

## AGAVE CULTIVATION TRIALS IN PAKISTAN

by

Mahmood Iqbal Sheikh\*

## Summary

*Techniques of raising Agave in the nursery and the field have been discussed in this paper. It has been found that bulblis must be planted in well manured and well irrigated nurseries for a period of one and a half to two years before these are planted out.*

## 1. Introduction

Agave has been acclaimed as a very useful source of raw material not only for cordage but also for the manufacture of carpets, matting and board. Cultivation of this plant was started in the country on an experimental scale more than 10 years back. At that time, no headway could be made as certain essential requirements of soil and water and methods of cultivation were not exactly known. In order to safeguard against the repetition of the mistakes which led to the failure in the past, work was started in the Pakistan Forest Institute to standardise cultivation techniques.

## 2. Species of Agave found in Pakistan

Following species of Agave are found in Pakistan:

(1) *Agave cantala*

This is the most common species of Agave which grows in wild lands and around fields of Punjab and foot hills of N.W.F.P. Leaves are one meter long and 7.5 cm. broad. It can be grown upto 1500 meters in the hills. Produces good fibre.

(2) *A. wightii*

It is naturalised in foot hills but is not as common as *A. cantala*. Leaves are comparatively small, 0.5 to 1m. long. The fibre is not so good.

---

\*Author is Director, Forestry Research Division, Pakistan Forest Institute, Peshawar.

(3) *A. americana*

The plant has variegated leaves with yellow margin. Commonly grown in gardens. It is of no value for fibre.

(4) *A. sislana*

This is the true Sisal plant. Leaves are upto 3 m. long and 15 cm. broad at the widest point. The margins are with or without prickles. It is not very common, and is planted only as an ornamental plant. This species and *A. cantala* are reportedly the best for fibre.

Some other species are also available in Pakistan but these are of no economic importance.

## 3. Nursery Techniques

Agave can be multiplied from bulbils as well as root suckers. Bulbils of *Agave sislana* and *A. cantala* were collected from Hazara and Hyderabad (Sind) in the winter of 1972-73. The area was thoroughly ploughed and levelled. Two spacings were tried viz. 15 × 15 cm. and 30 × 30 cm. Ten irrigation were provided during one year. Results of the nursery techniques employed are given below:

Source	Spacing (cms.)	No. planted	No. of survivals	Success percentage
Haripur	15 × 15	6500	5400	83
Haripur	30 × 30	5000	4300	86
Hyderabad	15 × 15	3000	1700	85
Hyderabad	30 × 30	3600	3100	86

Bulbils from Hyderabad gave the highest percentage of survival. Bulbils planted at 30 × 30 cm. spacing showed better rate of growth and proved to be healthier and sturdier in the long run. In two years, the bulbils became about 30 cm. high with a well developed rosette of 6-10 leaves.

## 4. Field Planting

In August, 1974, this stock was planted at two sites in Islamabad viz. spoil banks and level ground using the two spacings of 2.3 × 2.3 and 1.5 × 1.5 meters. Four plots of 18 × 9 m. were taken at one site.





Fig 1. Two year old plants raised from bulbils planted at 30 cm  $\times$  30 cm. in the nursery.



Fig 2. Bulbils after one year in the nursery.





Fig. 3 : Bulbils after 2 years in the nursery.



Fig. 4 : A well developed 2-year old nursery plant ready for planting out.



Pits 30 cm. deep and 30 cm. in diameter were prepared, large enough to accommodate the entire root system and a part of the bulb of the plant from the nursery. After planting, thorough ramming was done so that the plants did not come out when pulled or pushed. One hand watering was given. Plants were provided thatching for protection against winter frost.

Data recorded in March, 1975 gave the following results:

Site		Spacing (meters)	No. of plants	No. of surviving plants
Spoil banks	..	1.5 × 1.5	336	330
(Shahrah-i-Kashmir)	..	2.3 × 2.3	160	158
Level ground	..	1.5 × 1.5	336	329
(Shahrah-i-Islamabad)	..	2.3 × 2.3	160	152

Neither frost nor spacing showed an appreciable effect on survival and growth of the plants after one growing season.

##### 5. Recommendations

It is recommended that instead of planting bulbils direct in the field, these may be planted in the nursery at 30 × 30 cm. spacing and kept there for  $1\frac{1}{2}$  to 2 years. These may be planted out in the monsoon season when these are at least 30 cm. in height and have developed a good root system. To save the plants from frost, winter irrigation may be arranged. Wind-breaks would also be helpful in preventing frost damage. However, it has been observed that unless very severe and prolonged, frost does not kill the plant totally. It recovers with the onset of spring season.