

PART-I
CHAPATER-V
PAST SYSTMEM OF MANAGEMENT

Sahebganj Social Forestry Division was carved out from old Dumka Division in the year 1978. Pakur Damin Range Rajmahal Damain Range of the erstwhile Dumka division constitute the present Sahebganj Division. Hence the previous plans for Dumka division can be taken help of to discuss the past system of management.

Harts Plan (1929-30- to 1938-39)

In the revised working plan by Mr. Hart for the period 1929-30 to 1938-39, the tower slopes of the hills and the plain area were allotted to coppice working circle which were divided into 4 felling series, 455 acres were to b felled annually with a rotation of 40 years. Standards were provided to be retained for silvilcultural reasons. Hill ridges and plateaus were allotted to selection working circle with rotation of 20 years. The minimum exploitable girth of sal, asan, karam, gamhar was 4 and that of bija, dhaura, jamun was 3.6". Bamboo overlapping working circles were created with tow felling series of 4000 acres each. The cutting cycle was 3 years. the demerit of this plan was there were less number of standards left per acre. Selection feelings could not be worked out well due to inaccessibility of the area.

In the bamboo, working circle, the yield fluctuated from year to year since the coupes were not equiproductive. The demand of the turis has also been ignored.

Derry's working plan (1940-41 to 1950-51)

This working plan provide coppice with standards, Plantation and bamboo overlapping working circles. Under coppice with standards working circle the old reserve was divided into 6 felling series viz. Mahuagarhi, khatgaon, Kathikund, Gopikander, Nargunj and Chirudih. The first tow felling series were worked on 60 years rotation and the remaining four on 40 years rotation. The godda reserves were divided into 4 felling series viz. Khelari Garial, Gandeswari East and Gandeswari West all on 40 years rotation.

For standard marking two types of prescriptions were provided (i) for the lower levels of the main ridges and (ii) the higher levels of the main ridges. the former did not prove

practical and the later was never carried out properly. Detailed rules for felling by right holder had also been framed.

In the plantation working circle attempts were made in the first few years of the plan to raise plantation in the western part of Dhamania Pahar. The area covered was nearly 400 acres.

The bamboo working circle overlapped the whole of the old reserve with three felling series, one to be worked on 3 years felling cycle for general supply and two on 5 year cycle of supply of young bamboo to Mahulis. Felling rules provided for retention of four year old culms besides the culms of the year and the previous year. However the execution of felling was defective.

Damin P.F.

Warren's scheme which covered 81 blocks of protected forests demarcated in Dumka Damin till 1944 was a supplement to Derry's plan. Working Circle comprising 1/- felling series was provided. rotation was fixed at 10 years. The felling series maps had not been prepared nor the sequence of felling shown.

Vested P Fs.-

The former private protected forests 94.10 sq. miles in area were worked under coppice working circle and bamboo working circle. There were 59 felling series in the coppice working circle.

Nankara-Shankara Forests:-

The Nankara-Shankara estate forests 8543 acres in area, were being worked in one working circle viz. Coppice with standards working circle. There were five felling series with 50.00 acres coupe in each felling series and the rotation varied from 15 to 40 years according to the area of the felling series.

UD Fs:-

For the undermarked protected Forests annual yield had been fixed empirically at 600 trees in Dumka Damin, 150 trees in Godda Damin and 100 trees in Pakur Damin Range. The minimum exploitable girth was 4.6".

1.5.4. Prasad's working plan (1955-56 to 1964-65 extended upto 1975-76)

This covered in all 1620.8 sq. of forests. Five Working circle were constituted.

- i) Coppice with standards working circle.
- ii) Bamboo Over lapping working circle.
- iii) Afforestation working circle.
- iv) Old Plantation working circle and
- v) U.D.P.F. working circle.
- i) Coppice with standards working circle.

This consisted mainly of sal forests, situated on hills, valleys and plains. Three rotations of 30, 40 and 60 years were adopted. 30 years for valley sal, 40 years for hills sal and 60 years for old reserved Khatgaon and Mahuagarhi. The forests were distributed into 117 felling series of which 6 were advised complete rest. Their yield was fixed by area efforts were made to form equip productive coupes. Three thinnings were prescribed in felling series with 60 years rotations, 2 in felling series with 40 years rotation and 1 in 30 years rotation. The plan also provided for plantation of blanks occurring in the annual coupes.

Prescriptions of plan have not been implemented in full. The control forms have not been maintained. The areas statements on the maps do not represent the actual state on the ground. During the period of the plan the practice of kuraon took a great toll of the forests. The proportion of sal went down giving place to inferior miscellaneous species.

- ii) Bamboo Over lapping working circle.

Prasad's plan retained the three bamboo felling series as in the old Reserve but the felling cycle was changed to 4 years. Two more felling rules provided for retention of current

and previous years culms. Purchasers would supply bamboo to the Mahulis at the rate prescribed by the D.F.O.

iii) Afforestation working circle.

The working circle comprised 3742 acres. all Total seven afforestation servies 2 in Hizala, 2 in Godda Damin, 3 in Pakur range were constituted. in the Mayurakhshi Dam catchment areas kaju, siris, gamhar, sisoo, teak, eucalyptus, bamboo Khair etc, were planted, later on a lot of Acacia moniliformis plantations were taken up. In the catchment area soil conservation measures like checkdoams, qually plugging, contour bunding and contour trenching etc. were taken up. Felling was prohibited in the catchment areas.

iv) Old Plantation Working Circle :-

Plantation working circle comprised the old successful plantations already existing in the Division. Two old teak plantations, one in Kulanga P.F. of bizla range and the other in dhamania Pahar of Simra Range, were kept under this working circle. However, both the plantations suffered badly on account of excessive theft of Tead trees. The Plan did not prescribe exploitation of mature trees.

iv) UDPF working circle :-

The comprised undermarcated protected forests. Selection fellings of trees of 5' and above girth were prescribed by the number of trees to be removed. The prescriptions of this working circle were also not implemented properly.

During Prasad's plan a number of forest roads were constructed. List of roads is given in the appendix. Few bridges were also constructed during his periods. List of buildings is also given in the appendix During this plan period the boundary was fully demarcated and plotted on 16" = 1 mile cadastral maps. During this process steps were taken. To consolidate the boundary pillars by replacing the earthen ones with stone masonry pillars and planting of Agave along the boundary line.

Y.P. jha's plan (1974-75 to 1988-89). Under this working plan five working circles were prescribed:-

- i) Coppice with Standards working circle.
- ii) Rehabilitation-cum-Soil Conservation working Circle.
- iii) Plantation Working Circle.
- iv) Bamboo (Over lapping) Working Circle.
- v) Avenue Working Circle.

Entire Forests of present saheganj Division were put under the first three working Circles.

- i) Coppice with Standards working circle. :-

Three types of rotations 60 years in old R.Fs and 30 years in the remaining felling series. The felling series which were kept as F.S. (B) under Prasad's working Plan could be put in "Rehabilitation-cum-Soil Conservation Working Circle by Y.P. Jha. Number of Standards were fixed at 35 per acre. Altogether 117.5 converting as area of 4153.697 ha of Sahebganj Division wee allotted to this working circle in whole plan.

- ii) Rehabilitation-cum-soil Conservation Working Circle. :-

All the derelict, waste areas and catchment areas of river projects like Mayurakshi Dam, Sundar Dam etc. were kept under this working circle. Prescriptions were given for rehabilitation of vegetation, conservation of soil moisture and protections of existing vegetation. Under this working circle a total = 397.5 spreas over on area of 7941.96 ha of the division were allotted to this working circle in Jha's Plan of 143 felling series were created.

- iii) Plantation working Circle. :-

This embraced all the raisea placations, illicitly kuraoned patches and blank areas. Tending operations were prescribed for the 87.5 covering an area of 684.324 Jha were allotted to this working circle in this plan existing plantations.

- iv) Avenue working circle. :-

This working circle was meant to take up avenue plantation works along the metalled roads of the Division. a total of 206 km. length of road was prescribed to be taken up for avenue plantation.

The species prescribed for taking up avenue plantations were teak, Mahogany, Mango, Jamun, Mahua, Kusum, Eucalyptus, Toon Karanj, Neem and Ficus species. Detailed plantation techniques was prescribed for the purpose.

v) Results of the previous working plan. :-

The working plan procedures were not at all followed. The forms prescribed for coupe working not filled up at all. There is no record available in the felling series history records. However, there is no sign of improvement of the stocking from the previous plant period. Wherever sal forests is present, it is mostly of pole or sapling size. Very few areas of Bunglow Alubera, Dumarhir, Simlong, Sakregarh sal trees of ple sizes. Rampant kuraon activities had legt the upper hills barren. It seems during the plan period little effective steps were taken up for containing the kuraon. Most of the sal areas have been converted to rooted stock areas. A large number of illegal fellings are seen throughout the area.

Plantations done during the last five years show very poor performance. According to the amount of the existing plantation show little correlation. It seems if the plantation activities were thoroughly neglected.

Roadside avenue plantations show good results at places.

PART-I
CHAPATER-VI

STATISTICS OF GROWTH AND YIELD.

1.6.1 The statistics of growth and yield compiled at the time of the last plan have been made use of in this plan as well.

1.6.2 Stump mortality:-

During the course of the last plant in order to clarify the doubt whether the forests were regenerating properly under the coppice with standards system, it was felt that if adequate number of stools do not produce successful coppice shoots and if the replenishment by natural regeneration does not make up the loss due to stump mortality then either the system would have to be change or at least some special steps taken to check the deterioration of the stocking. It was thus necessary to assess the stump mortality and the augmentation of stock by natural regeneration. The assessment was done in the manner described below:-

During the course of field work representative plots were laid but in the coupes coppiced in the previous year. In order to study the effect of topography upon the stump mortality if any, representative polts of (1/4 to 1/2 acres) (10 hec. to 20 hec.) were laid out on steep, moderate and gentle slopes and flat areas along the fertility gradient. The number of stools that had successfully coppiced and those which had failed to coppice were enumerate in 15 cm (6") girth classes for sal and other miscellaneous species separately in order to study their different coppicing power. Simultaneously fresh recruitment over the areas was also enumerated to know how comparatively much less than for sal as will be evident from Table below:-

Species	Girth classes in cm/feet			
76.20	91.44	106.68	121.92	137.16
91.44 cm.	106.68 cm.	121.92 cm	137.16 cm	152.40 cm
(2.5'-3')	(3.5'-4')	(3.5'-4')	(4'-4.5')	(4.5'-5')

01	02	03	04	05	06
Sal	24.1	29.0	54.5	81.8	75.0
Misc.	18.75	25.0	28.5	32.0	60.0

N.B. Mortality has been expressed as a percentage of the total stools enumerated.

This lower mortality percent of the stools of higher girth classes of miscellaneous species in the growing stock, sal having been replaced by them in localities where sal stools of old age predominate. It was unfortunate that during that study it was not possible to lay out representative plots on steep and moderate slopes in adequate numbers as most of the coppice coupes of the previous year were on fiat or gently slopping ground. Only 9 (nine) plots were laid on steep slopes and 19 plots on moderate slopes which do not provide adequate data for conclusive derivations. However, the trend of behavior can be indicated by the study. The consolidated data is given in Table No. below:-

For the stump mortality is being mitigated by natural regeneration. The stump mortality and the fresh recruitment were then expressed in terms of the percentage of the total number of stumps enumerated. The result is given in the attached table.

From the attached table (Table) the following interesting observations can be made:-

It can be seen that while for sal the mortality percent is 5.1 the fresh recruitments amount to 191.42 percent, and miscellaneous species, the stump mortality amounts to 5.8 percent and the forest recruitment to 255.4 percent. Hence it can be safely concluded that the growing stock is in no danger of depletion, as the fresh recruitment compensated very much more than the stump mortality. In fact, the stocking is expected to improve in density with proper protection and tending.

The stumps mortality of sal almost negligible for the stump of to 1' girth being 1.4 percent. 4.8 percent, and 12 percent for 30.48 cm-45.72 cm (1'-1.5'), 45.72-60.96 cm (1.5'-2'), and 60.96 cm 76.20 cm (2'-2.5') girth classes respectively. Mortality shows sharp rise for higher

girth classes being 24.1 percent to of sal of upto 76.20 cm (2.5') girth only where after coppicing should be discouraged. This result compares observations on the subject.

3) For the miscellaneous species the behaviour is most similar to sal except that for the girth classes 76.20-91.44 cm (2.5'-3') and higher the mortality percent is.

The following observations can be made:-

1. the stump mortality increased almost proportionally with the gradients. While for plain ground and gentle slopes the stump mortality percent for sal is 4.2, it increases to 5.1 and 13.2 for moderate and steep slopes respectively.

For the miscellaneous species almost similar behaviour is observed, the stump mortality being 2.7 percent for flat and gentle slopes increasing to 8.2 percent and 9.4 percent of remunerated and steep slopes respectively. Obviously, it goes to account for the poor density of the crop with increasing slopes. Lesser soil depth, higher exposures and desiccating condition are unfavorable for natural regeneration on the one other.

The miscellaneous species have retained the distinctive feature of having lower mortality percentage than that of sal even on varying gradients. It show that sal needs more protection than the other species. more so while coppicing poles of larger sizes.

On moderate and step slopes, the mortality percent of sal is distinctively greater than those the increasing proportion of miscellaneous species on steeper slopes.

Study of Growth

Age/D.B.H. (curve) – stump analysis:- To study the growth, stump analysis had been carried out for sal. The apparently different behaviour of Hill sal and valley sal towards growth led to their study separately. Unfortunately no data could be collected for other species due to non-availability of well grown trees in the locations. A large number of various sizes were selected in different localities and the data were collected. The radii corresponding to the rings at different decades were measure. Measurements were taken along four radial directions and their mean taken. After making proper allowance for the age corresponding to average stump height, graph was plotted showing diameter under-bark at stump height against age. From the field observations, relation between diameter under bark at stump height fir different stump

heights and was graphically represented. On the basis of the above a final graph showing age against diameter at breast height-over-bark was plotted which is attached herewith (Graph No. 1).

On the same graph, curves showing age and average diameter-over-bark at breast height of the standard coppice qualities a and b (vide howard packet book) were superimposed for comparative study. From Graph No. 1 the following observation can be made:-

The valley sal up to about 56 years of age corresponds to a quality better than coppice quality 'B' but for higher ages the quality decreases below the coppice quality 'B'. Hill sal is of quality proper than coppice quality 'B'.

The rotations required for valley and Hill sal come to 30 and 40 years respectively as the average diameter at these ages is 15.24 cm (6") and 15.74 (6.2") respectively, which is the average size required to meet the demand of fire wood and pole of the local population.

Locality	Age in Years	D.O.B.B. H.cm/inches	Corresponding D.O.B.B. cm/inches) GAOB	C.A.I. in cm/inches of D.O. B..H.	M.A.I. in cm/inches of D.O. B.B.H.
1	2	3	4	5	6
Hill Sal	10	3.5/1.4	-	0.35/0.14	0.35/0.14
	20	8.1/3.2	-	0.46/0.18	0.41/0.16
	30	11.4	-	0.33/0.13	0.38/0.15
	40	15.7/6.2	-	0.43/0.17	0.38/0.15
	50	19.6/7.7	-	0.38/0.15	0.38/0.15
	60	23.4/9.2	-	0.38/0.15	0.38/0.15

Locality	Age in Years	D.O.B.B. H.cm/inches	Corresponding D.O.B.B. cm/inches) GAOB	C.A.I. in cm/inches of D.O. B..H.	M.A.I. in cm/inches of D.O. B.B.H.
1	2	3	4	5	6
Valley Sal	10	6.1/2.4	-	0.60/0.24	0.60/0.24
	20	10.2/4.0	-	0.41/0.16	0.51/0.20
	30	15.2/6.0	-	0.51/0.20	0.51/0.20
	40	20.4/8.0	-	0.51/0.20	0.51/0.20
	50	25.1/9.9	-	0.48/0.19	0.51/0.20
	60	27.7/10.9	-	0.25/0.10	0.46/0.18

Average height (Curve):-

The height of health sal trees of different girths were measured. With the average figures a graph was drawn with diameter at breast-height-over-bark against average height. Now, from Graph No. 1 the age corresponding to different diameters were found out and finally the following table (Table No.) was prepared showing relating of age an height. A graph (Graph No.,) was then drawn accordingly. Graphs for standard G.A. were also superimposed thereon.

Locality	Age in years	BOBBJ cm/inches.	Height in cm/ft.
Hill Sal	10	3.5/1.4	2.38/7.8
	20	8.1/3.2	5.79/19.0
	30	11.4/4.5	8.79/27.5

	40	15.7/6.2	11.58/38.0
	50	19.6/7.7	14.02/46.0
	60	23.4/9.2	16.15/53.0

Locality	Age in years	BOBBJ cm/inches.	Height in cm/ft.
Valley Sal	10	6.1/2.4	6.01/20.0
	20	10.2/4.0	10.06/33.0
	30	15.2/6.0	14.48/47.5
	40	20.4/8.0	17.83/58.5
	50	25.1/9.9	20.36/66.8
	60	27.7/10.9	21.27/69.8

The valley sal approaches standard coppice quality 'B' shale Hill is of inferior quality. The low quality of Hill sal is due to exposure, desiccation and lesser soil depth on steeper gradients. It will also be seen that the valley sal is more vigorous in growth than the Hill sal, more so in the younger age.