

## PART-II

### WORKING PLAN FOR THE SELECTION CIRCLE.

#### GENERAL CONSTITUTION.:

546. The Reserved Forests of Oreya an area of 1257 acres (508.91 hectares) constitutes this Working Circle. It is situated on this with steep slopes.

547. The Working Circle contains dry mixed crop with exception of a few pockets in valleys where miscall aneous crop occurs. Predominant species are Sal Asan, Pandan, Bija Karam Gamhar etc. Semal and Rose Wood also occur in certain pockets, bamboo have dominated in coupe No. 10,11,12,13,14, and 15 and are worked by separated Bamboo overlapping Working Circle. The productions in the above coupes in last felling cycle has been high. These areas are also on high hills and very steep.

548. Mr. Nicholson (1932) and Mr. Mishra (1951-52) while allotting Oreya forests to selection Working Circle were guided by :

- (i) The composition of crop and
- (ii) The danger of suppression of valuable species by bamboo.

In fact, Mr. Nicholson recorded that Oreya forests if Worked under coppice would lead to dominance of bamboo at the expense of mixed forest. Though due to the inexperience of the marking staff there was overfelling during Nicholson's Plan, Mr. Mishra continued with the prescription and sequence of the Nicholson's Plan.

549. Though Mr. J.P. Sinha (1970-71) was reluctant to keep this forest under selection Working Circle, he decided to continue it under selection felling in the interest of few valuable species that exist in this area and also watch the process and stages of changes from dominantly miscellaneous forests to bamboo forests.

550. As the area is still productive except a part on high hills and slope, it was considered wiser to keep the selection system in Continuity and giving rest to the coupe No. 10,11,12, 13,14, and 15 in this felling cycle. They will be worked in the normal sequence in the next 5<sup>th</sup> felling cycle.

#### OBJECTS OF MANAGEMENT.

551. The special objects of management are :-

- (i) to maintain and improve the present composition of the crop by tending and nursing every thing valuable below exploitable diameter which can reasonably be expected to reach the exploitable diameter.
- (ii) to utilize all silviculturally available trees above exploitable diameter.

#### SILVICULTURAL SYSTEM.

552. The system is selection-Cum-Improvement. Exploitable trees which are silviculturally available will be removed. At the same time, adequate soil cover will be maintained.

FELLING CYCLE:

553. The existing felling cycle of 20 years has been retained.

CALCULATION OF YIELD:

554. Yield is regulated by area. Annual coupe area is in the tabular statement as below:

TABEL NO: CIXX

Year of Exploitation.	Number of Coupe.	Area in acres.	Area in hectare.
1	2	3	4
1991-92	1	62.00	25.10
1992-93	2	59.00	23.87
1993-94	3	57.00	23.08
1994-95	4	58.00	23.48
1995-96	5	57.00	23.08
1996-97	6	58.00	23.48
1997-98	7	58.00	23.48
1998-99	8	60.00	24.29
1999-2000	9	51.00	20.65
2006-07	16	75.00	30.36
2007-08	17	75.00	30.36
2008-09	18	48.00	19.43
2009-10	19	58.00	23.48
2010-11	20	63.00	25,57
TOTAL		831.00	339.65

EXPLOITABLE DIAMETRE:

555. All trees of Sandan over 30cm dbh. And all trees of other species including salai over 40cm dbh. Will be marked for felling. Khair of above 20cm dbh will also be marked for felling.

DEMARCATION OF ANNUAL COUPE:

556. There is one Forest Management History which has been divided into 20 coupes. Coupes will be demarcated by 2m cleared lines with double coaltra rings on trees standing on the boundary or immediately on the coupe side, Coupe NO. 10 to 15 will not be laid during this felling cycle.

RULE OF MARKING :

557. Markings will have leaning to wards improvement rather than revenue. The following rules will be observed:

- (a) All dead, dying or top-broken trees will be marked for felling.
- (b) All trees of non-descript species interfering with the growth or proper development of sal and other commercially valuable species will be marked for felling.
- (c) All trees of minimum exploitable diameter and above shall be marked for felling except in the following conditions:-
  - (i) Where the density is low and the crop is open.
  - (ii) Where established regeneration is absent and bamboo does not occur;
  - (iii) Where the slope is steep
  - (iv) No bamboo shall be felled in any coupe and
  - (v) Climber cutting will be done along with the marking.

#### SUBSIDIARY SILVICULTURAL OPERATIONS :

558. In the year following the main fellings in the annual coupes, silvicultural operations will be carried out as follows :-

- (i) Coppicing of the top brodin, damaged poles and high stumps;
- (ii) freeing the growing shoots from climber and debris and over topping of grass and bushed
- (iii) In coupe No. 10,11,12,13,14,and 15 cleaning will be done in their year for laying outcoupes.

#### PART-II

#### CHAPTER -III

#### WORKING PLAN FOR THE SURPLUS WORKING CIRCLE.

#### GENERAL CONSTITUTION AND CHARACTER OF VEGETATION.:-

559. in view of the continuity of the prescription and partial success of this system in the prevalent condition in right free and remote forests an area of 28,838.73 hectares have been brought under this working circle. these forests are approximately in a state of good regeneration under the silvicultural system of coppice-with-standards without any aid or with nominal aid. undue risk in regard to regeneration and deterioration in productivity of the forests have been avoided and the result of the past working has been given due weight age. the forests of his working circle are broadly composed of pure sal with varying proportions of its common associates and of miscellaneous species. predominant

species in the mixed miscellaneous forests are sidha (*lagerstroemia parviflora*), dhauntha (*anegeissus latifolia*) kekar (*garuga pinnata*) genjan (*lanneag coromandelica*) siris (*buchanania lanzan*) kend (*diospyros melanoxylon*) asan (*terminalia tomentosa*) with a few salai (*boswellia serrata*) khair (*acaia catechu*) and bija (*p.marsupium*)

560. broadly, the above forests of approximated pure sal, occur on southern part of the division. the forests on the western part and those adjoining the daltonganj south/north are of miscellaneous species.

561. this working circle covers an area of rangewise break-up of area has been listed below:-

range.	acres.	hectare.
latehar	5,977.85	2,419.20
sarju	7,249.65	2,933.90
manika	7,254.89	2,936.02
chandwa	12,874.65	5,210.30
richughuta	29,493.27	11,935.76
balumath east	3,174.02	1,284.51
balumath west	5,236.14	2,119.04
total		28,838.73

special objects of management:

562. the special objects of management are :-

- (i) to improve the stocking and quality of the existing growing stock by regulating cutting on sound silvicultural basis, tending the young crop by suitable cultural treatments and by planting up the blanks with natural species.
- (ii) to ensure continued existence of forests in a healthy state for prevention of soil erosion, flood control and regulation of water supply.
- (iii) to meet the local demand of right holders and non right holder of poles, timber to the maximum extent possible.

stock maps.:

563. the forests have been stock mapped on 4"=1 mile topographical sheets showing the distribution of principal species, their size and density. plantations already raised, area fit for plantation erosion prone areas regeneration status and tooted wastes have also been indicated by symbols.

method of tretment.:

564. for the reasons outlined above the coppice-with-standards system has been adopted to retain vigorous healthy and well formed saplings of upto 8" in girth constitutes

a prominent feature. the reasons for the retention of saplings of upto 6” in girth are to provide adequate soil cover desirable species after the main felling to safe-guard against erosion and invasion of grasses and to avoid as far as practicable the sacrifice of young saplings of valuable species.

standard trees.:

565. the standrads are to be retained to serve the following objectives:-

- (i) to ensure re-stocking of blanks or under-stocked areas.
- (ii) to increase the natural regeneration of the climax species.
- (iii) to promote production of large size timber of selected species in the next rotation depending on  
the site-conditions.
- (iv) to prevent frost damage and,
- (v) to prevent erosion along streams and on steeper slopes.

rotation.:

566. the rotation has been fixed at 60 and 40 years. only 21 forest management series have kept under 60 years rotation while 108 f.m.s. have been prescribed 40 years rotation.

constitution of felling series.:

567. in constituting the forest management series, the points taken into consideration are the extent of rights. and the local requirements of the produce. the details of the forest management series are given in appendix- ix,

division into coupes.:

568. the net area of felling series has been arrived at after deducting the unproductive areas from the forests which constitute the management series. only the net area of a forest management series has been divided into coupes to ensure the availability of forest produce throughout the period of rotations.

demarcation of coupes.:

569. coupes must demarcated on the ground strictly in the same sequence as shown on the management maps. maximum fifteen coupes have been shown on these maps. old felling sequence and coupes have also been shown. coupes will be demarcated on the ground by cutting clear lines 2m wide all round. trees along the shall be divided into sections by cutting internal lines to ensure efficient control over fellings. the internal lines need not be very wide but must be clearly distinguishable with double half rings of coaltar. the coupe lines must show up properly. sign boards indicating the number of coupe, area, year of felling etc. shall be put up at coupe corners and at the crossing of important roads and foot-paths. if there is big trees or rocks at desired points these may be utilized for writing there on the necessary information.

priority-allotment of coupe and requirements of funds.:

570. coupes will be laid out a year in advance of actual fellings. immediately after the demarcation of coupes, items of work be listed. the list will include all or a few of the measures prescribed under sub-head “ subsidiary operations” depending on the crop. regular estimate operations- wise for the execution of the measures as found necessary for the improvement of future crop will be made. the preparation of estimate at this stage will enable the divisional forest officer to include the required funds in his budhet.

571. priority list of the coupes requiring measures for improvement would also be prepared. in case the entire required fund in not available in a particular year, work of improvement would be confined in coupes ranking high in the priority list,

572. inspite of all these, if the bare requirement of funds is not available for the coupes listed as priority i, it is advisable to stop felling in such of the coupes as coppice regeneration is almost sure to fail and the process of creation of blanks will get accelerated. a list of such coupes may be sent to the conservator of forest well in advance for his information and approaval.

standard marking and rules thereof.:

573. standards will have to be selected with utmost care as unless thy are well grown, healthy, suitably placed and of valuable species form economic and silvicultural points of view, depending of course upon the availatility of trees, the main objects enunciated in earlier paragraph will be defeated. one single uniform prescription in respect of number of trees to be retained as standards does not appear feasible in the forests of this division on account of the variation in stocking, possibility of damage by frost and risk of erosion in vulnerable areas.

- (a) for the stocked coupes and part thereof free from damage by frost and erosion, the number of standards to be retained per hectare and the sizes to be preferred corresponding to different rotations are given in the tabular statement below.coupe boundary lines will be double-ringed with coaltar at breast height and shall be retaubed. such trees may be of 15 cm diameter and above standing 30cm to 50 cm apart. each coupe in right free management series

table no : cxx

rotation	number of standards to be retained per hectare.	the sizes to be preferred in diameter.
60	50	6''-10''(15cm-25cm.) for class trees
40	70	8''-12''(20cm-30cm)for class ii trees.

		(15cm-20) class – i
		(20cm-25cm) class- ii trees.

marking rules.:

574. (i) in the management series or parts thereof which fall within the khair overlapping working circles, all khair trees as the case may be, shall be retained but their retention will not counted to wards the standards.
- (ii) efforts should be made to select such poles for standards which have originated form seedlings.
- (iii) the distribution of the standards will be primarily guided by the following silvicultural and protective considerations.
- (a) in the localities subject to frost, the distribution should be a s even as fesoible.
- (b) when blanks occur in a coupe, the retention of a few well selected thrifty young sal and other trees and poles to the windward of such blanks in prescribed.
- (iv) climbers resting on, or climbing upon the trees marked for retention must be cut at he time of marking.

method of marking and maintenance of records.:

575. (i) standards shall be marked by coaltar at breast height and at the base as close to the ground as possible.
- (ii) they shall be serially numberd.
- (iii) number of coupe shall be recorded below the serial number of the standard.
- (iv) the size of the standards and species shall be recorded against their number in the prescribed register of standards.

methods of executing the felling:

576. (i) all saplings below 10 cm. dbh. in coupes shall not be felled except those which are malformed, top-broken and diseased.
- (ii) cutting in a section must be done form one end and must proceed to the other and on an even front.
- (iii) all trees must be felled as clearly and as close to the ground as possible. in no case stumps should be higher than 15cm.

- (iv) in addition to the standards marked for retention, all edible fruit bearing trees such as kend, mahua, piar mango, shall be retained provided that their number does not exceed more than 25 per hectare. no over matured malformed, diseased and pollards of edible fruit bearing species shall be retained.
- (v) trees of sacred groves, sarna or jahira shall not be cut.
- (vi) in consideration of strong silvicultural reasons, asthetic value and wild life preservation, felling may not be done over such portions of the coupe wherever it is so desired.
- (vii) no bamboo shall be cut.
- (viii) healthy and well formed khair trees below 20cm. in diameter shall not be felled.
- (ix) over the portion of the coupe felling in khair overlapping working circle no khair shall be cut.

577. there will be no restriction on the felling of khair trees over the remaining portion of the annual coupe subject to the limitation imposed under (viii) above.

578. the division of the annual coupes in to two or more section is left at the discretion of the divisional forest officer. coupes will be demarcated and marked one year in advance of felling. the coupes will be handed over to the state trading division after the later has returned the previous exploited coupe to the former.

579. coupes not exploited in the year prescribed may be exploited in the year following, but not in the subsequent years unless it is permitted by the territorial conservator with the approaval of the working plans officer.

subsidiary operations.

580. the attainment of the objectives laid down in previous is largely, if not solely, dependent on the efficient and timely execution of the operations, these are enumerated below. :-

in the year immediately after the main felling, apart from:-

- (i) dressing down any stumps higher then 15cm. form the ground,
- (ii) coppicing down top-broken or other wise damaged standards and the trees meant to be felled,
- (iii) close attention has to be given to the seedlings of sal bija shisham, salai, khair and bamboo which occur in different stages and to the sizeable blanks or other wish unproductive areas for which the following measures are prescribed. :-



- (a) seedlings of sal bija, shisham, salai, khair and bamboo occurring in patches and the coppice shoots of valuable species shall be freed from weeds, overtopping climbers and felled materials,
- (b) woody malformed seedlings of sal, salai, khair either in group or singly shall be cut back.
- (c) young, unestablished clumps of bamboo shall be cleaned and soil round about the clumps shall be hoed.
- (d) soil in blanks or unproductive patches shall be just hoed or loosened 20 to 30 cm. in width along the contours at 4m interval.
- (e) with the first pre-monsoon shower seeds of sal, salai, khair and bamboo shall be sown in the worked over soil and lightly covered. the choice of species will be guided by the extent and occurrence of seedling regeneration of the species present in the coupe area.
- (f) such patches shall be inspected during the rains to assess the extent of germination and operations if any, required for the survival and growth of the seedlings.
- (g) rigid fire protection at least for 5 years shall be ensured. the danger of fire may be considerably minimized if coupe lines are kept cleared by early burning.

581. the execution of operations as under items (a), (c), (d) and (e) above wherever required would be productive if funds permit to execute them in the following year as well.

cleaning.

583. thinning, as is understood in the forests managed under uniform system, has very limited applicability on account of the openness of the forests and inferior sit-conditions in latehar division. so far, treatments prescribed are mainly to improve the stocking of the crop and there fore the area of application of thinning to get large size timber within the quickest possible time is very much limited. in view of heavy demand of small size timber and of species hither to considered of our value, the scope of application of thinning in true sense is very much reduced. but, nonetheless, the adverse influences of congestion and root competition in the young crop have to be removed to allow proper development. it would therefore, be advisable to carry out regular mechanical thinnings in the young crop. how quickly and to what extent the crop will respond to thinnings in this locality is not yet known but it is presumed that on interval of 15 to 20 years should be made available to the thinned crop its growth and development before it is finally coppice. thinnings should therefore, be done in the 20th and 40th year in 60 years rotation and 15th and 30th year in 30 years rotation.

thinning rules.:

584. in view of what has been stated above the following rules are laid down for guidance in the field.

(a) first thinning:

this thinning will be done in every management series when the young crop is 15/20 years old. the nature of this thinning will be purely mechanical with a view to provide an average spacing of 6ft. in the standing crop.

- (i) cut back all worthless species interfering with the growth of valuable ones.
- (ii) cut back all dead, dying diseased, crooked and malformed items.
- (iii) cut back all dead, dying diseased, crooked and malformed items.
- (iv) cut back all climbers.
- (v) the number of coppice shoots per stool should be reduced to one.
- (vi) the crop should be thinned so as to have final spacing of 6ft. on the average.

(b) second thinning :

the second thinning will be done when the crop is 30/40 years old. it will be an ordinary thinning for which the following guide lines are laid down:-

- (i) the operations prescribed under items (i) to (v) under first thinning will be repeated in this case also. in addition to the above:-
- (ii) cut back wolf trees, if any present,
- (iii) cut back suppressed stems provided their removal do not expose the soil.
- (iv) the crop should be thinned so as to have an average spacing of 8ft. x 8 ft.

schedule of thinning.:

585. in consideration of the present status of the crop and the impact of biotic and edaphic factors thereon, the thinning schedule must not be followed mechanically. in many cases, the expenditure on thinning may prove wastage and harmful effect may be caused on this account. the decision to execute this operation will therefore necessitate close and thorough examination of the crop by staff not lower in rank than a range officer a year in advance of the time schedule.

586. thinning may not, therefore, be required in all the coupes falling due for it annually, and it may not also be required over the entire coupe-area of any particular one. it should ordinarily be confined to such coupes or part thereof where real signs of competition affecting the growth of valuable trees become apparent. on dry, eroded and open areas as also in miscellaneous patches great caution will be necessary or else the ground may get unduly exposed and remain so for long as a result of thinning.

annual programme of thinning:

year of thinning	first thinning	second thinning	j.p.sinha plan rotation.		
			60	40	30year.
1	2	3	4	5	6
1991-92	41	21	1	1to 6	1to4
1992-93	42	22	2	4to7	5-8
1993-94	43	23	3	8	9-13
1994-95	44	24	4	9	14
1995-96	45	25	5	10	15
1996-97	46	26	6	11	16
1997-98	47	27	7	12	17
1998-99	48	28	8	13	18
1999-2000	49	29	9	14	19
2000-01	50	30	10	15	20
2001-02	51	31	11	16	
2002-03	52	32	12	17	
2003-04	53	33	13	18	
2004-05	54	34	14	19	
2005-06	55	35	15	20	

588. in kumandih forest management history old felling sequence as many available has been annexed. for other management series the sequences have been shown in the same management map.

grazing

589. coppice coupes will remain closed to grazing for a period of six years from and including the year of felling. this restriction may, however, be relaxed earlier in the case of any coupe where the divisional forest officer finds on his inspection that grazing if allowed, will not adversely affect the growth of the new crop. on the other hand, if he finds that grazing over such coupes causes damage to the soil and the crop, he may prohibit grazing over such area for a specified period subject to the limit of one third of the total area of the felling series at a time.

fire

590. one single factor which has greatly contributed in upsetting the hopes and faith laid in the prescription of the previous plans and the results therefore is fire. the entire working circle has to be ensured of the protection against fire.

unauthorized cutting:

591. people are in the habit of cutting young crop mainly for ghoran and firewood. the requirement of ghoran can be met to some extent from the produce obtained from

cleaning operations if it is executed before june. produce obtained from cleaning and thinning operation may be given free to rightholders.

part-ii

working plan for deficit working circle.

with community participation.

general constitution:

592. this working circle has been constituted of villages having less forests proportionate to their population as below:-

- (a) protected forests with density 0.4
- (b) protected forests with such a biotic pressure of local population that they have been rooted waste  
or tending to do so and

(c) k.r.fs. which have also degraded due to the biotic factare.

the total area allotted to this a working circle is 63,069.82 hectare.

special object of management:

593. the special objects of management of this working circle are:-

- (a) community participation in protection and management of higher to under productive  
and refractice forests,m
- (b) to ducte the mass for the beneficial and environmental effects of the forests,
- (c) to meet the requirements of the right-holder and non-rightholders both,
- (d) consistent with the above, if surplus is generated to feed the local market and
- (e) development of the village and revenue to the govt. out of the sale proceeds.

area :

594. the range wise areas under this working circle are:-

sl. no	range.	area in hectare.	
		ac	ha
1.	balumath east	27,993.91	11,328.98
2.	balumath west	33,207.28	13,438.80
3.	chandwa	37,757.99	12,280.45
4.	richughuta	8,695.18	3,518.90
5.	latehar	20,295.78	8,213.59
6.	manika	13,315.49	5,288.71

7.	sarju	14,579.91	5,900.41
	total	1,55,845.54	63,069.82

stock map:-

595. the forests have been stock mapped on 4"=1 mile topographical sheets showing the distribution of principal species, their size and density. plantations already raised, area fit for plantation erosion prone areas regeneration status and rooted wastes have also been indicated by symbols.

method of treatment:

596. for the reasons outlined above the coppice- with-standards system has been prescribed to retain vigorous healthy and well formed sapling of upto 10 cm. dbh. the reasons for the retention of saplings of upto 10cm dbh. are to provide adequate soil coner by desirable species to safe- guard against erosion and invasion of grasses and to avoid as far as practicable the sacrifice of young saplings for next rotation. the forest will be managed by the village forest management and conservation committee (v.f.m.c.c)

village forest management and conservation committee:

597. the v.f.m.c.c will be constituted as below:-

- (A) divisional forest officer, latehar will call a meeting of a village or a group of villages in which all the adults of the village/groups of village will pqaarticipate. the quorum of the meeting will be considered when at least 50 percent of the adults of the village/group of villagers concerned will be present.
- (B) the range officr of forests will be the co-ordinater- secrqtary of that meetiong.
- (C) the general body meetig will constitute a v.f.m.c.c of every village/group of villages. the member of v.f.m.c.c will be one member from each family.
- (D) the v.f.m.c.c will an executive committee for every village/group of villages.
- (E) executive members may be mukhia, teacher, sarpanch, manki munda, representative of ngos and any (male and female) member of head loaders whose livelihood depends on collection fuel from forests. the formation of excutive committee will be as below:-

(a)	president	:	1
(b)	co-ordinater cum member- secretary	:	1
(c)	mukhia	:	1
(d)	defeated mukhia	:	1
(e)	sarpanch	:	1
(f)	traditional munda- manki, manjhi, mahato pahan	:	2

(g)	schedule tribes	:	2
(h)	schedule caste	:	1
(i)	teacher	:	1
(j)	female	:	3

the total number of the members will neither be less than fifteen nor more than eighteen. at the time of the formation of the committee the number of female members must be minimum 3 and maximum-5.

- (f) concerned forestser will be co-ordinator and nominated member cum secretary of the executive committee
- (g) the quorum for the meeting of the committee will be 10.
- (h) the duties and responsibility of the committee will be as follows:
  - (i) the meeting of v.f.m.c.c will be called after six months. in the meeting the work of the committee will be evaluated and policies and directions will be ascertained.
  - (ii) every member of the v.f.m.c.c will care for the management and conservation of the forests and will inform forests officers about forest offenders. they will held small meeting of local people on utility and important of the forests and protect the forests form depletion.
  - (iii) every member of the v.f.m.c.c will watch the activities of the members of the activities of the members of the committee. if the activity of any member of the executive committee is not satisfactory, he will inform it to forests officers. if he understand it proper he can highlight them in the meeting.
  - (iv) member of the v.f.m.c.c will help to arrest forest offenders and also in their prosecution.
- (I) If the activities of any member of the V.F.M.C.C. or Executive Committee found to be against the protection of forests and the village, he may be removed from them after a resolution in the general meeting of the V.F.M.C.C. He may be prosecuted under Concerned Forest and Wild Life Acts.
- (J) Executive Committee will be formed for two years. Later on it will dissolved automatically to be formed again for two years according to the above procedure.
- (H) Duties and responsibilities of the Executive Committee will as below.



- (i) Executive Committee will select its own President.
- (ii) Executive Committee will meet once in a month.
- (iii) Meeting place and date will be fixed by the Member-Secretary.
- (iv) In the meeting protection and development of forests will be discussed.

Executive Committee will have to follow the direction given from time to time by the Principal Chief Conservator of Forests. The direction will have to be obeyed by the Committee. Accordingly programmers will be made. The programmed evaluation will be done monthly. Ways for removal of mistakes will also be discussed in the meeting.

- (v) The Executive Committee will ascertain the active Contribution for the development and Conservation of forests.
- (vi) It will also ascertain the obedience of the Forest and Wild Life Acts.
- (vii) It will watch the activities of the forest offenders and will also inform about them to the forest officers.
- (viii) It will take active part in arresting and taking action against offenders.
- (ix) It will execute the development work in forests on the direction of forests officers.
- (x) It will help forest officer in employing laboures in development works of theforests so that the landless and unemployed poor people of the village may get employment.
- (xi) It will help in exploitation and distribution of the forest produce.
- (K) At first, the cost of the development of the forests will be borne by the Government.
- (L) These forests will be managed as below.
  - (i) The forests will be managed as per the Joint Management Plan (JMP).
  - (ii) The J.M.P. will be prepared by the Working Plans Officar and the Divisional Forest Officer, Latehar with the help and suggestion of the Committee and will be approved by the Conservator of Forests =, Western Circle.
  - (iii) The Right holder will take dry branches leaves and Grasses free form the forests during the gestation period of the programme.

SILVICULTURAL SYSTEM.

598. The Silvicultural system will be Coppice with Standard Working Circle. The minimum Standard will be 60 per hectare.

#### ROTATION.

599. Since these forests are deficit forests and the pressure for fuelwood and poles is very high and also the success of the programme is dependant the Credibility of the forest department, the rotation will be of 20 years.

#### LAYING OUT OF COUPE:

600. No Coupe will be laid out in the first 10 years of the Community Management. Later on with the recovery of the area, Coupes will be laid out after the survey of the success of the system by the Working Plans Officer. The details of the F.M.S. are given with appendix- X. which may be modified as per the Joint Management Plan.

#### DEMARCATION OF COUPES.

601. Coupes will demarcated on the ground strictly in the same sequence as shown on the management maps. Old felling sequence and Coupes have also been shown. Coupes will be demarcated the ground by cutting clear lines 2m wide all round. Trees along the coupe boundary lines will be double ringed with coaltar at breast height and shall be retained. Such trees may be of diameter 15cm. and above standing 30cm. to 50cm. apart. Each coupe will be divided into sections by cutting internal lines to ensure efficient control over exploitation. The internal lines need not be very wide but must be clearly distinguishable with double half rings of coaltar. The coupe lines must show up properly. Suitable sign-boards indicating the number of coupe area, year of felling etc. shall be put up at coupe corners and at the crossing of important roads and foot-paths. If there is big trees or rocks at desired points these may be utilized for writing thereon the necessary information.

#### STANDARD MARKING AND RULES THEREOF.

602. Standards will have to be selected with utmost care as unless they are well grown, healthy, suitably placed and of valuable species form economic and silvicultural points of view, depending, of course, upon the availability of trees. Failing to do so the main objects enunciated in earlier paragraph will be defeated. Standards per hectare will be as below.

Roration	Number of standards of be retained per hectare.	The sizes to be preferred in Trees diametere.
20	80	10cm. to 15cm. 1 <sup>st</sup> Class 15cm. to 20cm. 2 <sup>nd</sup> Class.

### MARKING RULES.

603. (i) In the Management Series or parts thereof which fall within the Khair Overlapping Working  
Circles, all Khair trees as the case may be, shall be retained but their retention will not be counted towards the standards.
- (ii) efforts should be made to select such poles for standards which have originated from seedlings.
- (iii) The distribution of the standards will be primarily guided by the following silvicultural and protective considerations.
- (a) In the localities subject to frost, the distribution should be as even as possible.
- (b) When blanks occur in a coupe, the retention a few well selected thrifty young sal and other trees and poles to the windward of such blanks is prescribed.
- (iv) Climber resting on or climbing upon the trees marked for retention must be cut at the time of marking.

### METHOD OF MARKING AND MAINTENANCE OF RECORDS.

604. (i) Standards will be marked by coaltar at breast height and at the base as close to the ground  
possible.
- (ii) They shall be serially numbered.
- (iii) Number of coupe shall be recorded below the serial number of the standard.
- (iv) The size of the standards and species shall be recorded against their number in the prescribed register of Standards.

### METHODS OF EXECUTING THE FELLINGS.

- 605 (i) All saplings below 10cm. in coupes shall not be felled except those which are malformed, top-  
broken and diseased.
- (ii) Cutting in a section must be done from one end and must proceed to the other and on an even front.
- (iii) All trees must be felled as clearly and as close to the ground as possible. In no case stumps should be higher than 15cm.
- (iv) In addition to the standards marked for retention, all edible fruit bearing trees such as Kend, Mahua, Piar mango shall be retained provided that their number does not exceed more than 25 per hectare. No overmatured

malformed, diseased and pollards of edible fruit bearing species shall be retained.

- (v) Trees of sacred groves, Sarna or Jahira shall not be cut.
- (vi) In consideration of strong silvicultural reasons, aesthetic value and wild life preservation, felling may not be done over such portions of the coupe wherever it is so desired.
- (vii) No bamboo shall be cut.
- (viii) Healthy and well formed Khair trees below 20cm.in diameter shall not be felled.
- (ix) Over the portion of the coupe falling in Khair overlapping Working Circle, no Khair shall be cut.

606. The division of the annual coupes in two or more sections is left at the discretion of the Executive Committee. Coupes will be demarcated and marked one year in advance of exploitation.

Coupes not exploited in the year prescribed may be exploited in the year following, but in the subsequent years unless it is permitted by the Executive Committee with the approval of the Divisional Forest Officer, Latehar.

#### SUBSIDIARY OPERATIONS :

607. The attainment of the objectives laid down in previous is largely, if not solely, depend on the efficient and timely execution of the operations. These are enumerated below:-

In the year immediately after the main felling apart from:-

- (i) dressing down any stump higher than 15 cm from the ground,
- (ii) Coppicing down top-broken or other wise damaged standards and the trees meant to be given to the seedlings of Sal, Bija shisham. Salai, khair and bamboo which occur in different stages and to the sizeable blands or other wise unproductive areas for which the following measures are prescribed :-
  - (iii) Seedlings of Sal, Biha, shisham , Salai, Khair and bamboo occurring in patches and the coppice shoots of valuable species shall be freed from weeds, overtopping climbers and felled materials,
  - (iv) Woody, malformed seedlings of sal, salai, khair either in group or singly shall be cut baack.
  - (v) Young, unestablished clumps of bamboo shall be cleaned and soil round about the clumps shall be hoed.
  - (vi) Soil in blands or unproductive patches shall be just hoed or loosened 20 to 30 cm in width slong the contours at 2 m interval.

- (vii) With the first pre-monsoon shower seeds of sal salai khair and bamboo shall be sown in the worked over soil and lightly covered. The choice of species will be guided by the extent and occurrence of seedling regeneration of the species present in the coupe area.
- (viii) Such patches shall be inspected during the rains to assess the extent of germination and operations if any required for the survival and growth of the seedlings shall be carried out.
- (ix) Rigid fire protection at least for 5 years

#### CLEANING

608. In the 5<sup>th</sup> year the following operations are prescribed in all the felling series, :-

- (1) Climber cutting.
- (2) Miscellaneous cleaning.
- (3) Reduction of coppice shoots to the minimum of two or three per stool.
- (4) Bamboo clumps and seedlings of Khair and Salai shall be properly

cleaned and tended.

#### THINNING :

609. Thinning will be done in 12<sup>th</sup> year of the formation.

#### DISPOSAL OF THE PRODUCE :

610. (a) After exploitation all the forest produce will be handed over to the Executive Committee at an

ascertained royalty.

(b) The Royalty will be fixed by Divisional Commissioner Ranchi and Chief Conservator of Forests

(Management and Protection) Ranchi. At the time of the fixation the royalty, it will be kept in mind that villagers have their interest in execution of the programme.

- (C) The forest produce will be distributed among the the right holders on the basis of quantity of forest produce and their requirement. The right holders will not sale such forest produce.
- (D) Surplus Forest produce will be sold to local villagers at market rate.
- (E) The amount received from sale will be divided in to three equal parts.
- (F) The first part will be for village Development Fund and the second part will be for the Forest development Fund From the third part an Executive Committee Fund will be formed.
- (G) Produce from thinning and cleaning will be utilized by the right-holders according to the distribution by the Executive Committee.

PART II  
CHAPTER –V

WORKING PLAN OF THE RANGE MANAGEMENT WORKING CIRCLOE.

GENERAL CONSTITUTION.

611. This Working Circle has been Constituted with most of the isolated hilly forests surrounded by villages and fringe forest areas with almost no vegetation. Even Plantations on such areas have failed miserably due to the heavy biotic pressure of grazing. The total area allotted under this working circle is 31,348.21 hectare.

CHARACTER OF VEGETATION :

612. The areas allotted under this Working Circle is generally very refractive with gully and sheet erosion. The hillocks have tno vegetation. They need immediate attention and soil conservation measures to conserve moisture. As grass is the most effective soil binder, these areas need to bre developed into posture land so that the major portion of the productive forests can be saved from the ill effect of heavy grazing.

SPECIAL OBJECTS OF MANAGEMENT :

613. The special objects of management of the areas are to :-

- (i) Conserve soil on exposed and steep slope of open areas.
- (ii) Confine the cattle to fringe areas to save larger areas from grazing,
- (iv) Habituate the local population for stall feeding and
- (v) Satisfy the local demand of fuelwood fodder and small wood.

AREA :

614. The Rangewise areas under this Working Circle are as follows :-

TABLE NO :CXXI

Sl no	Range	Area	
		Acre.	Hectare.
1	2	3	4
1	BALUMATH EAST	17,432.07	7,054.66
2	BALUMATH WEST	8,353.79	3,376.69
3	CHANDWA	8,165.21	3.304.41
4	LATEHAR	16,096.62	6,514.21
5	RICHUGHTA	3,436.18	1,390.60
6	MANIKA	20,365.79	8,241.93
7	SARJU	3,621.77	1,465.71
	TOTAL	77,461.43	31,348.21

the village wise area is given in the column the appendix-VIII.

### METHOD OF TREATMENT :

615. In this Working Circle. Only such areas have been allotted which have come to the present condition due to excessive fellings, annual hacking removal of the atumps and intensive grazing. As these area are near or surrounded by villages, the pressure is going to increase year by year. Earlier efforts to restock the area by Coppicing and afforestation have not succeeded. Before taking up the areas for development into pastureland a Committee of the beneficiary villages will be formed and agreement as per the Govt. resolution for Community participation will be achieved. When the local Community agrees for stall feeding and abstaing their cattle from open forests only then process for development of the Pasture land will be initiated.

### SOIL CONSERVATION WORK:

616. The soil Conservation work will be done on departmental expenditure to conserve the moisture and reduce the run off as below :-

(i) In predominantly eroded are gullies will be plugged by earthen or masonry dams supported by

vegetative plantation. Diversion channels will be made to divert excess water. The anti erosion measures will be done from top to downwards of the gullies.]

(ii) In hilly and undulating areas contour trenches will be dug as per requirement and standard practice.

### DEVELOPMENT OF PASTURE LAND:-

617. After completing the Soil Conservation work the area will be made out of bound for cattle and pits for planting fodder, fuel and fruit trees at 15m a part will be dug. With the on set of monsoon better varieties of grass seeds depending upon the soil condition will be planted in the entire area. The pits will be planted with Sisoo, Khair, Mango, Jack fruit between Sgasti and Sub babul. Hoing and weeding will be done between both the tree species and the grasss species for the first year. From the 2<sup>nd</sup> year, local community will be allowed to cut grass as per their decision at a rate of Rs 1/- per head load. The money so collected will be deposited in the village fund to be shared equally to Community fund and the government.

618. From 3<sup>rd</sup> year the local Community will be allowed to lop Khair, Agasti, subabul and other palatable species.

## PART-II

### CHAPTER –VI

#### WORKING PLAN FOR TH EKHAIR OVERLAPPING WORKING CIRCLE:

#### GENERAL CONSTITUTION:

619. This working Circle comprises all such forests which contain Khair (Acacia catechu) trees in commercially exploitable quantities. On account of its occurrence in mixture with other species this working Circle overlaps other Working Circles. It covers an area of 23,119.04 hectares.

#### CHARACTER OF THE VEGETATION :

620. The occurrence of Khair and its distribution has been discussed in paragraphs 60,220-225 and 386-388. Khair is a pioneer species and is the first to colonise any land. But it is not that it comes up only in blanks. Although Khair does favour particular type of rock and soil, its occurrence in Latehar Division in dry deciduous mixed forests and in dry sal forests is sure indication of its character to grow on a variety of soil. The general condition of Khair trees is, however, very discouraging. The trees are generally stunted, crooked and malformed with a few exceptions in comparatively inaccessible areas. Though in last working plan it was thought that with the removal of dead, dying, diseased and malformed trees of even below 6" (8" later on) prescribed diameter will improve the Khair forests but it is not so. Lopping has played the most important role in the formation of malformed trees. Khair, by virtue of its economic importance, had to suffer the most by illicit felling aided by fire and grazing has restricted the improvement of Khair crop considerably. Complete absence of cultural operations too contributed towards the present condition.

621. Prolific regeneration of Khair even on highly hostile sites and its survival under heavy odds and in tense adverse conditions, lead one to forest the great potentiality that lies in this species. If given adequate protection and required care, it may form one of the principal species of the division. The appearance of Khair on highly eroded and gullied sites after proper protection amply supports the above view. Almost all the plantations in the division have fairly high incidence of Khair seedlings. The high economic value of this species and the ease with which it is coming up, call for a due attention.

#### SPECIAL OBJECTS OF MANAGEMENT :

622. The special objects of management are :-

(A) To obtain maximum sustained yield of Khair trees of economic size, consistent with the

silvicultural claims of other important species with whom Khair occurs mixed in the crop and

(b) to aid and help the young seedling and crop in the areas allotted to this Working Circle by suitable cultural operations and thereby to augment the stocking and improve the quality of the future crop.

#### STOCK MAPS.



623. Khair has been stock mapped on enlarged topo map of 4"=1 mile. Such forests and parts there of which contain Khair in commercially exploitable number have been stockmapped and the incidence has been shown with distinct separate symbol.

METHOD OF TREATMENTS AND EXPLOITABLE DIAMETER :

624. The system will be selection Cum improvement system. Selective fellings of Khair trees of and above exploitable diameter of 20 cm. will be done.

### FELLING SERIES :

625. Six Felling series have been constituted for the convenience of working. Each annual coupes of the Felling Series in expected to yield sufficient Khair trees to permit economic exploitation. In doing so, adjustments have been made in the Khair bearing of ests of different Ranges. The felling series as far as precticale have been confined to territorial boundaries of the Ranges. They are given below.

TABLE NO : CXXII

Name of Range	Sl. No	Name of F.M.S	Total area of FMS in hectare	Felling Cycles.
1	2	3	4	5
CHANDWA RICHUGHUTA	1	DAMODAR	39,327.50	15
BALUMATH EAST	2	BESRA	19,395.96	15
BALUMATH WEST	3	AMANAT	19,693.13	15
LATEHAR	4	SUKRI	16,845.88	15
MANIKA	5	AURANGA	15,706.35	15
SARJU	6	SARJU	19,995.15	15

### EXPLOITABLE DEAMETER :

626. The minimum exploitable diameter has been fixed at 20 cm. all the trees in a Coupe of above 20cm. dbh will be felled.

### FELLING CYCLE.

627. The felling cycle will be of 15 years.

### ANNUAL COUPE :

628. All the Felling series have been divided into 25 annual coupes. The details are given in appendix –XIII Coupes have been so made as to yield Khair trees on sustained basis as far as possible. Almost whole village has been given in one coupe to avoid cutting of artificial lines

### REGULATION OF YIELD.

629. In view of the enumeration not done, the yield will be regulated by area only. It is accordingly prescribed that the annual coupes will be exploited on the basis of area asl indicated in the statement in appendix-XIII.

### RULES OF MARKING.

630. All khair trees including dead and dry trees of and above 20cm dbh present in each annual coupe shall be marked for removal. In addition of them the following will also be marked to improve the crop:

(a) Gravely malformed, gnarled or twisted stems, on which increment will not be economic, will

also be marked even below 20cm dbh.

(b) In stumps having more than one shoots, the best one should be retained and the remainder should either be marked or Cut back at the time of marking.

#### EXECUTION OF FELLING :

631. (a) All trees should be felled as closed at the ground and as clean as possible.

Felling, in any case

should be above 15 cm. from ground level .

(b) To get vigorous growth of Khair coppice, felling should be dcompleted before 31<sup>st</sup> march.

(c) Only one year old coupe may be felled without deviating the prescription.

#### SUBSIDIARY CULTURAL OPERATIONS :

632. In the year of following the main felling, the following operations will be done :-

(a) All marked trees or stumps not felled by the state Trading will be cut back at the cost of the State

Trading and the produce will be handed over to the

(b) any Khair trees damaged in the course of felling shall also be cut back.

(c) Young saplings would be given close attention and if top broken, malformed or defective would

completely be cut. These saplings should be freed from climbers and overtop of inferior species.

(d) Coppice shoots should be reduced to two preferring those which are healthy and growing from ground evel.

#### CLEANING

633. This operation will be executed in the 5<sup>th</sup> year after the main fellings and will consist:-

(a) Reduction of coppice shoots to ONE per stool.

(b) Freeing of coppice shoots and young saplings of seedling origin from overtop of inferior species, shrubs etc.

(c) Cutting away all climbers including those interfering with established seedlings and saplings.

(d) Congestion wherever present should be removed by thinning.

634. The above time schedule of cleaning may be changed by a year or two on either side if the felled areas are to be gone even either under Coppice Working Circle or Rehabilitation Cum- Afforestation Working Circle.

MISCELLANEOUS REGULATIONS:

635. (a) Khair trees will not be allowed to be felled in the course of exercise by right holders.

(b) Lopping of Khair trees shall be strictly forbidden.

(c) Felling of Khair trees under any other Working Circle is prohibited.

(d) The illicit trade of Katha should be totally stopped.

(e) No Khair tree will be felled after 31<sup>st</sup> March.

PART-II

CHAPTER-VII

WORKING PLAN FOR THE BAMBOO OVERLAPPING

WORKING CIRCLE.

GENERAL CONSTITUTION OF THE WORKING CIRCLE:

363. This working Circle covers all bamboo bearing forests which are surplus and deficit as well and mainly overlaps the surplus and deficit working circles.

CHARACTER OF VEGETATION:

637. The occurrence of bamboo its condition and results of past working have been dealt with in paragraph 61,212-216 and 392-398. It primarily occurs on the northern zone of the division though its presence elsewhere is not negligible except in Kuru Chandwa, Balumath and Latehar beats. Its occurrence is not uniform throughout and appears to prefer miscellaneous forests, shallow valleys and lower slopes of the hills and cooler aspects. The result is that there is a wide variation in density in the forests listed as bamboo bearing. The quality of bamboo in this division is also greatly influenced by the locality factor and the site condition particularly soil depth, aspect and drainage bamboo of Orey, Kumandig and Kuku is far superior to that of Roda, Nagar, Endua etc.

638. While on the one hand bamboo is easily extending and occupying new area on the other hand it is heading towards complete elimination from some of its abodes. Many such forests which formed the parts of bamboo cutting series have now been taken out on account of almost complete destruction of bamboo due to over exploitation. This situation has been created by the local middle men in the name of Turees. The Bamboo bearing forests close to the habitation have suffered the most. In fact a very engrossing problem has appeared in so much as Nature helps and the sites favour this valuable species in one part of the division but in other parts it is being eliminated at the hands of men by taking advantage of the present trend of natural reproduction of bamboo and considering to meet the local demand on priority and channelising the trade of bamboo- basket, it may be hoped, can serve the bamboo forests. Earlier most bamboo C.S.were worked on 12m,8 and 4year long leases. Some were auctioned annually. During the Contract period, right holders were neglected and there was always under reporting and over- exploitation by the Contractors. The deficit clumps used to be marked and handed over to the purchasers and was expected that they would be cleaned during cutting. The working of the bamboo forests by state Trading Divisions is also not proper. All the exploitable series are not cut annually. The irregular and intermittent cutting due to lack of demand, transport facility and law and order problem has virtually

eliminated the scientific management. The unemployed labour force and the ready middle men to exploit the situation have given momentum to the Karil felling by Turees and others in the name of turees to ever rising Bamboo-basket trade. Large quantity of Kopal (young shoots of Bamboo) is illegally extracted from forests in months of July and August and sold to local and distant markets. This kiopal is used for Pakaura and prickling.

#### SPECIAL OBJECTS OF MANAGEMENT:

639. The special objects of Management are :

- (a) to improve the stocking of bamboo by artificial aid:
- (b) to meet the requirements of turees and right holders with such convenience to them as may be

practicable without damaging the bamboo forests

- (c) Consistent with the above to obtain maximum sustained yield of industrially acceptable and

silviculturally available bamboos.

#### STOCK MAPS :

640. Bamboo has been shown by an independent symbol in the stock maps prepared on a 4"=1 mile scale which has enabled to assess the areas of bamboo bearing forests.

#### AREA DISTRIBUTION AND CUTTING CYCLE :

641. A list of bamboo bearing areas together with acreage where exploitable bamboo occurs has been given in appendix XI. The total area of this working circle is 20,836.72 hectares.

#### CUTTING CYCLE.:

642. The cutting cycle will be of 4 years. To maintain the continuity, the cutting series of the plan under revision which are workable have been kept intact as far as possible. The degraded series has been constituted to rehabilitate the bamboo and meet the local demand and that of the Turees.

643. The composition of the cutting series is given in appendix-XI. The XI-A has list of surplus cutting series while XI-B show the degraded or deficit series for local people and rehabilitation.

644. The area of annual coupe has been brought to round figure by rounding off the decimals. Right free and right – burdened bamboo bearing forests have also been constituted into separate cutting series.

645. Usually the whole village has been allotted to one annual coupe in which case no demarcation on the ground is necessary. Coupe lines have been shown on the

Management Maps wherever it has been found necessary to indicate the area of annual coupe. The artificial lines wherever to be cut are to be done by clearing 3m wide strips and putting the standard coaltar marks on the trees along the coupe lines at convenient distances. In all cases sign-boards indicating the cutting series and the name and number of the coupe should be put up at conspicuous places.

METHOD OF EXECUTING THE CUTTINGS.:

646. The following cutting rules are prescribed :-

- (i) In each clump the culm of the previous rainy season commonly known as Karils shall not be cut. Even the damaged Karils shall be left intact only the damaged end may be removed.
- (ii) In each clump old, healthy, green and straight culms equal to the number of Karils or to a minimum six in any case shall be left uncut. These older culms should be left on the periphery and should be so distributed as to provide the necessary support to each Karil.
- (iii) No clump containing less than eight green culms shall be worked but such clumps must be properly cleaned. This will mean removal of dead and damaged old culms or high stumps. In no case Karils shall be cut the damaged end may however be removed.
- (iv) Digging and extraction of bamboo rhizomes are strictly prohibited.
- (v) Cutting should be done within one foot from the ground level or just above the second visible node whichever is less.
- (vi) Cutting must be done with a sharp axe or saw in such a way that the stumps are not split or torn.
- (vii) In a clump which is in flower, no cutting shall be done until the seeds have ripened. After this all the culms shall be cut.
- (viii) Except to the culms which have to be retained under the above rules all culms including the dead, damaged and high stumps in the clumps shall be cut. The dead, damaged or malformed culms should be cut first. Cutting of green bamboos should be done from inside cut so that the culms which are to be retained should be well distributed on the periphery of each clump.
- (ix) All climbers and miscellaneous growth in a clump interfering with their proper development should be cut and removed.
- (x) Cutting of bamboos between the 1<sup>st</sup> July and the 14<sup>th</sup> October in each year is prohibited.
- (xi) Illegal extraction of Kopal should be stopped firmly.
- (xii) The state Trading will not work the same coupe in more than one year. The coupes will be returned annually to the territorial division.

647. Cutting in the annual coupe should start from one end and proceed on an even front. For proper Working, the quasi Community Coupe should be divided in 5 sections. Cleaning in clumps should be carried out simultaneously with the main cutting . all slash should be removed beyond a distance of one meter from each clump to eliminate fire hazard. Clumps containing less than 8 green culms must be cleaned under proper supervision. All such clumps should be enumerated while making coupes.

#### DISPOSAL OF COUPES :

648. The quasi-community coupe should be laid out and one fifth of the area should be handed over to the right holders in advance October. The left over area will be handed over to State Trading division in May-June to be exploited from October only after the written consent of the working Plans Officer.

649. The entire coupe of the community area should be thrown open to the local right holders so that they can meet their demand and clean the clump. The unworked part or whole the Community Coupe will only be handed over to the State Trading after taking written Consent of the working Plans Officer.

#### SUBSIDIARY CULTURAL OPERATIONS :

650. Working of bamboo in accordance with the cutting rules prescribed in the foregoing paragraph and if supervised properly, may not necessitate intensive subsidiary cultural operations. However in the year following the cutting, the bamboo coupes will be gone over and all dead and dry culms, high stumps and hanging branches if any shall be removed by the territorial division at the Cost of the state Trading and the produce will be handed over to them. Climbers, if any, damaging the clumps shall be cut, with a view to increase the hitherto low outturn per hectare and in consideration of the tendency of bamboo to regenerate naturally and availability of sites suited to bamboo in Latehar forest Division the following operation are recommended:

(a) Immediately after the main cutting and with the first break of shower the soil around the deficit clumps should be hoed up to a radius of one meter.

(b) In suitable sites within the coupe area, seeds of bamboo may be sown after disturbing the surface soil either in patches or in lines depending on the configuration. This operation too should be done immediately after the main fellings when the rains start.

(c) Patches where sowing has been done should be attended, in the next and subsequent year.

#### SUPPLY TO TUREES:



651. The Turees cut nothing but the new culms. These new culms are just those that keep the bamboo clumps from extinction. They use only freshly cut bamboos and so they visit the forests throughout the year. So far the efforts to make them use freshly cut old bamboo and to store such bamboos for their use during rainy season have borne no fruit. This has resulted in many bamboo forests having completely wiped out. This in fact, is a serious menace and needs to be tackled with all seriousness and sincerity.
652. The Turees obtain their requirements on the days agreed upon from the nearest current bamboo coupe on payment of Rs. 3/- Per hundred bamboos. As the supervision of forest staff is not proper they go on cutting karils. The supervision needs to be effective so that no more than one culm per clump will be cut by the turees.
653. The clumps from which the turees are to get their needs will be marked co-operative societies of the turees could be registered through the help of the tribal welfare corporation to make bamboos available right in the village of the turees who make safer manufacturing baskets etc. may sell them to the society. This will discourage them to go to forests and cut Karils. Proper arrangement for continued supply of bamboo to the turees will reduce the wastage, improve the bamboo forests and turees as well. This will eliminate the middle men.

**RANGE WISE AREA OF BAMBOO WORKING CIRCLE:**

Sl no	Range	AREAS.	
		Ac.	Ha
1	BALUMATH EAST	1,55.00	426.96
2	BALUMATH WEST	14,558.14	5,891.60
3	CHANDWA	6,014.14	2,433.89
4	RICHUGHUTA	20,560.21	8320.61
5	LATEHAR	861.00	348.45
6	MANIKA	2,978.61	1,205.43
7	SARJU	5,213.33	2,109.81
	TOTAL	51,240.43	20,736.72

PART –II

CHAPTER – VIII

WORKING PLAN FOR THE REHABILITATION CUM PLANTATION.

OVERLAPPING WORKING CIRCLE;

GENERAL CONSTITUTION :

654. This working Circle has been constituted as a time ga arrangement between the old Working and Community participation. Such forests which are prone to soil erosion, rooted waste, blanks or semi-blank have been included in this Working Circle. Areas of above descriptions are extensive and cover a large number of billages. This in the result of over- grazing, fire indiscriminate fellings hacking in the forsts close to habitations and failure of earlier efforts to rehabilitate them. Much of the area is covered by lantana bush with scattered pollards and large trees of salai and Khair. Soil is generally poor and infertile with severesheet erosion and advancing gullies. These areas are also prone to encroachment.

SPECIAL OBJECTS OF MANAGEMENT :

655. The special object of management of these areas is :

- (a) to rehabilitate as fast as possible, if efforts of community participation has not been achieved.
- (b) to bring under vegetation such areas which are still bland and partially stocked.
- (c) to rehabilitate rooted wastes of valuable species.
- (d) to minimize the loss of soil and run- off.
- (e) to meet the ever increasing demand of forest produce by local people,
- (f) to provide increased quantity of grass for fodder,
- (g) to provide employment to local unemployed poor people and,

656. consistant with the soil and cdlimatic ccondition to raise plantations of fuelwood fruit and smallwood species to be meet local requirmente and surplus if any to be used in wood based.

AREA :

657. The total area under this working Circle is as below ;-

TABLE NO CXXIII

Sl no	Range	AREAS.	
		Ac.	Ha
1	BALUMATH EAST	47,927.43	19,395.96
2	BALUMATH WEST	48,661.72	19,693.13
3	CHANDWA	56,319.35	22,792.13

4	RICHUGHUTA	40,858.89	16,535.37
5	LATEHAR	41,626.16	16,845.88
6	MANIKA	38,810.40	15,706.35
7	SARJU	49,408.01	19995.15
	TOTAL	1,23,611.96	1,30,963.96

The detailed area is given in appendix- XIV.

#### METHOD OF TREATMENT :

658. The treatment will be rehabilitating the rooted wastes by fencing and planting the blanks with natural and other plants given in Chapter-XII. Depending upon the site condition.
659. The details of methods of treatment has been given in the Govt. resolution no 0-6179-1371 dated 1/14.4 1979 and the book “ vanropan Paddhati’ by Sri L.K. Pandey, conservator of forests development Circle. From the past experience it has been found that Salai and Khair once the area is selected and fenced appear naturally. They must be given protection special measures to minimize soil erosion should be adopted as describe in that green book.

#### SUBSIDIARY REGULATIONS:

660. The plantations are generally attended to upto the 3<sup>rd</sup> year. No other operation is done thereafter as it is expected that the plantation would get established within 3years of planting and keep on growing without any let or hindrance. However, this expectation is commonly not realized and the plantation barring a few exceptions, do need subsequent operations either over the entire area or a part thereof.
661. It is there fore prescribed that besides attending the planted areas for the first three years, the following operations will be done in each plantation in the 5<sup>th</sup> year as described below :
- (I) Hoeing would be done all over the plantation.
  - (ii) Interference in growth by inferior species, climbers etc, would be removed.
  - (iii) Seedlings of Salai and Khair , if any, should be helped.
  - (iv) Cleaning in the cut back area would be done leaving two or three shoots per stump.
  - (v) Wherever growth is found abnormally low, reasons there of would be ascertained, measures taken to eliminate them which may include application of fresh does of fertilizier, strengthening of fencing etc.

#### OTHER REGULATIONS :

662. Right holding villages whose forests are allotted to Rehabilitation cum plantation Working Circle in part only, would exercise their rights from the remaining portions allotted to the Coppice Working Circle in the manner laid down in paragraph 248. such right holding villages whose entire forests is included in this working circle would exercise their rights from the area due for cutting back and planting in that particular year. Whotover produce is available in such areas will first be offered to the rightholder any surplus left would be auctioned. The forest and the area of treatment would therefore be decided and delineated an year in advance. In case complete treatment of the annual target in each Rehabilitation cum Plantation series is not possible a scheme for felling to enable the right holders to exercise their right may be prepared out of the rooted wastes of the Rehabilitation Cum- Plantation series. The felled area under such scheme has in any case to be fenced after properly dressing down the high stumps etc. if , even funds for fencing is not available, it is advisable to allow the right holders to meet the requirement as they are doing now.

#### REGULATION FOR GRAZING :

663. The longer the grazing is staved off from any area better it is. But in no case grazing be permitted in either planted or rehabilitated areas within 5 year of their formation and treatment. Efferts should be made, without causing undue inconvenience to the local people to maintain the fencing for even longer than 5 years.

#### REGULATION FOR FIRE.:

604. Fire and grazing have together brought forth the present condition in forests. Fire has to be kept out of plantation and rehabilitation areas as long as possible. The elimination of fire in conjunction with with measures in course of plantation and rehabilitation of forest would help improve the site condition quickly.

PART-II

CHAPTER-IX

WORKING PLAN FOR PLANTATION WORKING CIRCLE.

665. Very few plantation of the division can be rated successful. The heavy biotic pressure has reduced the percentage of survival to very low. Some areas have also been replanted. Maps of many plantations were not made available to reach spot for assessment of success. These Plantations were raised under many state and central scheme like R.L.E.P., N.R.E.P., D.P.A.P., R.D.F. social Forestry etc. in order to achieve several objects, the most important being to fulfil the local demand of timber and fuelwood. Though the survival percentage is very low, it was considered better to exploit the plantations by sharing with the local community to bridge the credibility gap between the department and the community.

STATEMENT OF AREAS :

666. in all seven Ranges of Latehar Forest division, the rangewise area allotted to this working Circle is as below :-

Sl no	Range	AREA IN HECTARE.		
		Under central Scheme.	Under Social Forestry.	Under sisal Plantation.
1	2	3	4	5
1	BALUMATH EAST	4,234.38	1,484.58	
2	BALUMATH WEST	3,273.82	778.38	
3	CANDWA	1,059.05	686.66	
4	RICHUGHUTA	669.58	-	
5	LATEHAR	1,864,70.72	800.46	
6	MANIKA	4,919.32	796.39	
7	SARJU	1,309.15	-	
	TOTAL	19,455.12	4,545.46	

SPECIAL OBJECTS OF MANAGEMENT :

667. The special objects of Management of this working Circle are :-

- (i) To feed the sisal fibre plants.
- (ii) To meet the local demand of timber fuelwood.
- (iii) to fulfil the agreement under social Forestry Scheme.
- (iv) to narrow the credibility gap between the Community and the forest deptt.
- (vi) to get the willing support of the local community in further protection and management of the degraded forests and Restock the areas with Community participation.

### SILVICULTURAL SYSTEM. :

668. The silvicultural system of plantations raised under Central Scheme and D.P.A. P. is simple Coppice system. All the planted species will be felled and Coppicedd except Shishm, Khair and other naturally grown trees.

### FELLING CYCLE AND ROTATION :

669. The felling cycle will be of 15 years Neither there will be any rotation nor exploitable diameter.

### ANNUAL COUPE.:

670. Each Management series has been divided into 15 Coupes depending upon the year and scheme of Plantations. Two Management Series in each range have been Constituted separately for Central Scheme and the Social forestry Scheme. Statement of the annual Coupe has been given in the appendix XII. The Divisional Forest Officer, Latehar/ social Forestry, Latehar will hand over the plantation Coupe to the village Community for exploitation.

### METHOD OF EXECUTING FELLING AND RIGHT HOLDERS SHARE.:

671. (a) felling operations will be regulated by area. Coupes will be divided into four sections, and one better section will be opened to right holders. If that will not be enough to meet their requirements, the other section may be given by the Range Officer after due permission from the Divisional forest Officer.
- (b) The felling will start from one section and it will proceed in a systematic manner to the last section of the coupe Lanky, hollow, crooked and malformed saplings or poles below the exploitable diameter will also be coppiced.
- (c) Coppice shoots need to be attended properly to get new shoots which shall form the future crop of the area. Fencing of the coupe after working will be done to plant in blanks the next year.
- (d) In case of pure plantation of Acacia, 1' deep trenches in between lines of plants would be dug two years in advance so that natural regeneration of Acacia is also available before cutting the available trees in the Plantation Coupe.
- (e) Felling should be completed in the coupe by the end of March in any way so that the coppice may be vigorous.

### POST FELLING OPERATIONS :

672. (a) Climber cutting will be done in the Coupe
- (b) All debris and inflammable materials will be removed from the coupe as a precautionary measure against fire hazard.

(c) The coupe areas will be Completely fenced to provide effective check against grazing.

(d) Blank areas of the coupe will be taken up for re- afforestation in the year subsequent to the felling.

(e) Gully plugging work should be taken up along with the reafforestation of the blank areas. The

failed species should not be tried again unless the Divisional Forest Officer is confident of its success in the particular soil.

(f) Coppice shoots need to be spaced on the next year of felling. Shoots less than metre in height need not be spaced at all. In taller shoots the spacing should be the height in metres between the coppice shoots.

(g) After felling the area will be automatically transferred to Rehabilitation working circle and will be restocked by sowing and planting in subsequent year.

#### DISPOSAL OF THE PRODUCE.:

673. The Forest Protection Committee will dispose of the Forests produce among the right holder as per the laid procedure and agreements subject to the minimum half in Central sponsored scheme. The plantation raised under social forestry scheme will be distributed among the local Community as per the agreement. The produce if left from the right holders will be sold at market price to the local people and will aid to the state revenue.

#### SISAL PLANTATION :

674. The Sisal plantations will be worked according to scheme of the F.R.O. Ranchi, Bihar.

PART-II

CHAPTER-X

WORKING PLAN OF PROTECTION WORKING CIRCLE.

GENERAL CONSTITUTION:

675. This Working Circle has been Constituted with the areas treated for soil Conservation, 100 cm above M.S.Land having steep slopes. The areas with no natural regeneration have also been included in this working circle. The total area allotted under this working Circle 1, 118.60 Hectare.

SPECIAL OBJECTS OF MANAGEMENT :

676. The special objects of management are :-

- (i) Rest for the areas treated for soil conservation measures in the last decade,
- (ii) Areas above 1000m height to be protected from felling
- (iii) No felling on steep slopes to Conserve the soil and reduce the run off and
- (iv) Assess the effect of the soil conservation treatments.

AREA :

677. The rangewise area under this working Circle are as follows. :-

TABLE NO OXXIV

Sl no	Range	Treated under soil conservation.	Above 1000 m	Steep slope
1	Balumath east	885.05		
2	Balumath west	58.12		
3	Chandwa	330.93		
4	Latehar	471.18		
5	Richughuta	48.56		
6	Manika	300.83		
7	Sarju	-		
	Total	2,094.67		

678. The village wise area is given in the column----- of the appendix VIII.

METHOD OF TREATMENT :

679. The areas will be treated as follows :-

- (i) These will remain closed for grazing for the plan period.
- (ii) These will be rigidly protected from fire
- (iii) Illegal felling and removal from these areas will be stopped completely.





PART -II

CHAPTER -XI

WORKING PLAN FOR WILD LIFE WORKING CIRCLE.

GENERAL CONSTITUTION:

680. This Working Circle has been created of forests under Plamau sanctuary and on southern port of this Division proposed to be notified as TANA BHAGAT wild life sanctuary over- lapping Manika, Sarju, Richughuta and Chandwa Ranges. Forests of this working Circles. Has been described in detail in other working circles. They are good habitat of flora and fauna and carry a number of wild animals. The name of wild animals found are given in Appendix- XXV & XXV-B.

SPECIEL OBJECT OF MANAGEMENT :

681. The special objects of management are :-

- (i) To ensure the maintenance of flauna and flora for scientific economic aesthetic, cultural and ecological values.
- (ii) To provide for safe breeding place and nucles for multiplication and dessimination of wild life and
- (iii) To preserve for all kinds for all times of such a diverse biological important area and a National heritage for the benefit, education and enjoyment of the eople.

METHOD OF TREATMENT :

682. The part of this working circle falling under Palamau Sanctuary/ Palamau Tiger reserve will be managed under the ManagementPlan of the Project Tiger By Sri R.C. Sahay 1985-86. A new management plan will be prepared separately for the Tana Bhagat wild lifr sanctuary when it will be notified.

TANA BHAGAT WILD LIFE SANCTUARY LATEHAR :

683. Latehar soil of Richughuta and sarju Ranges of Lohardaga district has good stocking of Sal and also supports abundant wild Life. Parts of this area is a habitat of Tana Bhagat. Tana bhagat are Oraon Sdivasis who have given upmeat eating and drinking with. They live an auspicious life under the honourable Guru late Sri Jatru Bhagat. The following forests of Latehar will be notified as ‘ Tana Bhagat wild life sanctuary, Latehar ‘. Tana bhagat are the true follower of Mahatma Gandhi.

TABLE NO :CXXV

Sl no.	Name of forest	Thana and Thana no	AREA OF FOREST.	
			ACRE.	HECTARE
1	2	3	4	5

1. Gotag K.R.F. Mah-11 389.18

157.75

2.	Paila Pathar 653.18	R.F.	“ 12	1614.00
3.	“ ‘ 312.04	K.R.F.	“ 13	772.53
4.	Oreya 508.70	R.F.	Lat.- 199	1257.00
5.	Boda 1372.55	P.F.	Bal.- 269	3391.06
6.	BulBul 146.06	P.F.	Loh.- 1	346.08
7.	Bulbul 2279.64	R.F.	“ 1	5633.00
8.	Kerar 1439.79	P.F.	“ 2	3487.60
9.	Honhe 498.19	P.F.	“ 3	1231.03
10.	Kurse 944.49	P.F.	“ 4	2333.84
11.	Partu 187.59	R.F.	“ 5	463.53
12.	Makka 657.06	P.F.	“ 27	1623.60
13.	Chainpur 330.88	P.F.	“ 30	817.61
14.	Putrar 863.32	R.F.	“ 31	2133.78
15.	Putrar 190.45	R.F.	“ 31	470.60
16.	Bandobar 847.43	P.f	“ 105	2093.33
17.	deodaria 273.71	P.F.	“ 106	2167.34
18.	Latdag 273.71	R.F.	“ 107	676.34
19.	Uldag 601.13	P.F.	“ 110	1485.40

20.	Bahabar	P.F.	“ 111	903.10
	365.48			
21.	Khaira	P.F.	“ 112	1947.25
	788.04			
	Total			35,237.74
	14,295.41			

For administrative control the above forests will remain under Territorial ranges but for wild Life purpose a new wild Life Range will be Created at Latehar.

AREA.

684. The rangewise area under this working circle will be as below. :-

Sl no.	Range	AREA IN HECTARE	
		Palamau W.L. sanctuary.	Tana Bhagat W.L. sanctuary.
1	2	3	4
1.	Balumath east	-	-
2	Balumath west	-	-
3	Chandwa	-	1,372.34
4	Richughuta	-	11,256.16
5	Latehar	-	-
6	Manika	904.21	-
7	Sarju	8,768.74	1,632.02
	Total	9,672.95	14,295.40

TREATMENT FOR IMPROVEMENT:

685. (a) These area will be governed by the principle of least disturbance and improvement of the habitat.

- (b) The availability of water is to be increased during the lean period.
- (c) All types of fellings including Collection of M.F.Ps. will be restricted.
- (d) Rights of local community will be estinguished.
- (e) Poaching will be stopped completely.
- (f) Fire Control measures will be used.
- (g) Local people will be helped to develop their under productive land by Chakriya Vikash system to reduce their dependence on forest and giving them a self dependent system.

CREATION OF RANGE :

686. A range named 'Tana Bhagat wild ALife sanctuary Range' will be created with headquarter at Latehar under Latehar Division. The beats will be at Boda, Sarju and Richughuta six forest Guards will be at his disposal.

PART -II

CHAPTER-XII

SILVICULTURE OF SOME PLAITED SPECIES IN SHERT

GENERAL

687. The purpose of this chapter is to give short description of silviculture of some planted species usually planted in Latehar Division. The details of Plantation technique is given in the book “ Vanropan Paddhati” by sri L.K.Pandey, Conservator of Forests, Development Circle, Ranchi- 1982. this book must be consulted and followed during execution of Plantation and soil Conservation works.

	<i>Acacia auriculiformis</i>
Vernacular	Akesia
Family	Leguminosae (Mimosoideae)
Distribution	Naitve to northern Australia, the islands of Torres strait and Papua New Guinea. Introduced into India.
Uses	Fuelwood ; Sp. Gro. 0.6 to 75 Cal. Value 4,8000-4900 Koal/kg Pulpwood ornamental Shade tree charcoal : tanning from bark.
Growth and yield	Fast growing MAI 15-20m <sup>3</sup> ha <sup>-1</sup> yr <sup>-1</sup> Ht 20-25m dbh 35-60 cm Rotation 10-15 years.
Ecological zone	Moist tropical dry tropical
Ecological	Temperature
Requirements	Mean annual -24-30°c Mean max 28-34° c Mean min 20-24° c Rain fall mean annual 1300-1800 mm Soil: Wide range including light, light medium or heavy shallow sand dunes mica schist, laterie, limestone, clay : can survive on poor soils altitude : upto 600m
Characteristics	Evergreen nitrogen foxing
Planting	seed per Kg 40,000 : direct sowing and nursery raised seelings
	<u><i>Acacia nilotica</i></u>
Vernacular	Babul
Family	Laguminosae ( mimosoideae)
Distribution	Western India (Rajasthan), Pakistan and Africa (sudan, zambia , Botswana etc.
Uses	Fulwood very popular specific gravity 0.67-0.85 Calorific value 4, 800-4, 950 koal/kg charcoal , timber carts, tool hadless boats

	and oars building fodder:- leaves and pods. Tannin and gum.
Growth and yield	fast growth under favourable conditions (irrigation) height 9-14m rotation 15-20 years. Diameter growth 2-3 cm/ years.
Ecological Requirements	Temperature Mean maximum 32-42o c Mean minimum 15-23o c Rainfall : 200-1,000 mm (mean annual ) can withstand arid conditions as well as waterlogging dry season 8-9 months. Soil ; Grows on variety of soils even on poor soils, Prefers alluvium but can grow on heavy black and clayey soil also.
Characteristics	Altitude 0 to 500 m Nirogen fixing Green during summer Coloniser drought hardy, weak coppicer
Planting	Seeds Per Kg. 12,000-15,000 seed treatment dipped in hot water and soak 24 hours also concentrated sulphuric acid (40 minutes) Direct sowing. Nursery raised seedlings in polypots weeding during the first two years.
Adverse factors	Insect bruchids caterpillars beetles vulnerable to grazing.
	Anacardium occidentale
Vernacular	Kaju, Cashew
Family	Anacardiaceae
Distribution	Tropical America and west indies Natruaised in other tropical areas Planted in South India, oriss, Bihar etc.
Uses	Edible nut, Oil fuelwood, fence post fodder, soil conservation.
Growth and yield	Height upto 12m upto 2,500 kg. nuts ha-1 year-1
Ecological requirements	Temperature : Mean Maximum 28-35o c Mean minimum 9-23o c Soil : Prefers light soil, toteraes poor soils, flourishes no coastal soils, altitude 0-1 100 m.
Characteristics	Evergreen, light demanding drought resistant, frost tender.
Planting	Seed per Kg 500: seeds annually , can stored for one year. Pretreatment by soaking 24 hours in water seedlings stumps, direct sowing air layering : 90 per cent
Adverse factor	Insect damage.
	Anogeissus latifolia

Vernacular	Dhaura
Family	Combretaceae
Distribution	Dry deciduous forests of India open grasslands of Sri Lanka.
Uses	Fuelwood calorific value 4,900 kcal/kg Specific gravity : 0.9 charcoal : excellent Fodder –leaves, wood poles, rafters, agricultural implements, axle of carts and shafts gum – gum gally of Indian gum tannin – from bark and leaves dye from leaves.
Growth and yield	Height upto 15m
Ecological zone	Tropical, tropical
Requirements	Mean maximum 25-35°C Mean minimum 5-15°C Wastelands altitude upto 1900 m
Characterist	Large slow growing.
Planting	Direct sowing, seed treatment not required, potted seedlings.
Adverse factors	Drought causes stress, prone to insect and fungi.
	<i>Azadirachta indica</i> .
	Syn. <i>Melia indica melia</i>
Vernacular	Neem Margosa (English)
Family	Meliaceae
Distribution	Dry Tropical areas of India, Pakistan Burma Thailand, Malaya, Indonesia, Cambodia : Semiarid and arid region wood-Sp. Gr. 0.56-0.85 Construction, furniture making, Poles, fence posts, durable, resistant to decay. Fuelwood- Caloric Value 20,900 KJ/kg fodder. Azadirachtin-antiinsect repellent from leaves and seeds. Medicinal. Oil from seeds, tannin (bark). Mulch and manure-green leaves. Fertiliser-neem cakes. Shade, shelter, wind break, soil improvement: wasteland reclamation.
Growth and yield	Height 20-25m. dbh : 100-150cm MAL-5-18m <sup>3</sup> ha <sup>-1</sup> year <sup>-1</sup> Rotation (fuelwood eight years)
Ecological	Temperature upto 40°C
Requirements	Mean Maximum 26-38°C Mean Minimum 14-24°C Rainfall (mean annual) 450-1,150mm Can to – lerate less than 455 mm per year.



	Soil : virvicable dry , stony , sndy, Clay, Shallow but not waterlogged, saline or deep dry and Altitude 50-1,500m
Characteristics	Ever: green : good coloniser: excellent Coppicer drought hardy: frost and fire tender.
Planting	Direct sowing seeds 4,000-4,500 per Kg. Viability 2-3 weeks Pretreatment – Soaking in cold Water 1-2 days seedlings (one year old) stumps
Adverse factor	Termites.
	<u>Cassia siamea</u>
Vernacular	Chakunde
Family	Casalpinoideae/Caesalpinaceae (Leguminosae)
Distribution	South India: south and South East Asia Fuelwood Sp. Gr 0.6-0.8 Calorific value 19,380 KJ/Kg. Fodder ., Timber – Poles Veneer/plywood. Charcoal. Ornamental, agroforestry, Shade for Coffee, Tobacco Hedge Wind break host for sandalwood.
Growth and yield	MAI 8-12 m <sup>3</sup> /ha/yr. Height 10m even upto 18. Rotation 10 years for fuelwood
Climatic Zone	Dry tropical (including Semiarid) Moist tropical. Soil : Deep, well drained, Relatively rich for good growth.
Characteristics	Coppicing power good, evergreen Straight bole, drought hardy, termite resistant, root sucker vigorous.
Planting	Direct sowing, seedlings or stumps, pretreatment of seed none if fresh : if old hot water or concentrated H <sub>2</sub> So <sub>4</sub> (sulphuric acid).
Adverse factors	Vulnerable to attack by scale insects and browsing.
	<u>Dalbergia sissoo</u>
Vernacular	Sissoo, Shisham
Family	Leguminosae (Papilionoideae/ papilionaceae)
Distribution	Punjab to North East region, the Himalayan Foothills, Widely Planted as avenue tree in the country.
Uses	Wood Furniture, Carts Veneer, Wheels Fence posts, Poles, Wood Carving tool handles etc. Fuelwood : calorific Value 20450 KJ/Kg. charcoal, fodder Avenue Plantation. Good for shade. Soil Conservation ravine reclamation

Growth and yield	MAI : I:5-8 m <sup>3</sup> ha. -1 yr.-1 height upto 30 m dbh upto 80 cm
Ecological zone	Dry tropical, moist tropical, sub-tropical Soils. From pure sand and gravel to rich alluvium of river banks, favour light to medium soil, Colonises land slides and exposed mineral soils.
Characteristics	Deciduous or almost evergreen trunk Often crooked : coppicer, drought resistant frost hardy.
Planting	Container raised seedlings, stumps, root suckers, branch cuttings.
Adverse factors	Susceptible to termite damage and browsing.
	Eucalyptus cammeldulensis
Vernacular	Red gum safeds
Family	Myrtaceae
Distribution	Australia-occurring in almost all areas including arid and semi-arid areas, widely planted throughout the world commonly planted in India (tropical region)
Uses	Wood Most important inland hardwood in Australia- General construction, resistant to termites, durable poles. Fuel wood ;sp.gr. 0.6, value 4,800 koal/kg. Charcoal Paper pulp avenue trees, shelter belt and ornamental.
Growth and yield	MAI ; 20-25 m <sup>3</sup> ha-1 yr-1. on poor dry sites 5-12m <sup>3</sup> /ha Rotation 8-10 years, Height 25-40m dbh 60 cmf 1m
Ecological zone	Dry tropical including semi-arid areas Soil : Wide variety – Light/medium/heavy; some provenances; tolerate saline soil; tolerant to periodic water logging.
Characteristics	Evergreen; Good coppicer; browsed by livestock; frost tender
Planting	Container raised seedlings, planting size in 4-6 months seedling required.
	Eucalyptus tereticornis
Vernacular	Safeda; Mysore gum
Family	Myrtaceae
Distribution	Papua New Gunia extensively planted in India.
Uses	Fuelwood Sp. Gr. :0.7-085 cal. Value :22,120 kj/kg Charcoal Pulpwood Fibre board particle board, general construction, mining timber,

	fence posts, poles honey flora, oils, shelterbelts, ornamental, grown in India mainly for Pulpwood.
Growth and yield	MAI : 12-25m <sup>3</sup> Ha-1 yr-1 Height : 18-30m (upto 46m in Australia dbh; upto 1-1-8 years. Rotation : 8-10 years.
Ecological zone	Dry tropical, moist tropical prefers fairly rich, moist alluvial sandy loams and gravened acidic or waterlogged.
Characteristics	Evergreen, straight stout trunk Coppicer, frost resistant; drought hardy
Planting	Polythene bag raised seedlings.
Adverse factors	Prone to termite attack in early stages
	<u>Gmelina arborea</u>
Vernacular	Gamgar
Family	Verbenaceae
Distribution	Native to moist tropical forests of India also native to Bangladesh, Sri Lanka, Burma, SE. Asia and Southern china.
Uses.	Fuelwood Sp.gr. 042-64 Calorific value : 4,800 koal/kg. Charcoal Fodder : leaves and fruits. Wood : Particle board, Veneerp Plywood, light construction boxes, furniture, packing cases. Pulp : paper grade. Ornamental : high quality honey
Growth and yield	MAI : 18-32 m <sup>3</sup> ha-1 yr-1 Height : upto 12-30m Dbh : 60-100 cm.
Ecological zone	Dry tropical, Moist tropical, moist sub-tropical. Soils : Various- acid, calcareous loams and lateritic soils, Cannot tolerate water logging, gets stunted on shallow soils. Prefers moist, well-drained alluvial soil.
Characteristics	Fast growing, coppicing power good, deciduous, termite resistant, frost hardy grafting stumps, potted seedings.
Adverse factors	Susceptible to browsing by livestock.
	<u>Leucaena leucocephala</u>
Vernacular	Su-baboos/Koo-babool,
Family	Leguminosae (maimosoideae/Mimosaceae)

Distribution	Native to Central Amerca (mexico) Naturalised in the Philippines.
Uses	Fuelwood : Excellent : sp gr. 05-0.6 Calorific value 4,200-4,500 Koal/kg (19.492 KJ/kg) Charcoal Fodder : Forage highly palatable digestible and nutritious.
Growth and yield	MAI : 20-25 m <sup>3</sup> Ha-1 yr-1 or even more Height : 5 m. 10m
Ecological	Moist tropical.
Requirements	Dry tropical : Soils. Variety of soils, rocky- to heavy clay to coral : grows well in neutral or alkaline (limestone soils, grows poorly on acidic soils, Cantolerate shallow soils.
Characteristics	Everagreen/ deciduous, nitrogen fixing, Coppicing, soloniser, drought hardy, frost tender.
Planting	Container raised seedlings, cuttings or grafts, soil may require inoculation with rhizobium strain, for nitrogen fixation.
Adverse factor	Vulnerable to browsing by domestic cattle.
	<i>Parkinsonia aculeate</i>
Local name	Vilayati babul, Jerusalem-Thorn
Family	Leguminosae (Caesalpiaceae)
Distribution	Native to the southwest U.S.A. and to Argentina, naturalized in India
Uses	Fuelwood : sp. Gr. 0.6 charcoal fodder
Growth and yield	Fast growth Ht ;10m ht growth upto 1m/year dbh ;40cm
Climatic zone	Drytropical; semiarid.
Soils	Can toterate poor soils, Gravely, sandy, desert soil, toterates salinity but not water logging.
Planting	Seed, seedlings cutting or air layers.
Adverse factors	Young plants are vulnerable to termites
	<u><i>Sesbania grandiflora</i></u>
Local name	Bak, Agasti
Family	Leguminosae (papilionaceae)
Distribution	Native to India, Malaysia Indonesia, the Philippines etc.

Uses	Fuelwood; sp.gr. 0.42 Fodder; leaves, pods relished by cattle Wood ; Soft fibre pulp for paper Green manure; foliage to fertilise crops Gum and tannin Ornamental; agroforestry; soil conservation Windbreaks ; avenue plantation.
Growth and yield	MAI; 20-25 m <sup>3</sup> ha <sup>-1</sup> yr <sup>-1</sup> Ht; upto 8m in 3years. Dbh ;upto 10cm in 3 years. Windbreaks ; avenue plantation.
Climatic zone	Moist tropical ; dry tropical.
Soil	Wide range, poor soils including black, poorly structured clay; can tolerate seasonal Waterlogging.
Planting	By cuttings or seedlings ; direct sowing aerial seedling.
Characteristics	Small tree; coppicing, nitrogen fixing frost tender; tolerates seasonal water logging
Adverse factors	Vulnerable to nematodes.
	<i>Syzygium cumini</i> ; syn/ <i>Eugenia jambolana</i>
Local name	Jamun
Family	Myrtaceae.
Distribution	Native to India, Sri Lanka, Burma and the Philippines.
Uses	Fuelwood; sp. Gr. 0.77; calorific value ; 4,800 Kcal/kg. Wood. Difficult to work; beams, rafters, posts, agricultural implements, boats, oars and masts. Fruits; edible; made into syrup; jellies, vinegar and wine; Tannin From bark. Ornamental; shade, avenue tree. Honey; flowers rich in nectar.
Growth and yield	Ht; upto 30m Dbh upto 1m
Climatic zone	Moist tropical ; wet tropical.
Soils	Many soil types including sandy.
Planting	Seedlings, direct sowing very successful,
Characteristics	Evergreen; handsome appearance, tolerates waterlogging ; prospers on river banks ; with stands prolonged flooding.
	<i>Zizyphus mauritiana</i>
Local name	Ber.

Family	Rhamnaceae
Distribution	Native to south Asia, Common in Whole India
Uses	<p>Fuelwood ; sp.gr. 0.57 to 0.66</p> <p>Reported also as 0.93</p> <p>Cal. Value ;4,900 koal/kg</p> <p>Charcoal ; Good.</p> <p>Wood ; Agricultural implements ; Construction in rural areas ; tool handles, tent pags, toys golf clubs etc.</p> <p>Fruits ; Eaten fresh, dried or pickled.</p> <p>Fodder ; Foliage and fruits Browsed by cattle, goats, camels.</p> <p>Silk ; Host plant for tassar silkworm.</p> <p>Lac ; Host plant for lac insect, tannin from bark.</p> <p>Others ; Soil conservation ; fruit production ; live fence.</p>
Growth and yield	Fast growing ht. upto 12m or more dbh upto 0.3
Ecological zone	Dry tropical, semi-arid, moist tropical
Soil	Wide variety including limestone.
Planting	Direct sowing easily propagated by grafting
Important	Spiny shrub or small tree ; good coppicer
Characteristics	Drought hardy ; can withstand high temperatures, suitable for arid and semi- arid region.
Adverse factors	Prone to insects, insects, pests such as defoliating caterpillars and fruit flies.

PART-II

CHAPTER- VIII

MISCELLANEOUS REGULATIONS :

MINOR FOREST PRODUCE :

KENDU LEAF :

688. About Kendu Leaf nationalization it appears with the taking of the collection by the corporation there has been no appreciable increase in the collection figure as it will be seen in app ----- new div. under Bihar State Forest Development Corporation has been created in Latehar in 1991 but the progress could not be made. The potential of Kendu leaves is very high in this division and can yield a large quantity if properly managed. Some unscrupulous old contractors are busy in pilfering the kendu leave. Even local people take them in hessian bags to sell in Masaurhi or Patna by the Palamau Express and get more money as 1 standard bag fetches around Rs. 600 at Masaurhi while the corporation pays only Rs. 200 as collection charge.
689. The cost incurred in illegal transport & trade of Kendu leaves by train is lower and gets remunerative high price.
690. Good quality kendu Leaves are obtained from the small plants coming almost annually in degraded forest land or on kendu can also produce good quality leaves but it will be also sacrifice of young trees as old trees of kendu also produce edible fruits for local populations.
691. A survey must be taken to assess the potential of each unit of the Division by the Resources Survey Division. The no of trees per hectare according to the dea class should be assessed and the yield per tree should be ascertained. As there are many lacunae in the collection, the optimum can not be fixed to achieve. To augment higher collection the Bihar State Forest Development Corporation needs to post one Range Officer in each territorial beat to collect the kendu leaf as much possible. The control on the pilferage should be done. This can work only in collaboration with territorial staff and Officers.

COLLECTION OF SAL, MAHUA, PALAS, KARANJ SEEDS :

692. The collection of seed is very erratic by the corporation. It is due to excess pressure on Kendu Leaf collection at the cost of other Nationalised seeds and fruits. The time of collection of Kendu Leaf and other seeds is approximately the same special effort with the staff and resources is needed to increase the collection of seeds and fruits.

#### PETTY FELLING :

693. A new trees out of approved site of prescribed area may be felled under the orders of the Conservator of Forests, western Circle, Daltonganj for the following pruposes.
- (a) For use in Departmental work.
  - (b) For supply of sample timber to Forest Research Institute dehra Dun.
  - (c) For meeting special tree grants.
  - (d) These trees will be recorded in the Form no. -2 and will be counted towards yield.

#### IRREGULAR EXPLOITATIONS :

694. Khair and bamboos are present sporadically in small patches here and there out side the area of the respective Working circle. Occasions may arise when the Divisional Forest Officer is unable to protect such scattered trees from theft or illicit removal due to adverse local conditions or other unavoidable circumstance. In such cases the Divisional Forest Officer, Latehr shall submit a proposal to Working plan Officer and Conservator of Forests, Western circle, Daltonganj. The two will decide and accord necessary permission for their removal. They will send a report to the Conservator of Forest. Working Plan of Research Circle, Ranchi for his approval and final orders.

#### PRESERVATION PLOT AND SAMPLE PLOT :

695. There is no such plot at present in the division. Sample plot to asses the coppice and natural regeneration of important species like Sal, Asan, Salai, Khair, Bamboo and other planted species should be established at random points to know the local yield table. These plots will remain excluded from the operations described in this plan. The trees on the periphery will be with white painted ring marked at brest height and some plates fixed on can picous places.

#### AURANGA DAM RESERVOIR AND MAILA DAM RESERVOIR AREAS :

696. The dam is under construction and proposal for the transferred forest land is under progress. The area to submerge in this reservoir is given the table-xi. Before transfer of these area, the compensatory land should be receivedand notified as Reserved forest. The felling if forest trees up to 4m. below flood level will be done by State Trading in two years. To conserve the soil the felling in the five management series i.c. Chetma, Jerua, Lanka, Bhatko and Kui will remain suspended during this plan perion. The K.R.F. of Sheocharantola F.M.S. will be also under this regulation. An area of 1689.31 acre or 683. 65 Ha. Out of the



submergence in the above Six F.M.S. will be kept under Protection Working Circle as most of the forests are open to degraded. Restocking and Soil Conservatin treatment will be allowed. The statement of the area is given in the table no CXXVI

Sl. No	Name of the F.M.S	Forests of the F.M.S.	Thana and Thana no.	Area in Acre.	Acre Area of submergence.	Acre Area out of submergence.
1	2	3	4	5	6	7
1	Chetma.	Salaiya	Lat – 120	273.00	209	64.00
		Rabda	“ 121	416.00	-	416.00
		Tumbagara KRF	“ 124	127.25	-	127.25
		Chetma	“ 125	206.58	46.62	159.96
		Pipra Kalan	“ 126	326.21	100.00	226.21 Malay D.
		Hurmur	Dal 256	390.67	-	390.67
2	Jerua	Jagtu	Lat 107	109.25	-	109.25
		Jerua	“ 108	1371.12	301.60	1069.52
		Kope	“ 111	429.64	192.23	237.41
3	Lanka	Lanka	“ 112	2065.64	865.86	1199.78
4	Bhatko	Dasdih	“ 105	815.17	10.78	804.39
		Bhatko	“ 106	488.71	54.85	433.86
5	Kui	Ranki kalan	“ 119	255.85	177.57	78.28
		Kamaru	“ 116	411.41	-	411.41
		Sheodhara	“ 113	167.85	106.80	61.05
		Kui	“ 115	448.50	62.49	386.01
		Koili	“ 114	310.88	-	310.88
		Total	Acre :- Hectare :	<u>8613.73</u> 3485.93	<u>2127.80</u> 861.11	<u>6485.93</u> 2624.82
6	Sheocharantola	Sheocharantola	Lat 89	318.00	-	867.20
		Banri	“ 93	130.60	-	130.60
		Simri	“ 101	700.16	8.65	691.51

		Total	Acre :- Hectare :	<u>1697.96</u> 687.15	<u>8.65</u> 3.50	<u>1689.31</u> 683.65
		Bakoria	Lat. 127 Hect.	<u>243.12</u> 98.39	<u>30.00</u> 12.14	<u>213.12</u> 86.25 lay D
		Garnd total	Acre :- Hectare :	<u>10,554.81</u> 4,271.47	<u>2,166.45</u> 876.75	<u>8,388.36</u> 3,394.72

#### ROADS :

697. Roads are in dilapidated condition and needs regular repair. The funds earmarked for repair should be used judiciously and culvert bridges and causeways should be constructed on each. Nallah to make there all weather roads. The roads may be metallidi to improve communication

#### WIRELESS NETWORK

698. To control illicit felling and transportation, a network of wireless should connect all the beats and Range with the Divisional Forest Officer. This will reduce the communication gap between the Divisional Forest Officer and the sub-ordinates these will help in monitoring the movement of flying aquad and arrange special raids.

#### REMOVAL OF DRY FALLEN FIREWOOD.

699. The present practice by head loaders to cut standing green poles and saplings and keep them in the forest to become dry as fallen fire wood has to be stopped at all cost. Although it is easily said than don, due to political circumstances there is no other alternative at present, other than the strict supervision, on the illegal manufacture of firewood, by the head loaders. But dry and fallen fire wood may be removed by the right holders from any part of the forests for their own bonafide use.

#### REMOVAL OF TANBARK WOOD LEAVES ETC :

700. Mochis living in villages close to forests may remove tan – bark of Asan (T. tomentosa) from the current coupe for their own requirements. Right – holders shall have full liberties to collect fruits Khajur leaves, Genti and seeds for their own requirement, free of cost.

#### REMOVAL OF FODDER- GRASS :

701. Generally fodder grass may be removed by right holders or non right holder free of charge from the forests and plantations. Commercial removal of grass for trade or by any other Government Department from Plantation areas may be charged as rate fixed by the department from time to time. Every effort should be made to get grass removed from the plantation either free or on payment. If found necessary, local people should be encouraged to prepare hay by cutting grass from plantation areas.

#### NON GRANT OF NEW RIGHT AND CONCESSION :

702. Mining operations have accelerated during the past two decades. New industries also have come up in the area as a result of which al large number of people from outside are setting down in the villages close to the forests for business. It would not be proper to extend the liberties of the right –holder to the non right- holders living at the same place except in Community Working of Forests.

#### MAINTENANCE OF BOUNDARIES :

703. Forest areas in all the villages have been shown on cadastral map of 16”=1 mile which are available in the division boundary pillars have not been numbered in all the maps. It should be done as early as possible. The Divisional Forest Officer is advised to utilize the service of Amin of his Division for checking up boundary lines and boundary pillars besides other survey work that may be needed from time to time. As a routine operation, a complete checking og boundary lines and boundary pillars of one beat in each Range of division has to be done annually so that the work is distributed uniformly to all the Ranges.

704. The Range Officer shall check up fifty percent of the boundary survey work and the Divisional Forest Officer to the extent of twenty five percent. Each of whom shall

give a certificate of having checked the work and actual defect noticed in course of inspection which were set right in their presence. Stress on inspection of boundary and boundary pillars must be given by the Conservator of Forests, Western Circle and Chief Conservator of Forests, management, Bihar regularly and a note to the effect should be given in their office inspection and field inspections. These Certificates should be maintained as record in the Divisional Office. The forms of Certificate that each of the territorial staff from Forest Guard to the Divisional Forest Officer has to submit to his immediate superior officer is given below.

705. This is to certify that I checked the boundary lines and boundary pillars of the following villages from (date)-----to-----from-----to-----  
-----from-----to-----and the defects noticed by me are mentioned in the table. The rest of the boundary pillars checked and which agreed with the map are given in the table :-

Name or P.F.	Thana and Thana no	Defects noticed.	Extent of rectification done in presence.	REMARKS.
1	2	3	4	5

---

Dated:-----place-----199

Signature,

ENCROACHMENT :

706. An assessment of the records of the division shows that around 2% of the forest land is under encroachment by villages. The act of illegal encroachment is gaining day. The Survey Settlement operation has been taken up by the revenue Department, which is in progress. Various stages of settlement operation have been finalized. The result of these stages has endangered the safety of forest land as records prepared so far, by the survey department have given illegal possession over the encroached lands to the offenders ignoring claims put forth by the forest officials. It is stated that in survey camp

the Divisional Forest Officer has been raising objections in every stage of operation supported by all valid documents and records to delete such mentis under section 83 and 89 of C.N.T. cat but of no use. This attitude of survey officials has created a grave situation which needs Government intervention. However all such matters should be fought in the Court of law to remain in title and possession over such land.

REMOVAL OF ENCROACHMENT :

UNDER THE AMENDED INDIAN FOREST ACT, 1927

707. The Divisional Forest Officer, Latehar has been vested with the power to evict encroachers from the forest Land. Suitable proceeding against such encroachments should be initiated beat-wise to reclaim the land within a period of 10 years. The Divisional Forest Officer should approach the Government and high Officials of survey and settlement department so that no record of right is issued u/s 87 of C.N.T. Act, 1908 to the encroachers.

SISAL FIBRE PLANTS. :

708. The two sisal fibre plants under Forest Research Office, Bihar , Ranchi are running smoothly at latehar and sabano. They will remain in charge of the Forest Research Office, Bihar Ranchi. Suitable places should be sought in forest to plant more Sisal.

POLE PLANTS. :

709. There are some species of trees that can be easily grown by their branch cutting. Planting of tall branch cuttings of species, which are easy- to root, gives the advantage of protection against damage by cattle and also makes maintenance easier once the plant gets established. Pole plants are almost like trees and hence have instant appeal.

PREPARATION OF POLE PLANTS. :

710. 3 to 4 metre long and 8 to 10 cm. thick healthy branch cuttings of easy- to root tree species are obtained. A list of such species is given below :-

Species	Common name	Climatic zone	Uses.
Ficus Spp.	Burh, papal pakar	Dry tropical to temperate	Aesthetic and shade.
Erithrina Indica	-	-do-	Green manure.
Glericidia Spp.	-	-do-	-do-
Moringa oleifera	Sehijana	Moist tropical	Fruit, fodder & medicinal.
Morus asba	Mulberry	Moist tropical	Fruit, timber, sports goods & fodder.
Morcus Indica	Tutri	Sub-tropical	Timber, silk worm

			rearing
Morus laevigata	Bola	Sub-tropical	Furniture wood sports goods & fodder.
Melia azadirach	Bakain	Dry and moist tropical.	Box planks, pulp. Medicinal
Species	Common name .	Climatic zone.	Uses.
Ingadulce	Jungle Jalebi	Tropical	Packing cases, tannin, timber & fuel.
Ziziphus mauritiana	Ber	Dry tropical	fruit, fuel, tannin & fodder.
Emblica officinialis	Amla	Dry & moist tropical.	Fruit, hair dye fodder, tannin timber & fuel.
Acacia modesta	Phulai	Dry & tropical & sub-tropical.	Fuelwood, timber tannin, gums & fodder.

#### NURSERY TECHNIQUE :

711. Nursery raising of pole plant should start with the selection of plastic bags of 50kg. capacity, which are normally used for cement packing. The bags are then to be filled with a mixture of clay, sand and farm yard manure in equal proportion. The branch cutting should be planted (not upside down) in a hole created in the potting mixture. Cutting are watered twice a day i.e. morning and evening. During summer and dry season branch cuttings may need more water, in about two to three months, the bbranch cuttings develop roots and sprout buds. Pole plants are then ready for planting.

#### PLANTING OF POLE PLANTS.

712. Pits of 1.0to 1.5 metre deep and one metre in diameter are dug and refilled with top soil and manure leaving top 30 cm. for planting the pole plant. Carefully the pole plant is placed Carefully at the centre of the pit, after removing the bag and without disturbing the root system. The balance pit is refilled and the soil is compressed around to firmly lodge the pole plant in the ground.

#### TIME FOR PLANTING ;

713. The right time to plant is rainy season. In dry perion it may need watering at least once a week. Protection against physical damage is necessary until the Pole Plant is established.

### DIRECT PLANTING :

714. Branches of the above easy- to root trees can also be directly planted in holes of 1.5 metre deep and 75 cm in diameter filled with a mixture of farm yard manure and top soil as explained above. The only thing is need regular watering and protection from disturbance.

### PRUNING OF EUCALYPTUS :

715. pruning is needed in some plants like Babul (*Acacia nilotica*) and sheesham (*dalbergia sissoo*). This is needed because the plant develops branchy habit which restricts the increase in length with the result of an unclear bole. Thus pruning is necessary to obtain a clear bole of tree along with good quality of timber . but in plantation of eucalyptus, there generally exists a clear bole and the nature of the tree is not branchy. Thus there is no need for pruning the plant. It would be needed only in very abnormal plants where plant tends to be bushy. In that case if it is bushy at the early stage (up to 1year) the plant should be replaced by a healthier plant. In case 2-3 or more branches emerge from a single plant then one healthy branch should be maintained.

### 716. DEFICIENCY SYMPTOMS IN PLANTATIONS AND REMEDY

NITROGEN DEFICIENCY : Stunted growth, smaller and lesser no of leaves, older leaves turn yellow.

Chlorotic with top marginal scorch. Remedy ; urea 10 gms for each year of age upto 3 year and 5 grams per year after that should be applied.

POTASSIUM DEFICIENCY : Plant bushy leaves lack turgidity and drop. Some leaves chlorotic. Many

leaves mal formed. Remedy nik fertillser 10 gms. For each year of age upto 3 year and 5 gms per year after it should be

PHOSPHOROUS DEFICIENCY : Stunted trees. Large number of branches. Number of leaves more than

normal. Older leaves dark bluish green in colour with scorched tips. Stems thin. Remedy : super phosphate at the rote of 10 gram for each year of age upto 30 years and 5 grams per year after that should be applied.

### PH AND SALINITY.

717. Ph, dterally is potential of hydrogen ions. Scientific fically it is the negative logarithm of hydrogenion concentration. It is a scale of measurement of acidity and

alkalinity. Ph of 7 is considered neutral. Ph above 7.0 is considered alkaline. And at 9.0 Ph it is considered extremely alkaline. Most plants will not grow beyond that it rarely survives. Similarly ph below 7.0 is considered acidic. Most plants can tolerate ph of about 6.0 However, ph 5.5 which is considered very acidic only halophytes will grow below this ph.

718. There is a simple way to check ph. Ph paper along- with colour reference should be obtained. A bit of soil to be tested is put in a dish with some neutral water. Ph paper is dipped in it for a few seconds. The colour of ph paper will change. The colour of the ph paper is compared with the reference paper to get a rough idea about the Ph.

#### FENCING BARBED WIRE FENCING :

719. It is an effective way of fencing the plantation except that it is very costly.

720. To fence one hectare of which the sides are approximately 100 metres by 100 metres one requires about 400 metres wire to go around it once. Effective fencing must be of at least 3 strands. That means you need 1200 metres of barbed wire. It sells at the rate of Rs. 12-14 per kilo and 1 kilo has roughly 5 metres of wire. Thus it is spending around Rs. 3,300/- for fencing a hectare of plantation. Another expenditure of Rs. 500/- for the fencing posts and labour for fixing the post is incurred.

#### DITCH OR TRENCH FENCING :

721. Usually ditch 1 metre deep and 2 metre wide is dug on the periphery of the plantations. This keeps the cattle away. This is also a very costly method and may cost Rs. 4,000/- per hectare. Also this is used by villagers to enter into the plantations.



### CACTUS FENCING :-

722. 30m. cutting of commonly growing cactus are collected they are planted 7 cm deep in the soil on a trench along the boundary after applying seradix, a rooting hormone to them. This is a cheap and effective way to fence plantations except that takes long to become an effective deterrent to animals. It will grow with your plants and may reach upto 5 metres. Height. It then becomes a natural wall. Its only disadvantage is that at a later stage it is difficult to remove.

### CHAPTER -XIV

#### RE- ORGANIZATION AND ESTABLISHMENT.

723. To cope with the growing population all round development of Communication and changed management the present average of 18.15 sq. K.M. forest per sub- beat has been reduced to 7.889 square k.m. even this area is not small but some remote forests with large areas cannot be sub- divided further . the re- distribution of the division into 23 beats and 199 sub- beats as below:-

Sl. No	Name of Range	No. of Beat	No. of Sub-beat	Area of Ac. Trer	Forest in ha
1	2	3	4	5	6
1	Manika	3	21	38,810.40	15,706.35
2	Latehar	4	21	41,626.16`	16,845.88
3	Chandwa	4	29	56,319.35	22,792.13
4	Balumath East	3	27	47,927.43	19,395.96
5	Balumath west	3	25	48,661.72	19,693.13
6	Richughuta	3	20	40,858.89	16,535.37
7	Sarju	3	23	49,408.01	19,995.15
	Total	23	166	3,23,611.96	1,30,963.96

724. The distribution of various forests with areas in Beats and sub-beat is given in the Appendix -XX . the Head - quarters of sub- beats should be fixed by the divisional forest Officer in such a manner that two or more Forest Guards should be posted at one place. This re-organisation will increase the non plan expenditure on pay and other personal claims with plan expenditure in buildings and Communication.

### FLYING SQUAD :

725. It is a high time that the protection of the existing Forest should be given top priority. A flying squad Range should be created with head quarter at Latehar. One pick-up van, one Range Officer, two Foresters five armed Forest guard with two leave reserve Forest guards should be sanctioned for this Range. One arms room and one hazat in every Range and one at Latehr should be Constructed. Between two ranges a jeep should be provided and every Beat- forester should be supplied with a motor cycle. Sivilsonal Forest Officer Assistant Conservator of Forest and all territorial range Officer should be vested with the power of magistrate.

#### ASSISTANT CONSERVATOR OF FORESTS :

726. A Divisional Forest Officer is a very busyman. He has not only to look after the forests but has to supervise the development works, check the expenditure and attend the meetings in the district and in the circle. Sometimes he has to rush to Patna or Ranchi for meetings or a court cases. With such a heavy load of out activities the office as well as the forests are neglected. The government has notified the duty of an A.C.F. in a territorial division as below (Vide Govt. Resolution No- 1793 dated 15.5.91).

#### RANGE RESPONSIBILITIES :

727. (a) Time to time inspection of Range and Beat Offices.  
(b) Inquiries of 10% Offence reports and forest Guards diaries.  
(c) Inspection of forests and in section of at least 10% of the Range store.  
(d) Inspection of 10% of muster rolls and measurement books.

#### SPECIAL TO TERRITORIAL DIVISIONS:

728. (a) 10% Inspection of all silvicultural operations like laying out coupes standard marking digit  
marking cleaning, thinning, felling etc.  
a. Inspection of coupes worked by Contractors and other agencies.  
b. Supervision of Kendu leaf collection by agents and purchasers. Issur of transit permits and approval of godown.  
c. Inspection of forests markets, inquiries related to beats.  
d. At least 10% examination of interim and final reports.  
e. Inspection of private depots and issuance of transit permit.  
f. Other words allotted by the divisional Forest Officer.

The work of the division should be divided into 3 A.C. Fs. As below :-

729. (i) Assistant Conservator of Forests, headquarter. He will supervise all the accounts, establishment  
and other miscellaneous works.

- (ii) Assistant Conservator of Forests, development. He will be incharge of preparation all the development scheme their silvicultural works and jproper checking and execution,
- (iii) Assistant Conservator of forests, management. He will be incharge of the Cases and working plan prescripjtions.

TOTAL STRENGTH OF THE DIVISION :

730. To cope with the present situation and follow the prescriptions of the plan the following is proposed to be the establishment to be maintained in Latehr division :-

			Total
1.	Divisional Forest Officer	:	1
2.	Assistant Conservator of Forests	:	3
3.	Head clerk.	:	1
4.	Assistants :Division	10	
	Range	7 :	17
5.	Range Officer : Territorial Range	7	
	Flying squad	: 1 :	8
6.	Foresters	: Beat 23 :	30
	Flying wquad	1	
	Leave Reserve	3	
	Court	1	
	Depots	2	
	(chandwa, latehar)		
7.	amin Inspector	:	1
8.	Amin	:	2
9.	Forest Guards	: sub- beats 166 :	215
	Leave Reserve	12	
	Naka Guard	30	
	Flying squad	7	
10.	Drivers	: jeep 4 :	5
	Flying wquad	1	
11.	Fourth Grade	: orderly Peon : 2 :	5
	Dak runner	1	
	Mali	1	
	Sweeper	1	
12.	Chowkidar	: Division 1 :	15
	F.R.H.	7	
	Range Office	7	
Total :			273
Earlier total :			206

731. The staff and officers of other functional, overlapping and special division will remain as such. They may be Changed according to the workload and re- organization whenever required.

PART – II  
CHAPTER –IV  
CONTROL AND RECORDS

CONTROL

732. The standard forms laid down in chapter VI of the code of working Plan Procedure shall be filled in and maintained in the manner prescribed in the code. The period between 1 st, July, to 30 the June will be reckoned as the control year and control forms will be prepared accordingly.

733. Three complete sets of Control Forms have been prepared in loose leaf clutch record. Two sets are for use and record in the Divisional Forest Officer's office and working Plans officer. The third is a flying set which will be filled up yearly by the divisional forest Officer Latehar and sent to working Plans Officer, western Circle, Daltonganj within two months of the closing of the Control Year. It will then be forwarded to the chief Conservator of forests, development Bihar through the Conservator of Forests, working Plans and research Circle Ranchi onward transmission to the Regional Chief conservator of forests Bhubneshwar as per Govt. of India's letter no 86. dated 23.10.89 annexed as snnexutr –Xxi the following control forms will be used.

734. Form noe 1- Gives a list of deviations. The divisional Forest Officer, Latehr will forward typed copies of this form in duplicate yearly with the control forms. No explanatory remarks are required on this form. These should be given in his forwarding letter. The spare copy of the form will be kept in the working Plans Office and one copy will be in the flying set. Normally there should be an entry in form no. 1 for every red entry in the forms 4(a), 4 (b), 4(c), 4(d), 4(e), 4,7(a) (i)7(b),(ii),7(b) (iii) if the regional Chief conservator of Forest sanction to the deviation has already been obtained in advance, his letter should be quoted in the last column.

**FORM NO 4-CONTROL FOR AREA YIELD.**

735. On the completion of the plan the working Plans Officer will fill in the prescription and hand over the control forms thus prepared to the Divisional forest Officer, Latehr to keep the figures in their proper columns and to secure neatness all entries in this form should be made in manuscript.

736. Each page is divided into five equal parts and each part is allotted to each coupe. Entries for two different coupes cannot therefore be made in one and the same part of the forms. On the other hand entries with regard to the same coupe (though worked in different years) will be made in the part allotted for that coupe.

737. Each form will hold entries for 20 Coupes.

(i) If the prescribed coupe is worked in full in the year provided, a single entry of the year will be

made in black in column-5 and the area worked in column-6

- (ii) The headings of the form clearly explain what are to be entered in each column. Entries in columns 7 & 8 should however be made in red ink.
- (iii) For a coupe or part of a coupe worked in any year except that prescribed the entries in column 5 and 6 also will be made in red ink.
- (iv) To obtain the figure for column – 8 in any particular year the total of the figure in column-6 shown in column-4
- (v) The divisional Forest Officer, Latehar will sign in the remarks column against each line of entry

Form(4) (a) Area control of coppice coupes of the surplus working circle under coppice with standard system.

Form (4) (b) Area control of deficit working circle with Community management.

Form (4) (c) Area control of Bamboo coupes under Overlapping working Circle.

Form (4) (d) Area control of Khair coupes under overlapping working circle.

738. FORM NO (5); Where subsidiary operations are prescribed in coupes of areas of past yield, one or two years after the main fellings this form will be filled up by the divisional forest Officer Latehar in black and red ink on the lines indicated above for form no 4

739. FORM NO; (7) ; This deals with plantation which are prescribed in working Plans. The divisional forest Officer, Latehar will fill it up using black or red ink in the case of columns- 4-6 according as they fulfil working plan Prescriptions or are deviations there from. Data from other divisions will also be obtained and incorporated by him.

Form (7) (a) (i) Area control of Plantation under Plantation working Circle.

Form(7) (a) (ii) Area control of Plantation under Sisal working Circle.

Form (7) (b) (i) Area control of rehabilitation in rooted wastelands under Rehabilitation working Circle.

Form (7) (b) (ii) Area control of soil conservation treatment in catchment areas under soil Conservation Working Circle.

Form (7) (b) (iii) area control of Planting under social forestry scheme.

Form (7) (b) (iv) Area control of D.P.A.P planting and treatment under D.P.A.P. Project under Plantation working Circle.

RECORDS:

740. In addition to Control Forms, the following records shall be maintained.

FOREST MANAGEMENT HISTORIES :

741. This provides useful information of the results of application of particular silvicultural Prescriptions to the forest on which proposals for further improvement are base. The importance of the upkeep of these forest management Histories (Felling series Histories ) in meticulous details can be easily understood.

742. Two complete sets, one for the Divisional forest Officer, Latehar and the other for the range Offecer, have been prepared in the working Plans Division and sent out to the Divisional Forest Officer Latehar who will provide his set on request to the other functionalk Divisional Forest Officers and will request him to fill up the Records and sent a centrifed copy for upto dating the Latehar Division record in every July. Summary of the workdone cost incurred, outturn etc. shall be filled in by the Range Officer in his copy and from this the Divisional copy will annually be posted upto dat. The Forest Management Histories will be checked annually by the conservator of Forests during the course of his inspections These must be returned to the working Plan Officer after the expiry of the Plan or whenever required by him. One copy will be kept is the working plans Officer for ready reference.

FIRE RECORDS

743. Fire maps will be maintained on a scale of 1" =1 milein the Dision and in the Ranges in the Forest Management maps (4"=1 1mile) on which areas burnt each year Will be indicated by distinct sysbols as per Code of Working Plan procedure.

The symbols beginning from 1991 would thus be

- i. :
- ii. :
- iii. :
- iv. :
- v. :

744. A brief note of the burnt areas will be recorded in Form (f) of the Forest Management History by the divisional Forest Officer Latehar. The fire Map on the Given 1" scale should be maintained for 5 year and sent to the working Plans Officer. After that a fresh set of maps will be provided by the working JPlans Officer on which the symbol will be repeated.

FOREST JOURNAL:

745. The forest journal should be maintained according to standing orders. This record may prove to be immense value if the important silvicultural, administrative and management notes are regularly regorded. Instances of gregarious flowering of banboos

and large scale mortality of tree species or any information of interest shall invariably be recorded in the journal.

PLANTATION JOURNAL:

746. A Plantation Journal for each Plantation shall be maintained according to the Vanropan paddhati by sri L.K.Panday. observations will be recorded in the plantation Journal. Remarks suggestions and instruction of inspecting officer with regard to plantaion should also be entered there in.

NURSERY JOURNAL :

747. A nursery Journal for each nursery shall also be maintained on the lines of the above banropan Paddhati.

PIT REGESTER :

748. A pit register of every plantation will be maintained as per the above Vanropan Paddhati and Checked as per Govt Instructions.

TREATMENT MAPS

749. Social Forestry/ D.P.A.P. Treatment Map/ Plantation treatment map./ soil conservation Treatment Map on a scale of 16"=1 mile will be maintained in the cancorned division and a copy of that will be annually submitted to the divisional forest Officer, Latehar and working Plan Officer with the control forms of Plantations.

FOREST MANAGEMENT HISTORY MAPS.

750. stock maps have been prepaed on 4" enlarged topographical maps where- in crop, density, extent of regeneration, etc. of the main crop along with Khair, salai and bamboo have been shown. Stock maps are enclosed in both the copies of the respective fellings seres history.

751. Management maps have also been prepared on 4" enlarged topographical maps where- in the ares already worked, coupes to be laid out and their sequence gave been shown management maps are enclosed in all the three copies of the respective Forest Management (felling seres ) history.

WORKING PLAN MAP :

752. The working Plan map has been prepared on 1" map showing all forests and Their distribution into working circles. Plantations already raised and plantable areas have also been shown. In addition, this map shows location of Range and Beat and sub- beat headquarters, forest Rest Houses and Forest roads.



PART –II

CHAPTER XVI

FINANCIAL FORCAST AND COST OF THE PLAN.

753. Ever since the creation of the Latehar Division it has remained a surplus Division. Though, the amount of fenenu and expenditure varies from year to year but the surplus has generally an upward trend till the introduction of the state Trading and collection of K.L.by the corporation. Adding the proporationate revenue and expenditure of other Overlapping divisions and project Tiger to that of Latehar Dibvision to assess the defects surplus of the forests of latehar for the last decade in the table below it can be said that the upward trand of surplus continued.

Year	Revenue in Rs.	Expenditure both plan and Non plan in rs.	+ surplus - Dificit.
1	2	3	4
1981-82	1,20,01,234.00	58,17,122.72	+61,84,111.28
1982-83	2,46,93,544.59	1,71,65,337.20	+75,28,207.39
1983-84	4,07,10,161.00	2,72,21,123.26	+1,34,89,037.74
1984-85	3,76,06,436.24	2,73,99,310.41	+1,02,07,125.83
1985-86	4,71,81,875.00	3,62,04,334.98	+1,09,77,540.02
1986-87	5,26,16,216.00	4,86,28,854.356	+39,87,361.65
1987-88	4,68,59,918.00	3,77,05,704.05	+91,54,213.95
1988-89	5,25,03,133.00	4,41,47,764.28	83,55,368.72
1989-90	6,49,68,844	5,18,61,518.20	1,31,07,325.80

754. The increase in revenue figure is due to the following

- (a) Sky rocketing rise in the price of forest produce including that of minor forest products.
- (b) Non exploitation of the R.H. part of the coupe by right – holders.
- (c) Ban on Contractors form exploitation of forest produce.
- (d) exploitation of old afforested areas.
- (e) Development of the market of less important forest produce and
- (f) Unexcepted revenue from non- forestry sources.

ENVIRONMENT AND WELFARE :-

755. The revenue of the Division has touched zenith already ever exploitation due to illegal felling has started to compel the forest to bleed to white. Now the time is rip to forget the torest as revenue source. The forest must be managed for environment protection and well =being of , the local population.

756. Even the present trend of degradation of forest area and annual rise of price of forest produce are continued as su any appreciable change in revenue is not expected in future. As the now system of Community participation in development of degraded forests is in offing around 60% area will have to be covered by it as the central government has defined forest of density below 0.4 as degraded forsts. There will Certainly 33 5 reduction in revenue genertedby the state trading division. As the old Plantations Have many feature, their explit ation is not expected to add much to the excheqner the expenditure was fluctuate significantly with the fluctuation of the physical and financial targets of the various divisions. If the targeted afforestation is kept in pace annually, the revenue and expenditure at current prices may be Forecasted as below :-

Year	Expected Revenue	Expected eexpenditure.	+ surplus or - deficit
1	2	3	4
1991-92	4,30,91,226.47	3,31,39,726.82	+99,51,499.65
1992-93	4,74,00,349.11	3,64,53,699.40	+1,09,46,649.71
1993-94	5,21,40,383.02	4,00,99,069.34	+1,20,41,313.68
1994-95	5,73,54,421.32	4,41,04,976.27	+1,32,45,445.05
1995-96	6,30,89,863.45	4,85,19,873.89	+1,45,69,989.56
1996-97	6,93,98,849.79	5,33,71,860.27	+1,60,26,989.52
1997-98	7,03,38,734.76	5,87,09,046.29	+1,76,29,688.45
1998-99	8,39,72,608.23	6,45,79,950.91	+1,93,93,657.32

#### COST OF THE PLAN

757. The expenditure involved in the preparartion of this working Plan is as below ( total expenditure of 1990-91 and 1991

(1)	PAY	:	8,30,000.00
(2)	DEARNESS ALLOWACE	:	3,25,000.00
(3)	MOTOR VEHICLE	:	40,000.00
(4)	TRAVELLING ALLOWANCE	:	50,000.00
(5)	OFFICE EXPENDITURE	:	93,000.00
(6)	BUILDINGS	:	500.00
(7)	OTHER CHARGES	:	4,300.00

(8) OTHER MISCELLANEOUS : 35,377.00

EXPENDITURE.

TOTAL : 13,78,177.00

758. The area of the forests is 1306.68 K.M the cost of the Plan Works out to Rs. 1054.72 pjer sq. K.M. or Rs. 10.55 per hectare.