and were to cater to the genuine needs of the local concessionists only. No yield had been prescribed and only dry trees to be marked. In case of chir, fir protection measures (control burning, construction of fire lines etc) were to be adopted, excessive grazing and lopping were to be controlled.

(iv) Resin (Overlapping) Working Circle

6.5.15 This working circle overlapped all the chir areas under chir working circle, Improvement working circle and even Protection working circle where resin tapping could be carried out without much difficulty. Special object of management was to obtain maximum sustained yield of resin for the rosin and turpentine industry with out harming the chir crop.

(a) Evaluation and Analysis

Most of the chir area (under resin tapping) were taken up for tapping in the year 1972-73 and 1973-74. It was emphasized that sizes of blazes (in actual practice) invariably exceeded the norms of width, depth, length and location, a considerably higher proportion of tapping space of each trees had already been used up. In respect of chir, trees 35 to 40 cm dia class, almost 50% of the tapping space had already been used and if this practice continued these trees would completely exhaust their tapping space in about 15 years. A study of crop data of chir working circle showed that number of trees in 20-30 cm dia class were lesser than those in 30-40 cm dia class. Trees of 10-20 cm dia class were even less than 20-30 cm dia class. This would lead to decline in the number of tappable chir trees (in future) when the tapping space of the crop start reaching in exhaustion and full replacement from lower dia classes.

(b) Limits of sizes for tapping

In order to achieve the objective of sustained yield in future, the minimum dia of chir trees for resin tapping was raised to 40 cm dbh (instead of previous 35 cm dbh o.b) for single blaze and lower limit of dia for double blazes was raised to 70 cm dbh (OB) (instead of previous 60 cm dbh o.b)

(c) Areas where resin tapping would not be done

It was prescribed that resin tapping would not be carried out (i) in those compartments where the density of crop was very poor (ii) in those compartments where it was noticed that continued resin tapping involving large scale violation of norms of size of blazes having harmed the crop (iii) those compartments where crop is predominantly young (iv) areas near the line actual control.

(d) Enumeration of blazes

It was prescribed to conduct resin enumeration after every five years.

(e) Sustained yield of resin

In order to ensure that a sustained yield of resin is obtained on a long term basis, these chir forests were recommended to be thoroughly checked and studied for resin tapping space already exhausted. If no improvement observed in resin tapping practices, the minimum dia was suggested to be increased to 45 cm dbh (OB).

(f) Accessment of future tapping life

On the basis of some measurement, the assessment of the remaining tapping life of chir trees wascalculated as under:-

1) Trees of 30 to 40 cm dia class-about 10 to 15 years tapping life more.
2) Trees of 40 to 50 cm dia class-about 15 to 20 years tapping life more.
3) Trees of 50 to 60 cm dia class-about 20 to 25 years tapping life more.
4) Trees of 60 to 70 cm dia class-about 08 to 12 years tapping life more.
5) Trees of 70 to 80 cm dia class-about 12 to 18 years tapping life more.

The above given estimates of the future tapping life of chir of their forests is for an average tree which has already been tapped for 09 years before 1982.

(g) Method of resin tapping

The French cup and lip method f resin tapping was continued in which inbolved the following steps; -

1) Presetting work
2) Setting up of crops
3) Clearing of pine needls in the area around the trees.
4) Freshing and taping
5) Collection of resin in tins.

6.6 Re-organisation of Blocks and Beats

During the year 1991, blocks and beats in all ranges have been re-organized in order to reduce the area of supervision for effective protection and to make productive use of staff having no assigned job. Moreover vide Pr. Chief Conservator of Forests No. 5-24/Bix/DPC dated 02-01-1992 two posts of foresters were also allotted to each division increasing allotted/sanctioned posts of foresters from 10 to 12 in the division.

Range wise, blocks, beats, compartments and their areas are as under:-

S. N.	Range	Block	Beat	Comptt.	Area (Ha)
1	Nowshera	Jhangar	Manpur	47/N to 52/N	762
			Bhowani	53/N to 56/N	724
			Jhangar	57/N to 60/N, 72/N and 79/N	1162
			Kanara	61/N to 66/N	973
			Chowki	67/N to 71/N and 73/N	730

		Nowshera	Lam	74/N to 77/N	528
			Darhal	78/N, 84/N to 86/N	1394
			Rajpur	105/N to 110/N	921
			Nowshera	111/N to 118/N	1521
		Androoth	Rajwa	80/N to 83/N, 87/N & 88/N	1291
			Androoth	89/N,90/N,102/N to 104/N	940
			Pir Badeswar	91/N to 93/N	751
			Mohra	94/N and 95/N	510
			Bagla	96/N to 101/N	1235
		Chingus	Anayatpur	119/N to 125/N	1091
			Narian	126/N to 131/N	1073
			Chingus	132/N to 134/N	674
			Chityari	135/N to 139/N	820
2	Lamberi	Rajal	Lamberi	1/N to 8/N	1616
			Garan	9/N to18/N,158/N to 160/N	1873
			Samkar	140/N to 144/N	993
			Papi Nala	145/N to 149/N	921
			Katera	150/N to 157/N	1004
			Panhar	102/K to 104/K	319
		Kalaal	Mangal Devi	19/N to23/N & 26/N to 30/N	1774
			Kangota	24/N, 25/N, 45/N & 46/N	812
			Deeing	31/N to 36/N	1002
			Kalaal	37/N to 40/N	593
			Gagrote	41/N to 44/N	320
		Treru	Gunda	1/D to 13/D	1663
			Treru	14/D to 19/D	876
			Harichuma“A”	83/D to 87/D	1024
			Harichuma “B”	88/D to 92/D	736
			Ransoo	93/D to 103/D	2303
3	Sunderbani	Dharamsal	Brevi	20/D to 27/D	1448
			Dharamsal	28/D to 39/D	1961
			Saleri	49/D to 55/D	1412
			Kallar	56/D to 64/D	1433
		Sunderbani	Channi	40/D to 42/D & 48/D	805
			Thandapani	43/D to 47/D	802
			Langer	114/D to 118a/D	975
			Rahsalyote	118b/D to 121/D	563
			Sunderbani	122/D to 124/D	822
		Devak	Bagla	65/D to 73/D	1689

			Hathal	74/D to 82/D	1732
			Devak	104/D to 108/D	1123
			Makol	109/D to 113/D	1238
		Kangri	Bhajwal	125/D to 129/D	648
			Dhok Banya1	130/D to 133/D	417
			Meenka	133/D to 141/D	1738
			Dhok Banyar	142/D to 146/D	726
			Kangri	147/D to 154/D	980
			Jhulla	155/D to 183/D	3498
Division Total					**58939**

In initial stages when ranges of Nowshera division were carved out of erstwhile Rajouri Division, Treru Block has been wrongly included in Lamberi range. In order to have contiguous boundaries of block within ranges, it is proposed that Treru Block should be transferred to Sunderbani Range and Kangri Block to Lamberi Range.

6.7 Past yield

674.1 No major commercial extraction of timber from these forest have taken place during the past decade.

6.8 Past Revenue and Expendature

6.8.1 The revenue and expenditure for past decate is given below in table below:

S. No.	Year	Revenue (Lacs)	Expenditure (Lacs)
1	2004-05	299.243	315.017
2	2005-06	703.148	310.523
3	2006-07	217.043	376.29
4	2007-08	430.611	378.666
5	2008-09	318.797	246.142
6	2009-10	179.253	415.20
7	2010-11	386.835	587.23
8	2011-12	187.463	622.444
9	2012-13	168.642	769.71
10	2013-14	399.253	652.098
11	2014-15	432.557	666.732
12	2015-16	34.967	832.221

CHAPTER-VII
Statistics of growth and yield

7.1. Inventory Method Adopted

7.1.1 In the present working plan Bitterlich's method of point sampling has been adopted for the assessment of growing stock. For resin blaze analysis 0.1 Ha sample plot method is adopted.

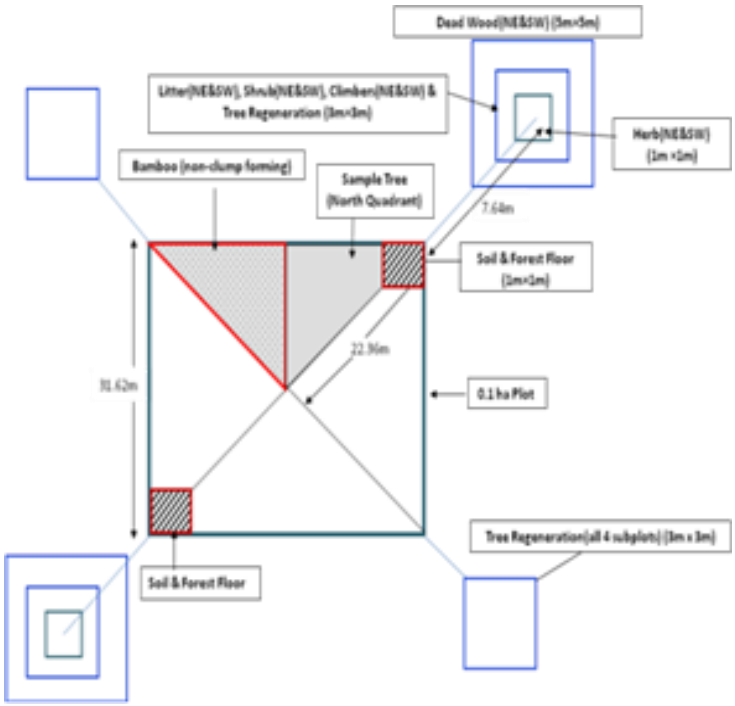


Figure showing the layout of sample plat as per National Working Plan code-2014

7.1.2 Since the forests of the division are heterogeneous in nature, the method was stratified random sampling i.e. stratification of the heterogeneous forests into more or less homogenous units. The stratification of the growing stock was done on the basis of condition, composition and silvicultural requirements of the crop besides method of treatment adopted for the area. Following strata/ sub –strata were accordingly constituted:

(a) Chir sub- stratum
(b) Oak sub- stratum
(c) rehabilitation sub- stratum
(i) Chir sub-starum
(ii) Broad leaved sub- stratum
(iii) Blank and scrub sub- stratum

7.1.3 The sample size required for an optimum survey of the crop was computed at predetermined precision of 10% at 95% probability level. The following formula was used in the pilot survey conducted for this work out the number of sample plots to be studied.

$$N = \frac{(CV \times T)^2}{(E\%)}$$

Where N = Number of samples required to achieve the desired accuracy "E" with probability level implied by value "t"

T= A constant denoting the reliability of estimates or level of statistical significance or statistical Probability of 95%. Also called students "t"

CV= Co- efficient of variation, a relative measure of dispersion.

E% = Percentage of error desired for the mean. Also called maximum permissible error in the sampling design.

7.1.4 On the basis of pilot survey, 315 numbers of samples of sample plots were calculated for study in the whole of the division.

7.1.5 These sample points are selected by fixing the coordinates using pair of random numbers on sample frame which is then transferred on the base map and then on relevant G.T. Sheet of the area. After this, the sample points are located on the ground in the field with the help of Global Positioning System (GPS). After locating the point on ground the exercise at each sample point was carried out by laying sample plots of 0.1 Ha.

7.1.6 The number of tree per ha and volume per ha were calculated diameter class wise at each point.

7.1.7 Mean value of the above named three variables were calculated by computing the arithmetic average of all the sample plots of a stratum/ sub-stratum. Further it was subjected to statistical analysis to check the value of standard error percentage. The results of these analysis are given in the following chapter.

7.1.8 In order to have high degree of accuracy 315 sample plots (each of 0.1 ha) were laid in the compartments where sample points were located. Sample plots were randomly distributed in all the ranges of the division. The results confirmed the out come of point sampling analysis.

7.2. Quality Class

7.2.1 The quality class of Chir found in this area is generally II/III to III. An average Chir tree of quality II takes about 150 years to achieve a dbh (ob) of 70 cms.

7.3. Volume Table

7.3.1 No local volume tables have been prepared for chir or other species found locally.

7.3.2 The practice has been so for to prepare local volume tably by developing local equations for academic interest only and finally to adopt Kulu Volume Table for actual calculations as these are said to be more familiar to the persons involved in the timber trade in this state. Therefore Kulu Volume Tables will be continued to be adopted and are reproduced below in respect of chir, Fir and Kail in Table No. 7.1.

TABLE 7.1 :
Kulu Volume Table For Chir

Dia Class (Cms)	Deodar	Kail	Fir/Spruce	Chir
10-20	0.13	0.13	0.13	0.00
20-30	0.13	0.13	0.13	0.00
30-40	0.76	0.76	0.85	0.48
40-50	1.33	1.36	1.56	1.13
50-60	2.10	2.27	2.97	2.21
60-70	3.14	3.34	4.90	3.54
70-80	4.39	4.42	6.85	4.87
80-90	5.66	5.35	8.30	6.20
90-100	6.85	6.14	9.40	6.99
100 & above	7.56	6.74	10.19	7.48

7.4 Growth Studies

7.4.1 No stump analysis was carried out during the field work of this plan. However growth studies as conducted By Sh. B.L. Tickoo in 1970 for Chir are reproduced as under in Table: 7.2

TABLE : 7.2:
Average age Corresponding To a Given Diameter Class

S.No	Diameter Class in cms	Age in Years
1	20-30	42
2	30-40	58
3	40-50	66
4	50-60	75
5	60-70	85
6	70-80	102
7	80-90	121
8	90-100	140
9	100-110	170

7.4.2 The data collected in this regard for chir was found to be quite near to that of chir of quality class II (as per yield of table of chir prepared by F.R.I Dehra Dun). An average chir tree of quality class II take about 120 years to achieve a dbh (ob) of 24" (60cm)

7.5. Regeneration Survey

7.5.1 The main objective of regeneration survey is to assess whether or not there is adequate regeneration in forest areas. Definition of adequate regeneration depends on desired number per ha of established plants. For this survey 2500 established plants per ha have been considered as adequate. A height of 3 m and above has been considered as established height because conifers of this height are considered to escape browsing. All other regeneration having the height smaller than established height was considered unestablished. Current year seedlings were classified as recruits. 4 unestablished plants were considered as equivalent to one established plants. It is assumption that out of four unestablished plants, one will attain the establishment height.

7.5.2 One hectare plot was considered as a sampling unit and since 2500 established plants per hectare was considered as adequate stocking, 4 Sq.m i.e 2 x 2mt. quadrant forms the convenient recording unit. Representative compartments from each working circle were selected and 1-3 sampling units were randomly dropped in the map of each pre-selected compartments. These sampling units were located on the ground.

7.5.3 Taking the point, located on the ground, as centre 90 m straight base line (45m on either side of the point in any direction as per the convenience of the survey party) was drawn. This line was divide into 9 equal segments of 10 m width each indicating the base of survey lines. These survey were numbered 1 to 10 and recording of each survey line was done separately.

7.5.4 From the base of each survey line, a 100 m survey line perpendicular to the direction of base line was drawn and along this survey line, at a distance of every 10 m interval, a recording unit of 4 Sq.m i.e 2 x 2 mt was laid. In this way 10 recording units were laid on each survey line and in all the 10 survey lines, 100 recording units were laid.

7.5.5 In each recording unit (quadrant) the following observations were made and ratings recorded accordingly:

i. If there was at least one established plant, the quadrant was considered completely stocked and the rating of the quadrant was recorded as 4.
ii. In the absence of established plant in the quadrant, the number of unestablished plants were counted. In case of presence of 4 or more unestablished plants in the quadrant, the rating of 4 was recorded and for lesser number of plants in the quadrants, the actual number of plants were recorded as rating for the quadrant. If there was not even a single unestablished plant in the quadrant, zero rating was recorded. In this manner every quadrant got a rating 0, 1, 2, 3 or 4.

7.5.6 The total ratings of all the 10 quadrants of a survey line gave the score of a survey line and total of all the 10 survey lines (i.e., total of 100 quadrants) of a

regeneration plot gave the total score of a plot. Total score of the plot was divided by 4 to get the regeneration status of the given plot i.e. 1 hectare. The division of total score by 4 was required because we were taken the ratings 4 times e.g. one established plants in a quadrant was/were given rating 4.

Ratings of quadrants = X_1 , X_2, X_3 ----------X_{10}

Ratings of quadrants = $X_1+X_2+X_3$ ----------$+X_{10}$

Total score of regeneration plot i.e 1 hectare = total of all the 10 survey lines (say x)

Regeneration status of that hectare or plot = X /4

= (Say y)

7.6 Resin Channel Survey:

0.1 ha circular sample plots were laid down in the forest compartments of Chir Working Circle and Rehabilitation cum Protection Working Circle and Chir trees were evaluated for resin channel exercise. 165 sample plots were laid down. Number of channels and number of rills present on each surveyed tree as well as available space for rills on each surveyed tree were recorded. The results of this exercise are given in Chapter XII on Non- Timber Forest Produce (Overlapping) Working Circle.