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**PRODUCT AND MARKET DEVELOPMENT OF SISAL  
AND HENEQUEN PRODUCTS**

**SUB-COMPONENT A3-VARIETY TRIALS IN ESTATES-KENYA**

**PROJECT NO. XA/RAF/98/613**

**CONTRACT NO. 98/211 between UNIDO and Kenya Sisal Board**

**FINAL REPORT ON THE SERVICES PROVIDED BY  
KENYA SISAL BOARD IN MANAGEMENT AND  
MAINTENANCE OF VARIETY TRIAL NURSERIES AND  
TRANSPLANTING NURSERY AT NAKURU- KENYA**

**Report Prepared for UNIDO**

**Report Prepared by;- J. L. Tipape-National Project Officer (Kenya)**

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## **INTRODUCTION**

Kenya Sisal Board was contracted through contract No.98/211 between the United Nations Industrial Organization (UNIDO) and the Kenya Sisal Board, to maintain and manage variety trial nurseries and eventually to transplant the Nakuru nursery, at a total cost of US \$ 3,985.00.

Although the contract was signed in August/September, 1998, the actual work started in November, 1997, immediately after planting of the nurseries.

On signing of the contract, a down payment of US \$ 2,076.00, was paid to the Kenya Sisal Board.

This report gives the final status of the contracted work up to February, 1999.

## **SYNOPSIS**

Variety trial nurseries consisting of five varieties each were established at Kilifi(low altitude), Kibwezi (mid-altitude), and Nakuru (High altitude), in October, 1997.

A caretaker was posted at the Kibwezi site to particularly protect the nursery from destruction by baboons and an enumerator (data recorder), was posted in each of the sites for two months to record data on the growth characteristics of the varieties.

The nurseries were kept completely weed free throughout the entire nursery period and one treatment of aldrin was given to prevent sisal weevil attack. One application of decomposed sisal waste was also given as manure.

Because of the effects of prolonged and heavy rains caused by the Elnino phenomenon, the nurseries grew very fast such that by october,1998 the nurseries were ready for lifting and transplanting at Kibwezi and Nakuru. This was done in November, 1998.

The nursery at Kilifi grew slowly due to severe competition from weeds. It is expected to be ready for lifting in march/April 1999.

## **MANAGEMENT AND MAINTENANCE OF THE NURSERIES**

The variety trials were established on sites representing the low, medium, and high altitude sisal growing areas of Kenya (i.e 0-20, 900 ,and 1,500 Metres above sea level), at Kilifi, Kibwezi, and Nakuru respectively.

Five varieties (Agave sisalana, Hildana, Agave angustifolia, Hybrid 11648, and hybrid 1300), were included in the trials.

The Kibwezi nursery was located in an abandoned sisal estate, the Kilifi nursery in a small holder farmer's plot, while the Nakuru one was located in Alphega sisal estate.

Kenya Sisal Board was contracted to establish the nurseries through contract No. 97/326 (UNIDO/KSB) and later through contract No. 98/211 to maintain and manage the nurseries and eventually transplant the Nakuru nursery.

As a result of the exceptionally heavy and prolonged rains caused by the El Niño phenomenon in late 1997 to mid 1998, the nurseries grew very fast. The extra ordinary weather also caused vigorous growth of weeds making this the biggest challenge in maintaining the nurseries.

A care taker was posted fulltime at the Kibwezi site to protect the nursery from destruction by baboons. This was achieved with remarkable success. Each nursery was provided with an enumerator for two months starting from the sixth month, to record data on growth characteristics. Data was recorded on:-

- Rate and percentage of establishment,
- Rate of leaf production
- Rate of growth,
- Incidence of disease and pests infestation.

Each of the nurseries was kept completely weed free by hand weeding throughout the entire nursery period. One treatment of Aldrin was given to prevent sisal weevil attack. Each also received one application of decomposed sisal waste as manure at an equivalent of 50 metric tonnes / ha rate. The nurseries at Kibwezi and Nakuru having matured faster than the aKilifi one, were transplanted in November, 1998. The Kibwezi nursery was slightly damaged by a wild fire in August 1998, but the damage was not so severe as to seriously affect the growth of the plants. The Kilifi nursery grew much more slowly due to severe competition from weeds. It is expected to be ready for transplanting in March/April 1999.

### **COMPARATIVE OBSERVATIONS**

A number of striking observations were noted between varieties and between sites as seen in tables 1 and 2 below.

**TABLE 1 - PLANT HEIGHT, NO. OF LEAVES AND WEIGHT AT LIFTING (KIBWEZI)**

Varieties	Height (cm)	No/leaves/plant	Weight/plant (kg)
11648	33.8	38.6	4.0
1300	35.2	18.0	2.0
Hildana	35.8	16.6	3.0
Agave Sisalana	36.0	18.8	2.0

**TABLE 2- PLANT HEIGHT, NO. OF LEAVES AND WEIGHT AT LIFTING  
(NAKURU)**

<b>Varieties</b>	<b>Height (cm)</b>	<b>No/leaves/plant</b>	<b>Weight/plant (kg)</b>
11648	19.4	30.6	1.7
1300	19.2	29.6	1.7
Hildana	18.8	25.4	1.3
Agave Sisalana	18.0	21.4	1.3

**1. Between sites**

- Generally at Kibwezi, the plants were more vigorous than in Nakuru particularly basing on plant height and weight at lifting.
- There was lower leaf production at Kibwezi than in Nakuru save for hybrid 11648 which produced more leaves in all the sites.
- After the rains , plants at Kibwezi particularly hybrid 1300 shored severe water stress which was not evident in Nakuru.
- A few plants were attacked by the sisal weevil at Kibwezi and Kilifi but none was seen at Nakuru.
- In Nakuru all varieties but hybrid 11648 produced more leaves.
- Except for signs of a die back noticed on hybrid 1300 at Kibwezi, no other diseases were recorded.
- Growth at Kilifi was severely retarded by competition from weeds.

**2. Between varieties**

- The hybrids were generally more vigorous in all sites.
- Hybrid 11648 showed superiority over all the other varieties in all sites.
- Hybrid 1300 showed severe water stress at Kibwezi which probably explains its poor leaf production at Kibwezi compared to hybrid 11648.
- Hybrid 1300 was also affected by a die back at Kibwezi`

3. It was also observed especially at Kilifi prolific weed growth retarded growth and thus prolonging the nursery period.

4. It was also noticed that adequate well distributed rains made the plants to grow faster thus shortening the nursery period. E.g the Kibwezi and Nakuru nurseries were lifted at exactly 12 months instead of the normal 18 to 24 months.

**CONCLUSION**

The work contracted to Kenya Sisal Board was successfully completed with the transplanting

of the Nakuru and Kibwezi Nurseries. Preparations for transplanting of the Kilifi Nursery are underway and it is expected that this would be done in March/April immediately rains set in. The total cost of the work was US\$4,416.00, US\$431 in excess of the contract sum. This cost was absorbed by KSB.

The Kenya Sisal Board would therefore like to apply for the release of the final contract payment of US\$1,909.

## FINANCIAL STATEMENT

<u>Item of Expenditure</u>	<u>Cost(US\$)</u>
1. Management of Nurseries	
(a) Weeding	
Kibwezi 8 x US\$39	- 312.00
Nakuru 8 x US\$39	- 312.00
Kilifi 8 x US\$39	- 507.00
(b) Wages	
Caretaker at US\$	
Kibwezi 12 m/m/45	- 540.00
Enumerators 3 x 2 m/m x US\$100	- 600.00
Sub total	<u>2,271.00</u>
2. Transplanting Nakuru Nursery	
- 4 DSA for NPO, Agronomist	
@ US\$ 92 per day	- 736.00
- 4 DSA for Driver	
@ US\$ 20 per day	- 80.00
- Land preparation	- 417.00
- Inputs	- 394.00
- Labour costs	- 518.00
Sub total	<u>2,145.00</u>
<b>Grand total</b>	<b><u>4,416.00</u></b>