

DIRECTORATE OF FORESTRY

MANAGEMENT PLAN FOR EUCALYPTUS WOODLOTS
GROWN IN THE NORTHERN REGION

FEBRUARY 1994

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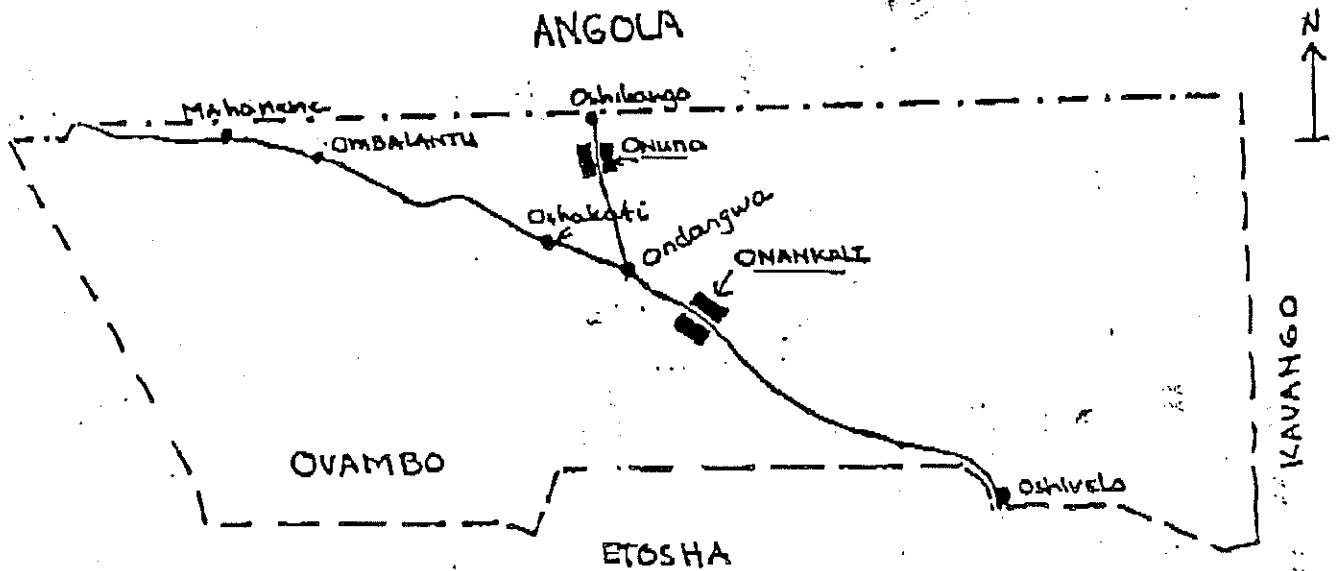
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MAP 1

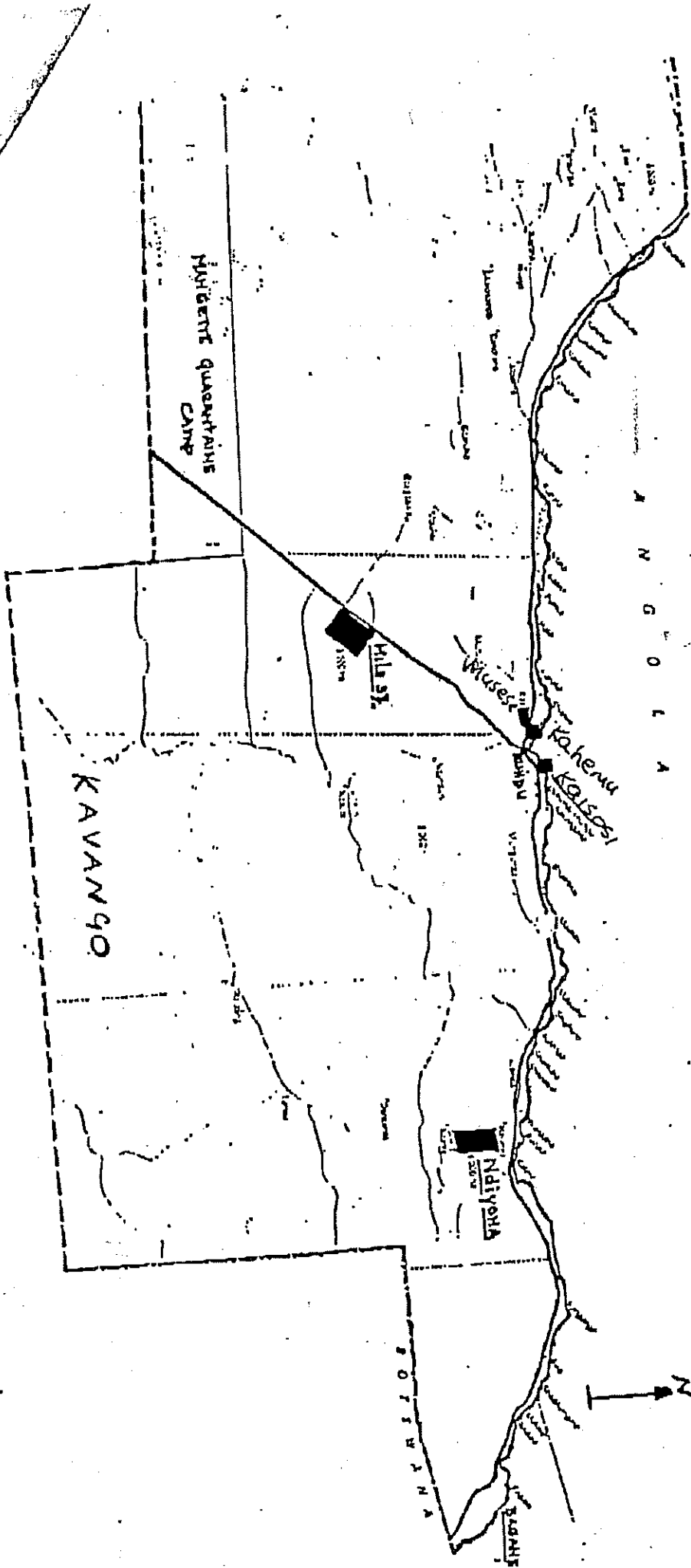
MAP SHOWING TRIAL PLANTATIONS IN OVAMBO

(not to scale)



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261198

MAP 2
MAP SHOWING TRIAL PLANTATIONS IN KAVANGO
(not to scale)



P\1

1.0 BACKGROUND

The first comprehensive Eucalypt provenance trials were established in Onuno, Ovambo and at Mile 37, Kavango. The experiment consisted of 25 different seedlots of Eucalyptus camaldulensis and 18 seedlots of Eucalyptus tereticornis. Apart from a few seedlots which came from RSA, Brazil and highbrid material from Mauritius and Zambia, the bulk of the material was supplied by CSIRO of Australia.

The original material was selected to cover various trial sites, particularly semi and tropical conditions. Unfortunately the majority of Seedlots had either no record of parent numbers or were represented by very few parent trees.

The principal aims of these provenance trials were to select provenances suitable for the growing conditions in the Northern Region of the country, and ensure a future supply of construction, and fencing poles and a source of firewood. In addition Eucalyptus species were to be tested for their potential as a source of nectar for bees.

2.0 PRESENT STATUS OF WOODLOTS

Apart from the Onuno and Mile 37 trial plantations, there are other plantings of Eucalyptus concentrating on Eucalyptus camaldulensis, Eucalyptus tereticornis, Eucalyptus citriodora and Eucalyptus grandis on sites like Onankali, in Ovambo, Musese, Kaisosi and Ndiyona in Kavango. The majority of the seeds used in some of the above woodlots originated from Onuno and Mile 37 and subsequent seed collection from those plantings with tree selection based on ease of seed access. These woodlots show obvious signs of in breeding, resulting in low survival growth and poor stem form (Gunn 1993).

P\2

2.1 ONUNO TRIAL WOODLOT

The Onuno trial plantings were first established in 1973\74 along the Ondangwa\Oshikango road, about 16 km south of Oshikango. The last planting was done in 1977\78. The total area covered by the trial was 2.6 Ha. Different provenances of Eucalyptus camaldulensis, Eucalyptus tereticornis and Eucalyptus citriodora were used. The experiment however was abandoned in 1982 - no reason is given in the available literature for this action. For 1973\74 planting, the following is recorded:

Average height	=	10	m
Average DBH	=	8.5	cm
Average Tree volume	=	0.043	m ³
SPH	=	365	
Volume\ha	=	15.7	m ³
No. of trees	=	949	
Total volume	=	40.8	m ³
Form of the trees	=	poor	

2.1.1 RECOMMENDATIONS

Since the woodlot has been neglected since 1982, it is recommended that the stand be clearfelled, but leaving 0.5 ha as a sample stand for future reference. The clearfelled area should be stumped and replanted with improved seed. The clearfelled poles to be sold.

2.2.0 ONANKALI TRIAL WOODLOT

The trial plantings at Onankali are 40 km southeast of Ondangwa on the Ondangwa - Tsumeb road, were started in 1976 and continued on an ad-hoc basis through to 1982. Eucalyptus camaldulensis and Eucalyptus tereticornis were first planted in 1976\77 season, thereafter other Eucalyptus trees of different subspecies were planted on the 10 ha stand. A comprehensive survey of the trial plantings was made in 1989, and the results published by Kreike (1992).

2.2.a The 1976\77 provenance trial consisted of Eucalyptus camaldulensis and Eucalyptus tereticornis planted with a spacing of 2.7 m x 2.7 m. Total area planted was 4.47 ha.

P\3

4.47
6.6
10
25.3
0.71

117.37 Ha

This is Compt 1 in Block A

Average Height	= 5.9	m
Average DBH	= 6.34	cm
Average tree volume	= 0.014	m ³
SPH	= 1200	
Volume\ha	= 16.8	m ³
No of trees	= 5364	
Total volume	= 75	m ³

The form of the trees can be described as fair.

2.2.b The 1977\78 - Block A Compt 2 - was planted with Eucalyptus camaldulensis and Eucalyptus tereticornis species. The seed was collected from Onuno trees planted in 1973\74.

Espacement was 3x3 m. Total area planted 6.6 ha.

Average Height	= 7.0	m
Average DBH	= 7.1	cm
Average tree volume	= 0.021	m ³
SPH	= 1200	
Volume\ha	= 25.2	m ³
No. of trees	= 7,920	
Total volume	= 166.3	m ³

Tree form fair

2.2.c 1978\79 TRIAL PLANTING BLOCK A - COMPT. 3

This consisted of Eucalyptus camaldulensis and Eucalyptus tereticornis and Eucalyptus citriodora planted at the spacing of 3 m x 3 m over an area of 10 ha.

Average Height	= 8.3	m
Average DBH	= 8.9	cm
Average tree volume	= 0.039	m ³
SPH	= 1200	
Volume\ha	= 46.8	m ³
No. of trees	= 12,000	
Total volume	= 468	m ³

Source of seed is not mentioned in the records.
Tree form fair.

2.2.d TRIAL PLANTING BLOCK B - COMPT.1 AND COMPT.2

Eucalyptus citriodora, Eucalyptus camaldulensis and Eucalyptus gomphocephala were planted in compartments 1 and 2 Block B. Espacement was 3 m x 3 m. Total area planted was 25.3 ha.

P\4

Average Height	= 6.4	m
Average DBH	= 5.3	cm
Average tree volume	= 0.015	m ³
SPH	= 1200	
Volume\ha	= 18.0	m ³
No. of trees	= 30,360	
Total volume	= 455.4	m ³

Various other species were planted in compt. 2, but were felled a few years later due to an extremely bad form of the trees. The remaining trees however show a fairly good form.

2.2.e 1981\82 TRIAL PLANTING BLOCK B - COMPT. 3

The last planting at Onankali took place in 1982. An area of 0.71 ha was planted with Eucalyptus grandis at the espacement of 3 m x 3 m.

Average Height	= 4.5	m
Average DBH	= 4.4	cm
Average tree volume	= 0.005	m ³
SPH	= 1200	
Volume\ha	= 6	m ³
No. of trees	= 852	
Total volume	= 4.3	m ³

In summary the Onankali trial woodlot has provided some useful research data on the tree species which were grown there, therefore one would conclude that the trials were successful. However, the trees are now moribund, with a high level of mortality. The stagnation of tree growth may be attributed to lack of silvicultural operations, like the initial site preparation and the absence of thinning. The inferiority of the seed origin is another factor retarding the tree growth.

2.2.1 RECOMMENDATION

It is recommended that each compartment be clearfelled and remove all stumps of existing trees, but leaving 3 ha stand in each compartment for research purposes. The three ha to be treated as follows:

- A. Leave one ha as it is to demonstrate lack of growth in unattended stands.
- B. The other 1 ha to immediately carry out thinning operations, to determine whether the trees can respond to silvicultural operations at this late stage. To thin to 250 SPH.
- C. The last 1 ha to be clearfelled and manage under coppice system.

P\5

The rest of the stumped out area to be replanted with improved seeds of Eucalyptus. The clearfelled poles to be marketed.

2.3.0 THE MILE 37 TRIAL WOODLOT

The Mile 37 (or 31) trial woodlot was situated south of Rundu on the road to Grootfontein. This trial plantation was established in 1972, and the species used were, Eucalyptus camaldulensis, Eucalyptus tereticornis; a hybrid of Eucalyptus camaldulensis x Eucalyptus saligna x Eucalyptus grandis. The spacing was 3 m x 3 m.

However in 1982 the provenance trial was abandoned and the following year it was cleared by the South African Army for security reasons.

2.4.0 MOSESE TRIAL WOODLOT

According to the information available, Musese is the oldest trial plantation in Kavango. It is situated in the floodplain of the Kavango river, about 2 km north of Rundu.

The first planting took place in 1967 and involved eight various Eucalyptus species. Out of the lot, Eucalyptus camaldulensis and Eucalyptus saligna yielded better results. Seeds have been collected from these two plots and used at other trial plantations like Ndiyona. Some thinning operations took place, but unfortunately no records are available to indicate when and the number of stems which were taken. The size of the woodlot is about 2 ha.

Average Height	= 13	m
Average DBH	= 9	cm
Average tree volume	= 0.06	m ³
SPH	= 1500	
Volume\ha	= 90	m ³
No. of trees	= 3,000	
Total volume	= 180	m ³

2.4.1 RECOMMENDATION

The Musese trial woodlot should be left as it is for future reference.

P\6

2.5.0 KAHEMU TRIAL WOODLOT

This plantations is located just adjacent to Musese trial plot, on the eastern side. A road passing through the middle of the two woodlots is the boundary. Most people have confused Kahemu woodlot to Musese.

(48) The plantation was established in ¹⁹⁷⁸1978 and was planted with the seed collected from the most successful trees from the Musese woodlot. The area planted was 20 ha, and the spacing was 2.7 m x 2.7 m. (25/86)

Average Height	= 11	m
Average DBH	= 8.5	cm
Average tree volume	= 0.047	m ³
SPH	= 1200	
Volume\ha	= 56.4	m ³
No. of trees	= 24,000	
Total volume	= 1,128	m ³
Tree form	= Good	

No thinning operations have taken place.

2.5.1 RECOMMENDATION

It is recommended that the woodlot be managed under a coppice system in order to produce poles. The woodlot to be divided into two stands measuring 10.0 ha each. The first 10.0 ha to be clearfelled early in 1994. The next 10.0 ha to be thinned later in 1994 and reduce the stems per hectare to 740.

2.6 KAISOSI TRIAL WOODLOT

This woodlot is situated about 3 km north east of Rundu. The plantation was established in 1979. Eucalyptus camaldulensis was planted, and the seed origin is from the plus trees of Musese trial plot. The total area planted was 20.0 ha at an espacement of 2.7m x 2.7m. The form of trees could be described as good. (86/87)

Average Height	= 10.0	m
Average DBH	= 8.0	cm
Average tree volume	= 0.038	m ³
SPH	= 1000	
Volume\ha	= 38	m ³
No of trees	= 20,000	
Total volume	= 760	m ³

P\7

2.6.1 RECOMMENDATION

The woodlot is to be divided into two stands of 10.0 ha each. The first stand to be clearfelled early in 1994. The last stand to be thinned to 740 SPH. The woodlot to be managed under coppice system.

2.7.0 NDIYONA TRIAL WOODLOT

Ndiyona is situated about 100 km east of Rundu on the road to Bagane. Planting started in 1975 with second planting in 1978 using seed from the Musese provenance trial of Eucalyptus camaldulensis and Eucalyptus tereticornis. The spacing is 2.7m x 2.7m. Ndiyona plantation measures about 0.0 ha.

Ndiyona woodlot seems to be the most successful in the region. The trees have got very good form.

Average height	= 12	m
Average DBH	= 10.5	cm
Average tree volume	= 0.078	m ³
SPH	= 1600	
Volume\ha	= 125	m ³
No. of trees	= 12,800	
Total volume	= 760	m ³

Part of the woodlot was thinned, however records don't show as to how many stems were thinned per hectare.

2.7.1 RECOMMENDATION

It is recommended that Ndiyona woodlot be thinned early in 1994 to 740 SPH. Then a year later to reduce the stems to 490 per hectare.

3.0 RECOMMENDED SILVICULTURAL MANAGEMENT PRACTICES FOR EUCALYPTUS SPECIES

3.1 INTRODUCTION

Eucalyptus camaldulensis is no doubt the most suitable eucalypt to be grown in the northern region of Namibia at this stage. But this does not necessarily mean that other Eucalyptus species can not be grown. This section is therefore concerned mainly with Eucalyptus camaldulensis. However, the Silvicultural Management Systems described below are applicable in general to other Eucalyptus species which can be grown.

P\8

3.2 OBJECTIVES

The objectives of the establishment of Eucalyptus woodlots is to provide fencing materials, construction poles and firewood. In addition the woodlots will also provide the necessary research data on the growing and tending of Eucalyptus spp. and its utilization properties.

3.3 SITE PREPARATION

Intensive and complete site preparation is highly beneficial for the growth of Eucalypts, which are intolerant of competition from weed and grasses. The main objectives of intensive soil preparation are to provide optimum conditions for vigorous root development of the young trees, to improve water penetration and moisture - holding capacity of the soil, and to reduce competition of weeds and grasses. It also provides additional Nitrogen from the rapid mineralisation of vegetable matter.

Thus before planting the trees on new sites, complete preparation by means of ploughing, fallowing and discing or cultivation should be undertaken. Consideration should be given to proper conservation practices in order not to cause unacceptable erosion. If ploughing is not possible, planting pits should be prepared. The pits should be 0.5m to 1.0m in diameter and the soil should be thoroughly prepared to a depth of at least 40cm. The care with which the site is prepared will often mean the difference between success and failure.

The layout of the tree lines and stocking density are of great importance. The tree line therefore should be straight.

3.3.1 ESPACEMENT

For short rotation crops such as construction and fencing poles, espacements to be 3m x 3m.

3.4 ESTABLISHMENT

Whether planting is done in pits or in ploughed land, the actual planting spots should be well prepared before planting takes place. The trees should be planted during the rainy season at a time when it is known from experience that extended dry periods are not usual.

P\9

Planting should be undertaken during the overcast weather or in light rain when the soil is already thoroughly moist from previous falls. If conditions are dry at planting time, each plant should receive at least 10 litres of water and thereafter the same quantity at weekly intervals until good rains fall.

Only vigorous, well grown plants should be used, and should have at least 4 to 6 pairs of leaves. The use of fertilizer may be recommended in some cases, however, fertilizing should not be undertaken without prior soil analysis and expert advice.

3.4.1 BLANKING

When a number of plants die after planting it may be necessary to restore the stocking by replacing the failures. As a general rule, blanking should be undertaken whenever the mortality is more than 10%. If the site is well prepared and the trees planted under optimum conditions, blanking should not be delayed later than four weeks after the first planting. Since it has been found that the blanked trees will not catch up with those planted originally.

3.5 TENDING

Once a woodlot\plantation has been established, it is necessary to tend it right through to maturity to provide optimum growing conditions. The intensity of tending depends on the end product, and it is generally true that short - rotation tree crops require less specialized tending than is needed in plantations which produce sawlogs.

3.5.1 WEEDING

As has already been mentioned all species of Eucalypts are highly intolerant of competition by weeds and grasses. It is particularly important that weed growth should be controlled in the early stages until the canopy closes. This is best achieved by disk cultivation or hoeing. If the weed growth appears to overtop the trees, it should be controlled by slashing. If trees have been given a good start, it should not be necessary to continue weeding after the trees are 1.5 to 2 meters high, by which time the canopy should be closing.

3.5.2 PRUNING

Essentially most Eucalyptus species are self - pruning and ultimately shed branches when the crown canopy is closed.

Pruning entails the removal of living or moribund branches close to the stem. On short rotations, the trees should not be pruned, the only operation being brushing or the knocking off of persistent dead branches with a heavy stick to facilitate access. In the case of Eucalypts grown for timber production, the objective is to eliminate loose knots and to promote the formation of timber which is knot-free or has tight knots only. Not more than a third of a living crown should be pruned if final timber yields are not to be reduced (Schonau and Stubbing, 1987). A suggested pruning regime is as follows for timber production:

WHEN MEAN HEIGHT IS:	PRUNE ALL STEMS TO A HEIGHT OF:
7 m	2.5 m
10 m	4.5 m
13 m	7.5 m

3.5.3 THINNING

This operation entails successive removals at intervals of the poorer trees to provide growing space and promote optimum growth of the remainder. However, thinning operations are applicable only when Eucalypts are grown for the production of sawlogs or heavy transmission poles. If the object of the woodlot/plantation is the production of construction and fencing poles on short rotation, the need for thinning does not arise. The trees will therefore be grown on a rotation of 8 to 12 years during which time no thinning will be undertaken.

However in case Eucalypts are grown on long rotation for transmission, telephone poles and sawlogs the following thinning regime is suggested:

AGE IN YEARS	THINNING INTENSITY STEMS PER HECTARE	
	FROM	TO
6 - 7	1370	990
9 - 10	990	740
12 - 13	740	490
15 - 16	490	250
18 - 19	250	150
21 - 22	150	100
30 (CLEARFELL)	100	

3.5.4 FIRE CONTROL

Eucalyptus species are very susceptible to fire damage because of their thin bark and the high content of oils in their leaves. It is not advisable to carryout large scale control burning operations in Eucalypt stands.

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However experience in Zambia has shown that control burning may be carried out as long as proper and strict supervision is exercised and that the timing must be correct. In the Namibian situation this needs extensive research work before control burning can be introduced in the plantations.

3.6 COPPICE MANAGEMENT

It is recommended that all Eucalypts stands in the Northern Region of the Country will be managed under a coppice management system at least for three rotations, ie 36 years. After 36 years that area will be stumped and ploughed before planting new seedlings.

The success of coppice regeneration is dependent on the season and method of felling and the stocking and uniformity of the parent crop. Felling during the rainy season produces the most vigorous coppice. If there is adequate soil moisture, felling in winter or dry season should usually give satisfactory coppice regeneration. Very dry weather like in Ovambo will definitely increase stool mortality.

In all cases where regeneration is planned, felling by a bow saw or power saw is recommended to felling by axe. The latter results in high wastage and tends to loosen the bark around the stool causing poor coppice attachment, damaged cambium and increased susceptibility to fungal attack.

After felling, stools should be cleared of waste branches, bark and logs which obstruct the early development of coppice stools and prevents them from growing straight. Burning slash will increase stool mortality.

In selecting coppice shoots that are to remain dominant, shoots of good form with the firmest and lowest attachment on each stool should be chosen. They should be well matched and should not differ more than 1cm diameter on each stool to ensure uniform growth.

The keeping of records is not specifically dealt with in this publication, but it must be emphasised that the keeping of comprehensive records of all aspects of the operation is essential for proper plantation management.

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4.0 HARVESTING

4.1.0 INTRODUCTION

To get trees from the forest to the point of utilization, they have to be harvested. Therefore, harvesting is a link between forest resources and timber users. There are various harvesting methods one can adopt, depending on the kind of raw material and the terrain. In our case, an assortment method will be used.

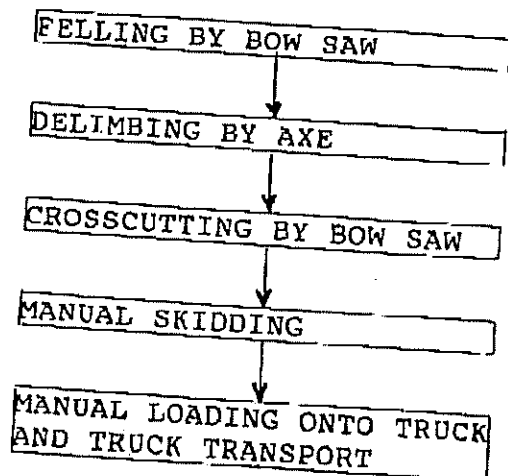
4.2.0 ASSORTMENT METHOD

This is a shortwood method, where the tree is felled and made into short wood, poles, droppers and other assortments at the felling site for later transportation to the user. The residue will remain at the felling site and will help to improve the soil. However great care must be taken to ensure that the stump is free of this residue, otherwise it will be an obstacle for proper coppicing.

Two alternative harvesting systems will be employed; Manual Harvesting System or Low Mechanized System.

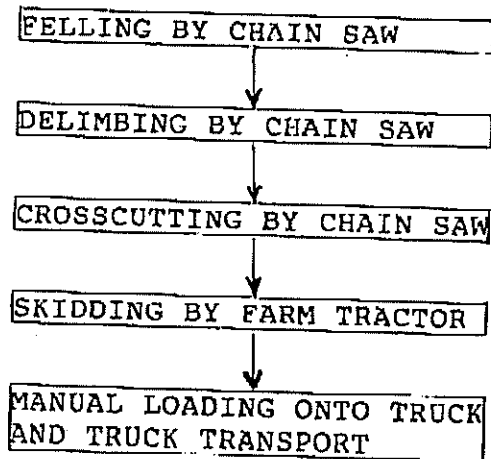
4.2.1 MANUAL HARVESTING SYSTEM

The sequence of operation of this system is as shown below:



4.2.2 LOW MECHANIZED HARVESTING SYSTEM

The sequence of operation of this system is as shown below:



It is possible to combine some steps of both systems.

5.0 PRESERVATION

5.1 INTRODUCTION

All timber is liable to attack by wood - destroying organisms when exposed under environmental situations following their growth and development. The forms of attack commonly encountered are termites, wood boring insects and wood destroying fungi. Some timber species are naturally resistant to one or more forms of deterioration, but others, including Eucalyptus are highly susceptible, and can be severely damaged in a short time. However susceptible timber can be treated with a wood preservative to provide effective long - term protection against deterioration.

Various applications of preservatives are available. However for the scale of our operations, the Hot - and - cold open tank treatment will be used. Details will be described later.

5.2.0 PREPARATION OF POLES

5.2.1 FELLING TIME

The best time of the year to fell trees for pole making is just after the rainy season. This allows for seasoning during the dry months, when conditions are less favourable for insect damage to occur.

5.2.2 DEBARKING

Bark is impervious to liquids and should therefore be removed entirely. Even the smallest strip of bark prevents the penetration of the preservative at that point. Bark comes off more easily while the poles are green, and should therefore be removed immediately after the trees are felled. This also facilitates seasoning or drying of the poles. Bark is most conveniently removed by means of a spade or any sharp instrument similarly shaped.

5.2.3 SEASONING

Dry wood absorbs preservatives much better than does green wood. Not only is it impossible to get good penetration, if any at all, in green wood, but when the wood dries out after impregnation, splits and checks are formed which would expose untreated wood to the attack of decay - producing fungi and wood - destroying insects.

After the trees have been felled, debarked and made into poles, they should be stacked in the open in such a manner as to allow air to circulate freely through the stack. The bottom layer of poles should be well off the ground.

It is not necessary to cross-cut the poles to exact length immediately the trees are felled, this operation is better done after the poles have dried when badly split ends can be trimmed off. Poles may be considered dry enough for impregnation when their average moisture content is 25 per cent or less. The time required varies with weather conditions, the locality, and size of poles. However it is estimated that the kind of poles available will take from 3 to 4 months to dry. It is important that poles be sufficiently dry before treatment otherwise penetration of preservatives will be poor or even prevented altogether.

5.3.0 HOT - AND - OPEN TANK METHOD

In the open-tank process, creosote is the preservative which is recommended for the chemical impregnation of poles. It has proved its value against termites and decay in neighbouring countries and is known to make non-durable woods last from 20 to 30 years under most adverse conditions.

The underlying principle of the Hot and open tank process is that if dry wood is submerged in a hot chemical the air in the cell cavities of the wood expands and is partially expelled; on cooling the chemical, the air in the cell cavities contracts and the chemical is drawn into the wood. Good penetration can be obtained by this method, depending of course on the type of wood, its moisture content and the temperatures used in the treatment.

5.3.1 METHODOLOGY

The preservative in the tank is heated to a temperature of 85 °C to 95 °C; during this process of heating, the poles are introduced and weighed down by means of any suitable weights that are available, such as blocks of concrete, steel rails or a drum filled with water, etc. A thermometer should be provided for registering the temperature, and preservative should be kept at 85 °C to 95 °C from one to two hours. The tank and contents should then be allowed to cool to atmospheric temperature before removing the poles. Most of the absorption takes place during the cooling period, and the poles should, therefore, not be removed too soon. The ideal treating cycle is to fill the tank with poles during the morning, heat it up to the required temperature, allow it to cool overnight, and remove the poles the following morning.

Absorption should range from about 80 liters per cubic meter of wood. Absorption will be controlled by regulating temperatures or by either increasing or reducing the time the wood is kept at high temperatures. Penetration of preservative should be tested by crosscutting a treated pole through the middle. With Eucalypts it is only possible to penetrate to a depth of about 19mm, which is the sapwood. The treatment should not be considered satisfactory unless the penetration is at least 13mm deep or more. Difficulty in obtaining satisfactory penetration can be due to the poles not being dry enough, or failure of the operator to heat the preservative to the proper temperature and or maintain it for long enough.

The charge on removal should be allowed to hang over the tank for about half an hour in order to allow the excessive preservative on the surface of the pole to drip back into the tank.

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In order to prevent water from mixing with the creosote in case of rain, a few sheets of corrugated galvanized iron should be available to cover the tank or drum. Water mixed with creosote causes the latter to froth up and boil over when heated and would increase the fire hazard considerably.

6.0 MARKETING

The treated poles and droppers will be sold according to the approved Government financial procedures.

7.0. CONCLUSION

The plan presented in this report is designed to fit the present situation. It is an attempt to outline the major guidelines for the proper establishment and tending of the Eucalyptus woodlots and their subsequent utilization of forest produce (poles). This should therefore not be seen as an end in itself, but the beginning of gathering of essential data.

At every opportunity, cost studies should be made of all plantation establishment operations. Time and cost studies of harvesting should be recorded. It must be stressed that PROPER RECORDS ARE A MUST for any operation undertaken. Duplicate copies should be sent to the Regional Office.

If these things are done, we should be in a position to revise the management plans at the appropriate times.

FEBRUARY 1994

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CHIEF FORESTER - NAR.

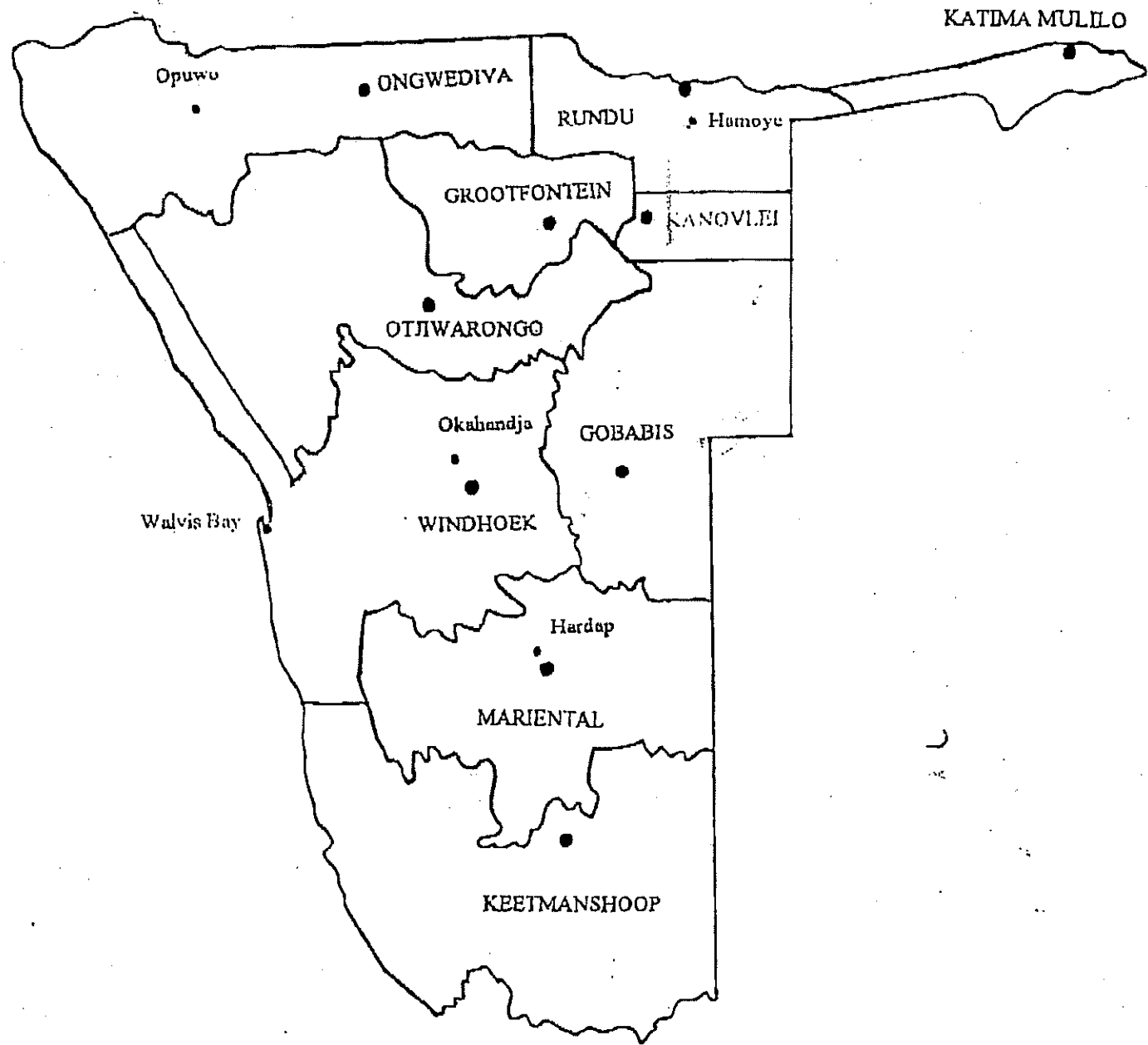


Fig. 1. Map of Forestry Districts, Forest Research Stations (Okahandja, Hamoye, Hardap, Kanovlei and Walvis Bay) and a proposed forestry office (Opuwo)

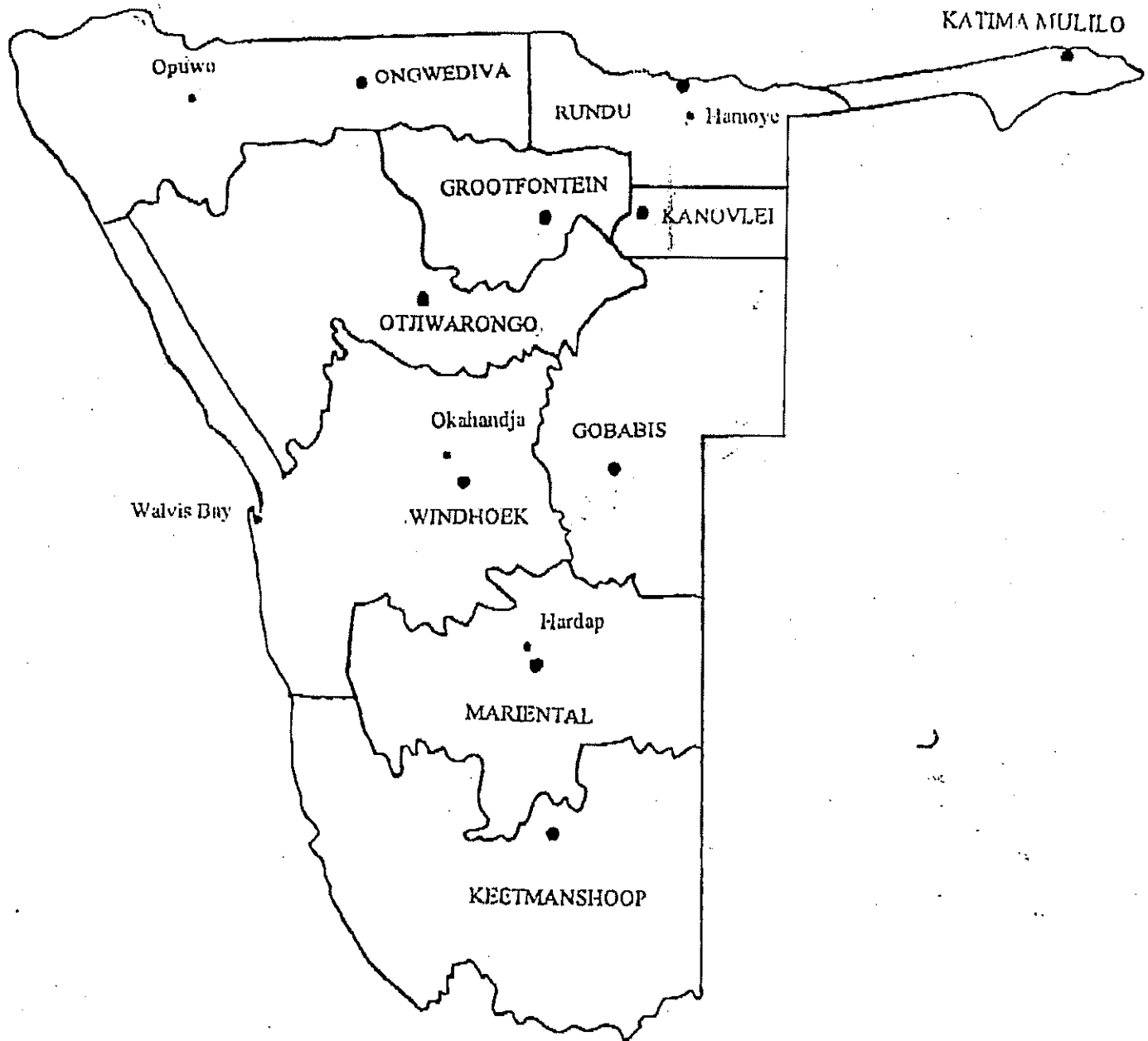


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Namibia Development Corporation

Constituted under Act 18 of 1993

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To : Acting Managing Director
Att : Mr. A Aboobakar

From : NDC Regional Manager - Caprivi
Mr. J H Dreyer

Date : 16 February 2001

Subject : **NDC - NGOMA FORESTRY PLANTATION : Request of assistance**

The NDC - Ngoma Forestry Plantation is located in Caprivi region, 2km away from the Ngoma border post. The project was initiated by the former AMCOM and started towards the end of 1998. However, tree planting activities started in 1999. This is to say that the old stand is almost two years old and hence very young and needs special care. The cleared and planted forest area covers a total area of 66ha. The major tree species planted are Eucalyptus camaldulensis, various hybrids of Eucalyptus grandis and camaldulensis, Albizia Versicolor (indigenous specie) and very few cashew nuts and casuarina trees.

The main objectives of the plantation were among others :

- * To contribute to the national economy by producing quality and cheap raw materials for local wood industries.
- * To improve the social welfare of the communities living around the plantation through job creation.
- * To try the possibilities of establishing forestry plantation in Namibia and hence reduce to some extent the amount of imported forest products such as droppers, light poles, electric poles and so on.

From the beginning, the aim was to cover a total area of 200ha after which possibilities for further extension were supposed to take place. But due to limited resources, it is almost impossible to continue with the extension of the project. Due to the above factor, I would like to request you to source for donors in order to help us to carry out various activities aiming at maintaining the existing plantation. Such activities will include the following:

- Reducing the biomass around and within the plantation in order to reduce risks of fire.
- Removal of weeds which may attract termites and other insects which may end up in damaging the young planted trees and this means a very big loss to us as over 80,000.00 trees have been planted this year.

On the other hand, weeds do compete with our planted trees for water, nutrients and hence this may lead to high mortality. It is therefore, very important to take care of this problem before it is too late.

- Cutting of regrowth is also important as this may attract large wildlife pests such as elephants into the forest plantation and this may lead to tree damages.

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