P A R T- II

CHAPTER I

FUTURE MANAGEMENT DISCUSSED AND PRESCRIBED.
:BASIS OF PROPOSALS:-

2.1.1 General objects of Management;–

The bjects of managment are:-

i) To protect, improve and maintain the forest cover. Hill slopes and denuded areas are to be protected from soil erosion. Provisions are mentioned for better conservation of moisture.

ii) To meet the domestic and agricultural requirements of the local inhabitants or small timber, bamboo and fuelwoods.

iii) To grow large size trees in some areas for meeting the demands of large size timber.
iv) To afforest the blanks and miscellaneous scrub areas to increase firewood production.

v) To rehabilitate rooted waste areas for developing better crop.

vi) To provide fodder to the local people in order to check grazing in the forest areas.

2.1.2 General methods of treatment;–

The forests of this Division are in different stages of preservation and growth. The crop of the old reserve is in better shape. Besides this in some. Parts of Godda Damin and Simra Damin some growing stock still exists in Protected Forests. However, most of the areas have become very much open and depleted. Large number of felling series which were worked under coppice working circle during the previous working plan are no longer fit

for further exploitation. The bamboo crops have suffered heavily during the last Working Plan thereby leaving no bamboo area fit for exploitation.

The local demand is very intense except in small pockets like Kathikund where the population is small and the Raiyats have still some trees in their raiyati lands. The demand is mostly of timber, poles and firewood.

Quite a large number of felling series which had been allotted to this working circle have now been reduced to rooted wastes. So these areas are now kept under Rehabilitation Working Circle, coppice with standards areas are are treated under 60 years and 30 years rotation. The standards retained in coppiced areas will provide large size trees of over 20″ diameter.

The areas which have been kuraoned in the R.Fs, where no rights for kuraon cultivation exist and the areas reclaimed illicitly in the old P.Fs shall be allotted to the plantation working circle in order to restock them with tree species. This working circle will embrace all the raised plantations and other blank areas which require to be planted up the planted trees along the roadsides must not be felled except the uprooted and dead trees. More roadside paantations are to be taken up afresh.

On the above lines the following working circles have been prescribed;—

i) The Coppice with Standards Working Circle.

ii)The Rehabilitation—cum—Soil Conservation Working Circle.

iii) The Plantation and Pasture Development Working

iv) The *Tasar* Working Circle.

2.1.3 Blocks and Compartments;—

The subdivisions of the forest into old reserve, old P.Fs and D.P.Fs have been maintained in this plan. The division of oldR.Fs into blocks have also been maintained in this plan.

2.1.4 Plan Period;—

The period of this plan will be from 1991—92 to 2011—12 i.e. 20 years. On the 10th year of the plan, this plan should be reviewed on the basis of the results of working. The exploitation programme plantations to be done during this plan period are also to be made that time.

CHAPTER II

COPPICE WITH STANDARDS WORKING CIRCLE.

2.2.1.1 General constitution of the Working Circle.

This working circle consists sal forests and sal mixed with miscellaneous species situated in valleys, plains and lower slopes of the hills. A large amount of area was kept under this working circle in the last working plan. However, a significant amount of forest of this category has now shifted to Rehabilitation Working Circle. During the revision only such forests which have density over 0.3 have been only included for exploitation. This also includes areas which can be exploitable after 10 years are included under this working circle. Therefore, conservation being important aspect a conspicuous decline in the area has been registered in this working circle.

2.2.1.2 Area of the Working Circle;–

The area of this working circle is 164260.49 as against the hect. allotted in the Y.P.Jha working plan excluding Pakur Damin and Rajmahal Ranges.

The total area allotted in Prasad's Plan under this Working Circle was 47,460.38 hect.excluding PD & RD Ranges.

The old reserve has been divided into six felling series. Some areas of the old P.Fs in Dumka Damin Range have been kept under this working circle. In such villages in which the forests occur in a number of patches scattered here and there, each patch has been allotted a block number for quick location. The distribution of area in each village has been shown blockwise in Appendix–I of the plan.

2.2.1.3 Objects of Management;—

The main objects of this working circle will be;—

i) to meet the demands of the right holders as indicated in Khatian Part II and these will be the first charge on these coupes. The surplus, if any, will be exploited through the agency of State Trading.

ii) to grow large size trees, poles and firewood for meeting the local demands of such produce.

iii) to ensure soil and moisture conservation.

iv) As indicated in Govt. of Bihar, Forest Department no. dated part of the revenue obtained from selling the products to go to the development funds of the village Van Suraksha Samiti.

2.2.1.4 Rotation & yield;—

Rotation adopted in the old felling series and old In the newly constituted D.P.Fs is 60 years which c.rill continuedelling series the rotation will be 20 years as they are to yield pole crops only. The common practice of allotting the forests to two categories viz; category A (surplus) and category B (deficit) has not been followed in this plan since all the deficit areas due to its level of degradation has been allotted to Rehabilitation—cum--Soil Conservation Working Circle. The yield has been fixed by area. The coupes have been shown in the management maps. The details of coupe working is being given below:—

2.2.1.5 Demarcation of Annual coupes;—

The coupes for the full rotation have been shown in 4″=lmile management maps. All the coupes are more or less equal in area. Coupes will be

demarcated on the ground by 5 ft. wide cleared lines. Trees on these lines approximately at 20 metres interval will be double ring marked with coaltar. All the trees marked on the boundary lines shall be treated as standards and shall not be allowed to be felled. Demarcation of coupes shall be done strictly in accordance with the coupe lines shown in the management maps. Where the couline meets a road or prominent foot—path, the name of the felling series and number of coupe will be shown on a signboard. Each coupe will be divided into more than one section for systematic working and for safeguarding revenue. The section lines will be delineated on the ground by double coaltar half rings.

2.2.1.6 Rules for marking the standards:—

The number of standards to be retained in coupes shall be 86 per hectare or 35 per acre including fruit trees like Hara, Bahera, Amla, Kusum, Mahua, Jamun, Mango etc. The standards shall be selected out of the best stems available among the principal species, namely sal, bija, asan, panjan, karam and dhaura. The standards shall be evenly spaced but at the same time selection of the right type of standard is more important than the mathematical spacing. The trees selected as standards shall be healthy and straight with a well developed crown. Preference shall be given to sal, asan and bija. Standards should be.of about 8″ diameter in the 40 years rotation and about 6″ in 20 years rotation.

The trees preserved for worship falling within the limits of the annual coupe shall be separated from the felling areas by boundary mark.

In open areas all available trees may be retained as standards to maintain the stocking.

All climbers on the trees marked for retention shall be cut at the time of laying out of the coupes and marking of standards.

Standards shall be blazed and marked one at the base and other at breast height and numbered serially. The serial number shall be written on the blazed portion at breast height and base. A register of standards shall be maintained for each coupe in each felling series showing the number of the coupe and details of each standard viz.species and size. Loss of any standard shall be recorded in the register.

2.2.1.7 Execution of fellings:–

Felling shall start from one end of the section of the coupe and proceed systematically. Haphazard and selective felling must not be allowed. Felling shall be confined to one section at a time and start in the next section only after completion of work in the preceeding section.

In addition to the standards well grown and healthy saplings of principal species may be retained as part of the future crop. Bamboo and khair above occuring in the coupe shall not be felled.

Adequate vegetative cover shall be left on either subject to the above restrictions all trees, poles, shrubs shall be clearfelled. Felling shall be done with sharp tools and the repair of the stump shall not be more than 15 cm. from the ground level.

2.2.1.8 Subsidiary silvicultural operations:–

Climber cutting and miscellaneous cleaning in the young regenerated crops shall be done in the year immediately after main felling and again in the fifth year. All the climbers and miscellaneous growth suppressing the seedlings and coppice shoots

of valuable species shall be cut during the rainy season following the *main* fellings. This operation shall be repeated in the 3rd year in the felling series of Narganj, Gopikander, Mahuagarhi and Khátgaon.

The 5th year cleaning operation will constitute climber cutting and removal of unwanted species interfering or expected to interfere with the growth of coppice shoots of valuable species. Besides, the number of shoots per stool shall be reduced to 3. All the malformed, crooked and top broken saplings shall be cut back.

Thainning:— After the 5th year intensive cleaning shall be done in the coupes of the felling series being worked on 20 yrs. rotation. However, no thinning operations shall he carried out. In the felling series being worked on 40 years rotation, thinning shall be done in the 20th year. Thinning rules are given below;—

i) Cut back all the worthless species interfering with the growth of valuable ones.

ii) Cut back all dead, dying, diseased and malformed stems.

iii) Cut back damaged standards.

iv) Cut back all climbers.

v) Number of coppice shoots per stool should be reduced to two.

2.2.1.9 General treatments:—

The annuaa coupes shall be scrupulously protected from grazing for 8 years after the year of felling. It should not be allowed in eroded areas. The Divjsional Forest Officer may close any other areas against grazi.ng for silvicultural reasons. In areas open for grazing the ‘operation

shall be allowed only during the winter and summer. Lopping should be prohibited. Regenerated crop should be fully protected from fire.

CHAPTER III

REHABILITATION-CUM SOIL CONSERVATION WORKING CIRCLE.

2.3.1 General Constitution:–

This Working Circle includes all the derelict, rooted waste, qullied and eroded sites including ravines. Crop contains sparse sal or miscellaneous growth and also thorny scrub forests containing Carissa species, Zyzyphus species, Lantana, Croton etc. Fairly stocked rooted wastes are included in this working circle. Such areas have preponderance of rooted stocks of sal and of miscellaneous species with the average height of the plant not exceeding 3 metres and diameter below 5 cm. The areas forming catchments of Mayurakshi Dam, Sunder Dam and other irrigation projects are also allotted to this Working Circle.

2.3.2 Area statement:–

The total area allotted to this Working Circle is acres. Its Ranywise distribution is given below:–

Name of the Range	Area under different prescriptions			
	Protection	Cut back fencing	Planting	Total
Dumka Damin	8224.49	2587.88	3804.86	14617.23
Simra Damin	2743.25	1603.99	1355.48	5702.72
Godda Damin	1924.15	1826.81	1053.67	4804.63
Hizla East	5381.85	5909.35	8818.07	20109.27
Hizla West	4349.03	2976.37	2095.37	9420.77

2.3.3 Objects of management:–

The objects of management are:—

i) to rehabilitate the rooted waste areas.
ii) to check soil erosion and conserve moisture to get better trowth of crops.
iii) to plant up the patchy blank areas.

2.3.4 General description:—

The main line of approach towards the management of such areas will be as follows:—

i) Fencing and cutt 9 back of the rooted waste and operation of soil conservation measures.

ii) Raisin _lantations of suitable species in the blanks.as part of the Plantation Working Circle.

The area allotted to this working circle have complete stocking of sal or miscellaneous species. The only thing lacking is protection from hacking by men and intensive grazing. To get a healthy crop out of it the area should be fenced and protected religiously from the adverse factors.

Regular soil conservation measures will also have to be undertaken. Thesewould include gully plugging,contour trenches, checkdams, silk detention structures, diversion channels etc.

2.3.5 Methods of treatment;—

Fencing will be done by cattle proof trenches, barbed wire fencing, brush wood fencing according to the fund position. As far as possible cattle proof trench of 1.8 m/l.2 m shall be dug all around the area. On steep slopes and stony areas barbed wire fencing or brushwood fencing shall be done. Barbed wire fencing or brushwood fencing

should be of such height that cattles cannot jump over i.e. 5 ft. high.

As soon as fencing is completed the areas shall be cut back departmentally. The cut produce shall be given to the right holders. This operation will be conducted as per yearwise prescribed areas. After cutting back plant—ation operations shall be taken up in patch blank areas. Required soil conservation measures will be taken up simultaneously. All the areas allotted to this working circle must be rigidly protected against grazing and fire.

The areas are to be selected carefully for the treatment to take care that they fall in compact and less problematic blocks in a concentrated way. This will make the job of organisations and supervision more convenient. The treatment would consist of cutting back malformed crop of sal on a rotation of 10 years. The places requiring only tending operations are to be carried out. The treated areas should be kept under strict vigilance through cattle watchers. Well grown saplings will be retained.

2.3.6 Method of execution of cutting:—

After fencing the area cutting shall start from one
end and progress systematically. Young healthy and well framed saplings will be left as it is while felling old high stumps and pollards also shall be coppiced. The stumps shall not be more than 15 cms. height.

2.3.7 Soil conservation measures:—

Mostly two types of erosions are met with; sheet erosion gully erosion. Erosion is mostly due to rainwater. The gradual depletion of the forest cover depleted the organic

matter content in the soil. The organic matter (humus) improves the aeration of the soil and Jncrease its capacity to conserve moisture and

deliver it readily to the plant roots. It improves these soil conditions favouring root penetration and the growth of beneficial micro—organisms and larger organisms. It aids in processing the inorganic constituents of the soil, changing unavailable mat erial in to forms available as plant nutrients. It aids in conserving the easily soluble constituents of the soil as plant nutrients. Erosion speeds up as the more absorptive humus charged top soil is washed off to expose sublayers, which are generally of lower absorptive capacity. The continuous biotic pressure has resulted in the loss of topsoil as well as subsoil exposing the parent rocks at places. In these areas the rains are quick and heavy ih the monsoon period. Due to the stripping up off the absorptive top soil exposing. the sublayers, 90% of the rainfall is lost as runoff thereby aggravating the problem of gully erosion.

Prevention of sheet erosion:—

Sheet erosion shall be prevented by contour trench— ing. In the slopy hills several contour trenches are to be dug up to prevent soil loss as well as helping in retention of water. The size of each contour trench should be 15’xl’xl’. The longitudinal interval between two contour trenches shall be 10’. The vertical distance between the adjacent contours should not.be more than 20’. However, these measurements will vary according to the degree of slopes. The dug out soil shall be kept on the lowerside of the trench. On these dug out soil babul and ber seeds are to be sown just before the monsoon. The contour trenches prove very effective for ehecking removal ot subsoil. It also retains water and help in percolation. The areas kept under Rehabilitation working circle must be treated with this.

Prevention of gully erosion:—

Innumerable number of gullies are present in all sloppy hills and adjoining, plains almost throughout the Division. Gullies may be controlled by terracing on the gully heads. However, according to the terrain it is not a practical solution. It becomes very cumbersome and needs well planning which may be difficult to implement in the field. Hence it is prescribed that gullies are to be stabilized with structures. Again structures may be permanent or temporary. Structures are used in gully control work either to facilitate the establishment of vegetation or to provide protection for those critical sections which can not be adequately protected by other measures. When our aim is only soil conservation and improvement of vegetation, temporary structures are preferred. When aim is to provide for small water reservoirs meant for drinking, bathing and minor irrigation purposes brick cement mortar or stone cement mortar structures are required. The temporary check dams cost less and is cost effective for 5 to 6 years. Temporary check dams are made of brush wood, loose stones and wire mesh.

Temporary check dams constructed across the bed of gully have two uses:—

i) to collect enough soil and water to ensure eventual growth of protective vegetation.

ii) to check channel erosion until sufficient stabilisi—ng vegetation can be established at that critical point.

The number of temporary check dams to be constructed across a particular gully will depend on the depth and length of the gully. Low check dams are more preferred to high check— dams. Low dams are much less subject to failure than high ones; and after, they silt up and not away they can be better protected from over falls with vegetative cover. These temporary dams should be extended far enough into the bottom and sides of the gully to

prevent washouts underneath or around the ends and shall have sufficient spillway capacity to convey the maximum expected runoff. Generally an apron of rock will be needed immediately below the dam to protect the structure from the under mining action of water discharged from the spillway. The requisite capacity of the spillway notch can be determined in the field by estimating the probable rate of runoff on the basis of the size and nature of the watershed. The height of the temporary check dams need not exceed 3 ft.
In order to preserve water after 3 or 4 temporary check dams built along the gully a permanent structure shall be built when the gully reaches the plain or at suitable sites along the hills. The temporary check dams will be affected by silting which can be desilted every year. In the process the permanent check dam will remain free of this problem and will contain enough water.
The diagrammatic example of a temporary and a permanent check dam is given below:—

PART—II

CHAPTER—III

PLANTATION & PASTURE LAND WORKING CIRCLE.

2.3.3.1 General Constitution:—

This working circle comprises of all the raised plantations, illicitly kuraoned areas and other blanks within the demarcated forests of this Division. The small patches where plantations have been prescribed in the areas allotted to the Rehabilitation—cum--Soil Conservation Working Circle have, however, not been included in this Working Circle.

2.3.3.2 Area statement:—

The total area allotted to this working circle is The Range wise distribution of the area is given below:-

Name of the Ranges	Area of existing plantations.	Area fit for plantation.	Area fit for pasture development.
1	2	3	4
Dumka Damin	6419.02	1917.47	277.12
Simra Damin	9214.90	895.53	895.53
Godda Damin	4577.18	2146.00	488.55
Hizla East	6946.66	1253.63	579.87
Hizla West	6240.97	6595.40	476.40

2.3.3.3 Management objectives:—

i) To plant up the kuraoned areas and other blanks with suitable fast growing species and some hardy species which can tolerate the adverse biotic and nonbiotic factors.

ii) To tend the existing plantations and harvest the given below:— Name of the Ranges.

iii) To develop pasture lands for all villages so as to protect the Rehabilitation and new plantation areas from grazing pressures.

iv) To plant fodder species to meet the fodder demand.

v) To provide employment to the local people through these forestry operations. 2.3.3.4 General

General Prescriptions:—

Plantations shall be raised according to the approved afforestation techniques. The choice of species shall depend on the locality factors.

In open thorny scrub, khair and other miscellaneous species of economic importance may be tried. The coppiceshoots of sal and other valu—able species produced by the existing rootstock should be properly nursed and tended.

Fire and grazing shall be totally prohibited in the fenced and planted areas.

2.3.3.5 Problems and lines of approach:—

In Dumka Forest Division a total number of villages are there with a population of according to the 1981 census. The details of population figures are given in the appendix. Taking into consideration, the per—capita fuel wood consumption is 1 ton per year. So the total requirement of fuel wood in Dumka Division is at least tons. Again the cattle population of Deoghar Forest Divn. Is including sheep, goats and pigs. On the basis of these the fodder plantations as well as pasturelands are to be developed.

The following species will be preferred in plantations:-

1. Cassia siamia
2. Acacia auriculiformis
3. Eucalyptus species
4. Subabul
5. Sisam
6. Terminalia arjuna
7. Fruit trees like Mango, Jamun, Mahua, Aonla,Bel etc,
8. Acacia arabica
9. Acacia tortlis

Chakundi, Acacia and Eucalyptus can serve the purpose of fuelwood. Subabul and babul are to be planted as fodder species. Sisam to be planted along river banks. Arjun tree plantations shall be taken up in consultation with the villagers to introduce sericulture. Fruit bearing trees are to planted throughout the plantation areas so that people will be attracted to save the plantations. Good breeds of fruit trees are to be planted to give early return.

Plantation of sisal shall be taken up in compact blocks in drier areas. The technique of sisal plantation is described later.

List of fodder requirements/day

Class of stock	General fodder in Kg.	Dry fodder in Kg.
Milking cows	30—35	3—4
Milking buffaloes	40—45	3—4
Dry cows & buffaloes	15—20	4—8
Pregnant cows & buffaloes	40—50	1—2
Growing calves	15—20	1—3
loes working	30—40	3—4

On the average it can be assumed that the qreen fodder requirement of a cattle per day is 30 Kgs. For the total cattle population villagewise fodder

requirements should be worked out and accordingly fodder plantations and pasture lands can be developed. However, on an average the area for pasture development is earmarked per village given in the appendix.

2.3.3.6 Pastureland Development:—

The details of 5 types of grasses have been mentioned
here. According to the site suitability and water availability the plantation of grasses shall be taken up.

i) Anjan (Cenchrus ciliaris)

This grass grows better in light to medium well drained soil. Sowing time is June—July. 5—6 Kgs of seeds are needed per hactre. When the grasses attain a height of 6-10 cms. it is cut and used as fodder. In the first year one cut is permissible and in the 2nd year, 2—3 cuts can be done. This grass yields 300 to 350 quintal per hectare. This is a perennial grass. Seeds are sown after minor soil working.

ii) Cenchrus setigerus

This is a good grass for sandyloam soil. Sowing time is June—July. The amount of seed required is 8—10 kg. per hectare. The grass is cut once in the first year and two to three times in the second year. Cutting height is 6—10 cms. This is also a perennial grass. The fodder yield of this grass is 250 to 300 quintal per hec.

iii) Dinanath (Pennisetum pedicellatum)

This grass grows well in clayeyloani to sandyloam soil. Sowing time is June—July. Amount of seed required per hectare is 8—9 kg. The first cut is done after 90 days.

The second cut is made after 60 days. Grass is cut when it attains a height of 6—10 cms. Fodder yield is 700—800 quintal per hec. This grass is annual.

iv) Stylo(Stylosanthes humilis)

This grows well in sandy surface soil. Sowing time is June—July. Seed rate is 6—8 kg. per hectare. The first cut is done after 70—90 days when the grass attains a height of 6—8 cms. The second cut is made after 60 days. Fodder yield is 200—250 quintal per hec, This is annual.

v) Bankuithi (Atylosia scarabaeoides)

This grows well in sandyloam, well drained and gravelly soil. Sowing time is June—July. 10—12 kg. of seeds per hac. is required for sowing. It is a perennial grass.

A single cut is given in the 2nd year, cutting height is 8—10 cms. Fodder yield is 70—125 quintal per hectare. Local people shall be allowed to cut and take away the grasses at a nominal rate of 10 paise per bundle.

2.3.3.7 Sisal plantation techniques:—

a) Sisal fibre is obtained from Agave sisalana (Ver.nanie Mooraba, Rambans). It is a native of Mexico. The fibre is used where tensile strength is needed. It is used in marine cordages and in manuf acture of articles of daily uses such as brushes, carpets, bags etc. India imports about Rs. 50.00 lakhs to 100.00 lakhs worth of sisal fibre annually.

b) Object: The plantation of sisal is also a soil conservation measure. This requires very less moisture. Hence sisal plantation is a good

utilization of soil which is neither fit for agriculture nor tree plantation.

c) Soil and climate requirements:

Sisal has been found to grow on a soil depth of less than one foot. It can develop on any type of soil. It is a drought—resistant plant by nature and rainfall of 30″—40″ is just sufficient for it.

d) Planting materials:

Sisal can be raised either by bulbils or by suckers. Bulbils are borne on poles, which appear only once in the life cycle of a sisal plant. These bulbils are small in size and are nurtured in nursery beds of standard size at a spacing of 20 cm x 20 cm. for twelve to fifteen months. They are transplanted in fields when they attain the size of 20—30 cm. Suckers are thrown out every year around a sisal plant from the roots of the plant. Suckers usually become available from the third year at the rate of on an average 2—5 per plant. These suckers are transplanted when they attain the size of 25—30 cm. They do not need any rearing up in nursery beds and can be transplanted directly. Normally a sucker is a better planting material.

In this plantation only protection against trampling by cattle for two years is needed.

e) Soil working:

Pits of 30 cm x 30 cm x 30 cm are dug up in the plantation area during October to March. The soil is heaped by the side of pit for weathering. Alternatively the soil is hoed in strips 150 cm.(5 ft.) wide and the cods of earth are up turned for weathering. Soil working may be completely abandoned and the plants can be transplanted directly in the field with the break of monsoon in good sites, where the top soil is light loam or loam. The spacing adapted is of double row of

plants that is 1m x 1m. Every double row of 1m x iron is separated by a 2.5 in. wide strip to facilitate intercultural operations, harvesting and carriage of leaves. The number of plants per acre is 2300.

f) Transplantation:

Before actual transplanting uprooted suckers or nursery raised bulbils are carried to the transplanting sites. Adventitious roots are trimmed by a sharp Are. Then the outermost layer of leaves are removed exposing the cream colour. This process is called root trimming. Trimmed plants should be transplanted immediately. The entire operation from uprooting to transplanting may be completed within 48 hours.

Suckers are transplanted preferably with the onset of monsoon. By end of July all transplanting operation must be over. The cream coloured portion of the bulb is planted in the soil. Soil around is tightly pressed.

g) Weeding and hoeing:

In a strip of 150 cm. width where the double row of plants have been planted, all weeds may be removed for a period of atleast 2—4 years consecutively. Soil is loosened upto a depth of 150 cm — 20 cm. in the 150 cm. wide strip without disturbing the soil in the radius of 15—20 cm. around the plant. This is essential for the healthy growth of plant and to promote production of suckers.

h) Manuring:

Sisal plants are calciphillous. Hence calcium fertilizers must be applied to it, besides nitrogen , phosphoreous and potassium.

Dose per plant needed:

Urea	:	28 grams
Muriate of Potash	:	8 grams
Dicalcium Phosphate	:	36 grams

Mixture of fertilizer is supplied in a radius of 15—29 cm. from the centre of the plant after 15—20 days from transplanting. Single super phosphate and dolomite may be substituted for dicalcium phosphate.

Extraction of fibres:—

Sisal plants become mature to yield leaves from the fourth year. In the first harvest only the peripheral leaves are cut leaving 20 leaves in the centre. The unfurled column of leaves in the centre is not taken into count. In the subsequent harvest only 15 leaves are left excluding central column of unfurled leaves.

Leaves are cut by a curved saw with a long handle as close to its base as possible, but without injuring the trunk of the plant. This instrument is called sisal leaft cutte r. Sisal leaves contain only 3% fibre. Harvested leaves are decorticated on sisal Decorticator machine. The fibre is washed and dried in the sun. Dried fibre is baled in balling machine into 50 Kg.of 100 Kgs. bundles. This now becomes ready for sale. Harvesting of leaves is continued from 4th year to 10th year after which plants are uprooted and new planta— tions are raised. This usually coincides with the poling, after which plants die out.

Area Demarcation:—

The areas to be planted with sisal should be decided by the concerned Divisional Forest Officer.

TASAR WORKING CIRCLE

General Constitution:—

Tasar culture in Bihar is many centuries old. formula an integral part of the life of tribal people in Santhal Parganas. It was linked to the livelihood of the tribal people who took to tasar culture to supplement income from agriculture. However, in the transition period of taking over the Zamindari *forests* there was a lot of destruction of tasar hoat trees consisting mainly of Asan and Arjun. It resulted in the tribal people taking to other occupations including the cutting and selling of timber (pols & firewoo*d)* from the forest areas. it is very essential to create plantations of tasar host trees so that the tribals could assume tasar culture in a big way. Tasar plantations are to be taken up around the habitations.

Objects of Management: —

i) To raise plantations of host plants (Asan and Arjun) in the viccinity of villages linked with rearing of tasar.

ii) To provide employment opportunities to the local people.

iii) To boost up export of tasar silk thereby earning foreign exchange for the country.

The cultivation of tasar si1k worm (Antheraea

mvlitta) is done in Bihar. *Its* caterpillars feed on leaves of Terminalia tomentosa & T. arjuna etc.

The cocoons are brown, red or yellow and collected from the force s as the moths do not breed easily in captivity.

Distribution of Area:—

The State Silviculture Department has identified pilot project centres in the district of Dumka. The tasar should take up this work extensively. In addition to the present area available for tasar farming more areas have been outlined for this which is mentioned Range wise in Appendix—Il.

Tasar plantation:-

Asan and Arjun are the main species for tasar host trees plantaiiun. spacing for plantation to be maintained are 1.2 m x 1.2 m. while for block plantation it is at 2m. x 2m. Tasar tees generally have a long gestation period but the most redeeming feature of tasar plantation is. The fact that the plantations require only three years to come to full yield. From the fourth year the plantations becomes self supporting.

Area Statement

Dumka Damin	-	35.00 hac.
Simra Damin	-	160.00 hac.
Godda Damin	-	684.00 hac.
Hizla East	-	1004.43 hac.
Hizla West	-	1565.48 hac.
	total-	**3,448.91 hac.**

CHAPTER—IV

MISCELLANEOUS REGULATIONS.

2.4.1 Grazing:—

Though the forests are suffering under heavy pressure of grazing cattle, it may not be feasible to enforce the desired protection against grazing. It is possible if the pasture working circle is successfully carried out. Efforts should be made to:-

a) close cut back and treated areas upto 5 years,

b) close planted areas upto 3 years.

2.4.2 Roads:—

The forests of this Division are fairly served with pucca and faire weather trunk roads. There is a good network of pucca roads in the Division. The forest roads are in bad condition. A lot of culverts and bed level causeways need to be constructed.

2.4.3 Energy efficient chullahs:—

The Divisional Forest Officer with the help of the Dy. Commissioner, Dumka should try to allot the fuel efficient chullahs to the villagers on priority basis at a subsidised rate.

2.4.4 Bamboo plantations in villages:—

It is difficult to have bamboo plantations since it is more vulnerable to grazing. In fenced areas near the villages bamboo plantations shall be done which should be cut and sold according to the view of the village committee Dumka Social Forestry

Division shall take up bamboo plantation works. Plantation of cuims and seedlings both can be taken up.

Technique of bamboo plantation:

Collection of bamboo seeds are to be done in April/ May in the bamboo available areas. Seeds should be sown on the ground and covered by soil, Watering of the seed bed is essential everyday. The seeds germinate within 8—10 days. When the seedlings attain a height of 3 to 4 inches they are removed from the bed and put into the polythene bags. By the month of August, the seedlings become ready to be planted at the site. Bamboo plantations should be done through the villagers. The idea behind this is that bamboo is heavily grazed. Without the cooperation from local inhabitants it is very difficult to protect them.

Plantation of culms:

One year old culms with the rhizome should be dug away. After leaving up to 6 ft. over the rhizome the rest portion is to be cut by sharp edges cutters so that while cutting the culm does not develop cracks. While digging it is ensured that the eyes of the rhizome (generally 2 to 3 in number) are not damaged. Plantation of culms are to be carried out just after 2nd shower of the monsoon. The pit may be circular with diameter of 12 inches and depth upto 12 inches. Culms should be tightly fixed to the ground so that it should not be disturbed by wind or cattle's.

CHAPTER—VII

2.7.1 In Dumka Division wildlife management shall be taken up in Dumka Damin Range. For preparing a wildlife management technique for this area a lot of survey work has to be taken up first e.g. Animal survey, Water resour— ces survey, Population survey, Poaching survey etc.

2.7.2 Animal Survey:-

For biological and management needs, in most cases it is not necessary to know the total population size. For example, many censuses are to determine trends or to make comparisons between different areas, seasons ___ or dif ferment treatments.

Objectives of animal survey

i) To determine whether a population of a species is increasing, stable or decreasing i.e. the trend.

ii) To determine how well introduced stock is doing.

iii) To compare densities of wildlife in an area before and after management intervention, like burning, developing water resources etc.

iv) To compare densities in different ecological zones. The animal survey may be of direct or indirect type. Since the species occurring in Dumka Division are in how density direct count is not possible here. Pellet counts and pugmark impressions are the suitable methods of indirect survey that can be conducted in Dumka Division. For occasional visits of leopards pugmark impressions can be taken and for the survey of bears and wild boars pellet counting will give a picture of the density of the animals. Previously while the forest was dense there were chittals and sambars in these forest. Gradual reintroduction of these animals shall be taken up in due course.

2.7.3 Water resources survey:–

Before planning for a detailed scheme of management the perennial sources of water shall be noted down first including rivers, nalas, streams, ponds. Then the temporary water points are to be listed. A water resources map can be constructed for the Dumka Damin Range. Then a correlation can be worked out between the density of the pellets available in a particular area and the density of the water sources.

2.7.4 Food availability survey:–

Presently for the four major animals bears, wildboars, monkeys and langurs food survey shall be conducted. The food habits of the animals are mentioned here in order to make easier the survey operations.

Bears:– Wild fruits like figs, mangoes, jamun, bel etc. are relished by the bears. During summer season they attack the honey coombs located in tree hollows. Bear's main insect food is termite. Bears living near human settlements have the opportunity to raid the ripening sugarcane and maize crops. They also relish mahua flowers.Wild boars:– The wild boars are omnivorus living on crops, roots, tubers, insects, snakes etc. They mainly feed early in the morning and late in the evening.

Monkeys and langurs:– They live on leaves, flowers and fruits only. Accordingly the food availability can be surveyed area wise and a correlation be established amongst the three variables e.g. the abundance of animals, the food availability and the water resources.

2.7.5 Population census:–

The human and cattle population in and around the forest area are to be calculated. In accordance with this management must be oriented. Keeping in full view of the requirement of the villagers, which has been dealt in this working plan separately, the conservation measures for the wild lives shall be taken. Food, water resources and habitat improve melts are the major areas of wildlife management water facilities are to be developed either by digging or budding small check dams. Plantations shall be done in conformity with the requirement of wild lives.

2.7.6 Survey of poaching:—

Poaching areas in the forest can be easily demarcated. Regular anti poaching operations will keep the poaching at a minimum level. Regular persuation of tribals for not organising melashikars may yield some better results.

On the whole if the management is done keeping the welfare of the people around in mind then conservation of wildlives will also be a successful venture.

2.7.7 In addition to the wildlife development measures in Dumka Damin Range a vigilant eye is needed to protect the migratory birds in winter visiting the large damsites such as the one on the Nayurakshi river. In winter a large number of migratory ducks and cranes visit the dam. Presently very little protection is afforded to them resulting in gradual decline of the winter visitors. The working plan strongly advocates that heavy anti poaching operations must be taken up in winter to stop shooting of birds.

CHAPTER—VIII

FIRE PROTECTION.

2.8.1 On silvicultural grounds it is essential that the entire forest should be protected from fire particularly the younger coppice coupes, 1 to 10 years old. For this, it will be necessary to fire trace the exterior boundary lines, all the roads and the line around 1 to 10 years old coppice coupes. Fire–tracing, whenever to be done, must be done in small strips in which all steps have previously been taken to ensure that fire will not spread outside the strips to be burnt. The exterior boundary lines of all the forest blocks must be fire traced to a width 7 to 10 metres. This will be effected in the following manner:

i) All grasses and shrubs growing on the line must be cut in December–January and left lying in situ for drying.

ii) The dry grass, leaves etc. should be swept and collected in the middle of the line in small heaps.
iii) Fire should then be set lightly on both sides of the line keeping the boundary or the edges of the line clear at all inflammable materials to a width determined by local circumstances so that fire does not spread anywhere outside the cleared line and advances gradually towards the middle of the line.

iv) Burning should be done in small strips. If necessary guidelines should be cut at intervals of 20 or 30 meters.

2.8.2 All roadsides must be fire traced to width of 5 to 8 metres. In the case of the Damin, P.W.D and R.E.O. roads this width will be taken from the

boundary pillars and not *from* the edge of the road. The following precautions will be taken when fire tracing the road:-

i) Only one side of the road should be burnt at one time.

ii) Strips of 20 to 30 metres long to be burnt at a time.

iii) All other precautions taken for burning the boundary lines should also be taken while fire tracing the roads.

2.8.3 Coupes of 1 to 10 years should be fire traced by lines 7 metres wide taking the same precautions as for the boundary line burnings. In addition to this such lines will be regularly swept of all dry leaves etc. and kept clear after the burning throughout the fire seasons i.e. middle of February to middle of June. Fire watchers will be appointed during the fire season especially for the protection of the younger crops.

2.8.4 General Conservancy:—

The instructions laid down by the Government in their letter no. 1725—IIIF—283--F dated the l9th/2Oth of February, 1931 embodied in rule 70 of the Forest Manual Vol. 11 will be followed strictly for the control of the fire conservancy operations in all the RFS and PFS. The fire lines will be fire traced, maintained, fires fought, reports sent and maps and records maintained according to these rules. Special attention of the forest staff is drawn to rule (12) thereof which is given below:—

Forest subordinates who see smoke rising anywhere in or near the forest, shall at once get together with whatever aid they can and proceed themselves to the spot. They must not sit quiet and send somebody else to enquire and report. The forest official who arrives at the spot where a

fire is burning shall at once proceed to put it out, should it be outside his own beat or range he will continue there till relived by local personnel unless the fire is so strong as to demand all possible help.

2.8.5 No camping should be allowed inside the forest. Due publicity should be made about the dangers of fire, losses caused thereby and methods of firefighting to gain sympathy and support of the local people. Reward system should be there for dedicated work to the staffs and to the local people. Fire patrols may be appointed during the fire season for watching fire and assisting the permanent staff in fire conservancy measures. The strength may be one fire patrol In every two sub—beats.

2.8.6 Fire maps:—

A record of fires with fire maps on a scale of 4"=1 mile be prepared for individual felling series. Each map will be for 5 year’s periods.