

## CHAPTER- II

### **COMPOSITION AND CONDITION OF CROP:-**

Before coming to the details, will be best to describe the main factors which have appreciably affected the condition of the crop in the division. Among the different factors responsible for the determination of the composition and condition of forests in this tract, human interference has played an extremely influential part. It is the single factor which has considerably affected the existing vegetation of these divisions for the last may decades. It undoubtedly reasonable that climatic, topographical and edaphic conditions also played their parts, but their role was subordinate to the biotic factor. Till 1946, the greater part of these forests belonged to the Zamindars. These were mercilessly exploited and mismanaged by the private owners due to lack of technical knowledge and in consequence the vegetation has retrogressed to the scrub stage particularly the lower and vat flat portion which forms the catchment of Barakar and Bamodar, foot hills of Gawan and Parasnath hills was reduced to shrubby stage. The appreciation of the value of forests as a national assets was also lacking at that time. More over the forests are heavily burdened with rights of different natures. In addition of the private owners, there was the unrestricted exploitation by mica and coal miner, hacking by the local people and destruction by their cattle. Combined effects of these resulted in continuous maltreatment and over-ex-plantation of the crop for a long period and its consequent deteriorations.

Due to the factors stated above, there was gradual reduction in the quality and density of forest property. The quality and composition of the crop varies considerably due to variation of soil and maltreatments. Extremely xerophytic species like Euphorbia and Zizyphus spp. are found at the foot of Satgawan and Gawan hills. Thorny species like Gardenis turgida, Carissa sp. and others occure on the fringes of the best sal areas as a result of over felling and excessive grazing. In some places like Bermo, Sal has been ousted by Palas. In large number of accessible areas particularly in Jamua region, e.g. Pathrogoundi, Balbala, Ektara and Jhinjhiri, Sal has been reduced to shrubby growth and crop has until now not improved due to the heavy interference of local people. In miscellanies ous patches of Jorasemal ( Doranda Range) xerophytic species like Harsingar and Salai and others are frequent owing to the dry condition created by maltreatment.

Parasnath hill is wholly forest clad, though the main spur, the Tundi hill bears forests only on the inaccessible peaks around Rajdaha reservoir and some of the valleys. Here also biotic factor has influenced the forest to a certain extent. The forests, especially in the lower heights, were extensively exploited till about 1920, so much so that at the base of the hill and upto a height of about 600 metes (2000 ft.) much xerophious type of vegetation appeared. But after this, forests were protected and gradually, the xerophilous type of vegetations was succeeded by tropophilous type. Now also, some firewood is cut at lower height and quite a large number of cattle graze so that the vegetation is affected adversely. But the typical scrub forest is seen no where on the hill, though just at the base such scrub forest is found owing to biotic influences.

Aspect is a great deciding factor about composition. Sal forest occur on the Northern aspects and in the valleys. Miscellaneous species are found on the southern faces. On the hotter aspects of Arwaria and Hardia in Balhara beat of Doranda, the ground supports miscellaneous species while on the Northern face and valleys Sal is frequent. On the Northern face and valleys Sal is

frequent. On the exposed faces at lower heights as also growing in the crevices of rock in Parasnath, the trees are low and leaves are smaller. The chief among these are *Nyctanthes arboristris*, *Dillenia pentagyna*, *Cochlospermum religiosum*, *latifolia* etc., useful only for firewood.

According to revised forests types of India by Champion and Seth (Cyclostyled manuscript, 1964), they fall in the following sub-types:-

	Sub types	Sub-types no.
1.	Dry Peninsular Sal	5B/C 1c
2.	Northern dry mixed deciduous forests.	5B/C2
3.	Dry deciduous scrub forests	5D/S1
4.	Boswellia forests	5/E2
5.	Central Indian Sub-tropical hill forests.	8A/C3

Coming to the details, however, it well as on hills and it is the most important species. At many places its percentage is very in the crop. Sal trees of upto 60-90 cm. 24"-36") girth are found in the Khurchutta Range, chutia beat of Gawan range and Phulibanga of Parasnath Range, where as there are large area in Dumri range, Gawan and Tisri beat of Gawan range and near about Jamua, Dhanwar, Birni and Deori, where owing to persistant maltreatment, it has been reduced to the stage of rooted waste. The density varies from 0.8 in the Khurchutta reserve to 0.2 in other open areas.

In the unworked area of the old reserve, the sal poles are generally 17-20 cm. ( 7" to 8" ) in diameter and 12"-14 metres ( 35'-40 ) in height, though sizes up to about 45 cm. ( 18") in diameter and 20 metres ( 60") height can be met with. In the new reserves and the protected forest, the sizes are very variable. In the localities which have been afforded protection sal poles 10-15 cm. ( 4"-6") in diameter and 8-12 metres ( 25'-35') in height occur. Else where in Dewatanr, Bijaipur, Manjhladih, Kharikwatarn, Dhumripahari etc. the forests have been permanently kept in the bushy stage below a height of about 5 metres ( 15ft.)

In the old reserve also, there are open and blank patches though these are rarely very extensive. In the new reserve and protected forests, there are in almost all the blocks, extensive blanks, most of which are badly eroded.

The main associates of Sal ( *Shorea robusta*) worth naming in the top canopy are Asan ( *Terminalisatomentosa* ), Pandan ( *Ougeinia cojeinensis*), Kend ( *Diospyros melanoxylon*), Salai ( *Boswellia serrata*), Jamun ( *Syzygium cumini*), Mahua ( *Madhuca indica*), Piar ( *Buchanania Lanzan*), Dhaura ( *Anogeissus latifolia*), Sidha ( *Lagerstroemia parviflora*), Doka ( *Lannea coromandelica*), etc.

Middle storey where it occurs consists of Dudhkeria ( *Holarrhena antidysenterica*), Kachnar ( *Baudhinia Variogeta* ) Akwan ( *Calotropis gizantea*). Anwala ( *Emblica officinalis*) ect.

The common shrubs are Harisngar ( *Nyctanthes arbortristis* ) . Putary ( *Croton oblongifolius* ) Kanaud ( *Cariasa opca*), Ber ( *Zizyphus mauratiana*), Dhawal ( *Woodfordia fruticosa* ), Churuchu ( *Casearia tomentosa*), etc.

In moister packets, the incidence of climbers like Mahulan ( *Bauhinia vahlli*), Latpalas ( *Butea superba*), Ganj ( *Millettia auriculata*), etc. is heavy. In the driver areas the incidence is low.

Natural regeneration of sal is almost absent. Coppice regeneration is satisfactory.

### **NORTHERN DRY MIXED DECIDUOUS FORESTS.**

Very dry aspects he not as rule carry Sal. but show a more xerophytic type, though not always of the same composition. A thin papery outer bark which appears quite white and easily allows the passage of light is very characteristic of many trees growing in the dry exposed places. This type occurs on the shallow and degraded soil conditions both on the hills and the plains. The main species occurring are kend ( *Diospyros melanexylon*), Piar ( *Buchnanian Lanzan*), etc.

**SALAI FORESTS:-** Champion and Seth ( 1964) recognise it as edaphic climax type. Salai ( *Boswellia serrata*) is found on southern aspects, hill tops and ridges. The percentage of salai in the crop is very high, at time upto 90% A large proportion of the salai trees are defective. The species is getting the upper hand in the forest due to biotic influences. It is encroaching the sal and mixed miscellaneous forests in certain areas due to drier condition. Incidence of young to mid mature aged trees are common with some scattered mature trees. It chief associates are *Lanea coromandelica*, *Diospyros malanoxylon*, *Buchanania lanzan*, *Anogeissus latifolia*, *cochlospermum religiosum*, *Garuga pinnata*, etc.

Coming to the size of the trees 0.8 to 1m ( 2' to 3') girth is quite common but its associates do not attain more than 0.3 (1ft.) girth. Density is about 0.5 in inaccessible areas, otherwise crop is open else where. Climber incidence is moderate and main climbers are smilax, *Acacia pennata* and *Butea superba*.

Regeneration of salai both natural and coppice are satisfactory.

### **CENTRAL INDIAN SUB-TROPICAL HILL FORESTS:- (HILL TOP FORESTS)**

This type is found on the Parasnath hill above about 1,200 metres. The sites occupied being exposed and often with poor soil, and long subject to human settlement, the residual forest is mostly of an inferior type the trees being short bold and branchy. The average sites carry a more xerophitic vegetation which in its present degraded form closely resembles the tropical dry deciduous forest though usually within rather higher proportion of evergreens.

Except the foot hills of Parasnath the rest of the hill contains vigorously growing specimens of trees, at lower height of deciduous monsoon forest plants mixed with some xerophilous ones and at higher levels about 1000 metres ( 3000 ft. ) of evergreen forests species mixed with some deciduous species for the deciduous forests region, the trees are tall, straight,

and close together, There are huge lianes like Bauhinia, Vitis and Cleamates green owing from tree to tree. The under growth is thick in the rains and ground is covered with herbaceous plants. Lets of epiphytic orchids are also seen . In the evergreen forest, between 1000-1300 metres ( 3000-'4000). the conditions are similar to the region described above, though the species are different. There are no mistletoes. The epiphytes are different set of orchids, forms and lichens in evergreen region. Bamboos occupy not an unimportant part of the land-scape.

The top canopy consists of Sal ( *Shorea robusta*), To- on ( *Cedrela toona*), even up to 2 metes (6') girth, Harra ( *Terinalia chebula*), Safed siris ( *Alizzia procera*), Albizzia odoratissima, Semul ( *Salmalia malabarica*), Eriola and quinquolocularia, Growia olastica, Glochidion Velutinum, Bischofla javanica, Hymenodictyon excelsum, Stereopspermum letragonum, Callicarpa arborea, Ficus scandona.

The middle storey consists of Cordia mysx, Alangium la marchil, Croton oblongifolius, Careya arbera, Syzygium operculata, Bauhinia malabarica, Saccopetalum tomentosum, Polyalthia cerasioides, Kydia calycina, Sterculia feetida, Sterculia urena, Sterculia Villosa, Antidesma bunius, Elaeodendron glaucum, Dalbergia latifolia.

The under-growth consists of Capparis horrida, Flacourtia ramontchi, Casearia tomentosa, Helicteres isora, phyllanthus debillas, Erythrina resupinata, Cephalostigma hirsutum, Plectranthus incanus, Viol patrinil, Sida rhombifolia etc.

The incidence of climbers is heavy. The main are Butea superba, Bauhinia v ahlil, Combretum decandrum, milletia auriculata, Vitis repanda, Vitis lanceolaria, Dumasia vi-llosa, Pueraria tuberosa, Mucuna imbricata, Clematis gouriana, Naravolia zeylanica, etc.

A few plants of sandal ( *Santalum album*) also occur. The plants were introduced here from outside some years back and their occurrence is not natural.

**KHAIR:-** Khair occurs sporadically only on eroded sites in Dumri, Khurchutta and Dawan ranges. It is also found in patches on rivers banks and eroded, unfertile sites of Doranda range. A small patch of Khair also occuppies eroded sites of the bank of river Barakar in Lewra in Palaungia beat. In ex-reserve of ramgarh it occurs mostly on the fringes and specially on the whitish soil in the volleys as a result of retrogression due to over exploitation. The quality varies from place to place. The crop is mostly under 0.3. Meters ( 1ft. to 1y2 ft. ) in girth. Most of the stems are malformed. Due to its poor quality and low incidence of occurrence, Khair is not exploited.

**BAMBOO:-** Bamboo ( *Dendrocalamus strictus* ) occurs in Gawan Parasnath, Dumari adn Satgawan ranges. With the exception of the Parasnath hill, the occurrence of bamboo is not extensive Bamboo of Parasnath is the best in the division so far as quality is concerned. It is found in commercially exploitable quantity in large pockets on the northern slope of Parasnath whereas the southern slope has extensive areas under bamboo. Bamboo areas in other ranges are sporadic. Bamboo of the Parasnath hill grows to about 7-12 C.M. ( 3"-5") diameter and about 15-18 metes (50'-60') in height. It occurs more less pure, generally on the fringes of sal areas, where the sal does not come. Bamboo is generally found on steep rocky slopes and in dry places in rest of the division. The clumps are congested as they have been over exploited and badly cutting the

past. The production of new culms per clump is very low due to maltreatment. The entire bamboo area needs rehabilitation by cultural aids.

**BLANKS:-** Blanks, both big and small are fairly common and are widely scattered both on hills and plains. Some of the blanks are totally bare while some have grasses and hardy species like *Diasporas melanoxylon* and *Butea monosperma*. Sheet erosion occurs everywhere. Gully erosion is severe in number of these blanks.

### **INJURIES TO WHICH THE CROP IS LIABLE:-**

**FIRE:-** Fire is definitely a great nuisance throughout these forests and causes the greatest damage to the existing crop, particularly to the young plants.

Fires in the forests are started by the interested villagers who burn the dry leaves during the leaf fall period and thereby set fire to the entire forests in the areas. This they do purposely with the object of getting a clear ground floor for collection of the Mahua corellas. Some fires are also caused by the careless discard of burning match-sticks or Biri stubs on the foot paths passing through the forests. One of the main causes of forest fires in the Parasnath hill is the habit of the local aborigines to roast the pods of *Bauhinia vahlii* over open fires in the forests. Mahua trees which are the principal cause of forest fires in Chotanagpur are absent here. So an intensive programme of climber cutting would, in addition to freeing the tree crop from this menace, also reduce the incidence of fire here.

The evil effects of fires upon forests can be enumerated as below though it is very difficult to assess the real amount of damage caused by fire:-

- (i) The soil nutrients remain partly unsecured and are not replenished due to the burning of the humus and leaf litter. The result is that soil becomes deficient in nutrients.
- (ii) The seedlings are some times killed outright and are commonly damaged or badly injured.
- (iii) The seedlings are some times killed outright and are commonly damaged or badly injured.
- (iv) Soil erosion is increased as there is nothing to check the direct action of water on the ground surface.
- (v) Ground surface is hardened making it difficult for the tender root hairs to penetrate into the earth.
- (vi) The porosity of the soil is minimised to a very great extent making the rain water drain off instead of seeping down into the earth.

(vii) Establishment period is lengthened and in extreme cases regeneration is inhibited for considerable period.

**Forest:-** Forests are rare they occur sometimes and damage the crop in the valley bottoms and valleys Forest damage has to be watched carefully in the future years. In any case, the maximum number of standards along with fruit bearing trees may be retained to provide a sort of shelter to prevent the present type of forest damage.

**Grazing:-** Grazing, both directly and indirectly, causes the maximum damage to the forest flora and the soil. It is the most important cause of devastation and degeneration coppiced forests into rooted waste and scrub forests. Grazing also makes the ground hard and compact by constant trampling, which in addition to other types of damages, greatly contributes to erosion of the surface.

**Drought:-** During the hot months of May and June drought causes considerable damage to young seedlings particularly in open areas. The damage increase with the late outbreak of summer monsoon.

Drought or insufficient rain increases the depth of water table and affects very adversely the growth and healthy development of the crop.

**Climbers :-** Climber's menace is not much importance in this division except in the moist patches. The main species are Bauhinia Vahlia, Millettia auriculata Butea superba, Acacia pennata, Zizphus species, Combretum decandrum, Celastrus paniculata and a few others. In moister localities, especially around nallahs and river banks on the Parasnath hill, Khurchutta reserve and in the other P.Fs. the young crop has to be made free from them.

**Man :-** Man is by far the worst enemy of the forests. Irregular, illicit and bad fellings in the past years coupled with fire and grazing, have very greatly degenerated the forests. The increase of population and unlimited number of right holders, who keep on increasing from year to year have caused the heaviest damage to the fauna and flora of this division. Unless some vigorous measures are enforced by legislation. It is very difficult to control the extent of damage to the forests.