PACKAGE OF PRACTICES FOR CULTIVATION OF ALOE VERA

Recent years have seen a major spurt in the demand of medicinal plants not only with in the country but also for its export. More and more number of farmers are entering into this most potential sector. The National Research Centre for Medicinal and Aromatic Plants (NRCMAP), Anand has developed package of practices for cultivation of *Aloe vera*.

Aloe Vera

Aloe vera is known by several names like Ghrit Kumari, Kunvar pathu and Indian Aloe and is widely cultivated because of its wide adaptability and use as a medicinal plant especially in dry areas. The succulent mature leaves having bitter juice are economic parts. Its primary use is in cosmetic industry for preparation of shampoo, face creams, shaving creams and moisturizing agents. It has also diverse use as vegetable and pickle. The leaves possess many medicinal properties and are used to treat fever, enlarged liver, and spleen and other glands, skin diseases, gonorrhea, constipation, menstrual suppressions, piles, jaundice, rheumatic diseases and also for the treatment of burns and bruises.

CLIMATE

It can be grown in almost all parts of India, even under constant drought conditions, except in temperate climate. As its water requirement is very low, it can be cultivated in arid and semi-arid region, especially in Rajasthan, Gujarat, Madhya Pradesh, and Maharashtra.

SOIL

It is grown successfully in marginal to sub marginal soils having low fertility. The plants have tendency to tolerate high soil pH with high sodium and potassium salts. However, its growth is faster under medium fertile heavier soils such as black cotton soils of Central India. Well-drained

loam to coarse sandy loam soils with moderate fertility and pH upto 8.5 should be preferred for its commercial cultivation.

LAND PREPARATION

The root system of Aloevera does not penetrate below 20–30 cm, therefore the soil should not be disturbed too deep. Depending upon soil type and agro-climatic conditions, 1–2 ploughing followed by leveling are recommended. The field should be divided into suitable plot sizes (10–15 m × 3 m) considering the slope and available source of irrigation.

PLANTING TIME

Suckers should be planted in July–August to get better field survival and subsequent growth. However, under irrigated conditions, planting can be done round the year except in winter months (November–February).

Planting Material

The planting material recommended for commercial cultivation are suckers. Nearly three to four months old suckers having 4–5 leaves and about 20–25 cm in length be used as planting material.

SPACING AND PLANTING

Suckers should be planted in about 15 cm deep pits made just at the time of planting at 60 × 60 cm apart. After planting of suckers, the soil around the root zone must be firmly pressed and appropriate care to avoid water stagnation should be taken. About 25,000 suckers are needed for one hectare planting.

MANURING

In general, the crop responds well to the application of manure (FYM or Compost). About 10 to15 tonnes FYM per ha may be applied at the time of soil preparation and also in the subsequent years. If sufficient quantity of wood ash is available, it can be applied in the pits at the time of planting as it helps in establishment of plants and their subsequent growth.

IRRIGATION

The crop withstands stress condition very well but to get good crop, irrigation at critical stages of growth as recommended below must be given.

- Apply first irrigation just after planting of suckers.
- Give 2–3 irrigations subsequently till the plants get established, 4–6 irrigations per year may be enough for its proper growth.
- Depending upon the availability of water, give light irrigation after each picking of leaves.

INTER-CULTURE OPERATIONS

The field should be kept free from weeds throughout the growing period. Two to three hand weedings followed by light hoeing per year promote growth and suckering. The first weeding cum hoeing should be completed within a month after planting. In the subsequent years, two weeding cum light hoeing in each year are sufficient to minimize the weed population. Remove regularly diseased plants and dried flower stakes.

INSECT-PESTS AND DISEASES

There are no major problems of insect pests and diseases, however, mealy bug and anthracnose and leaf spots have been reported from some parts of the country. If there is a termite problem, it can be managed by applying light irrigation.

HARVESTING AND YIELD

Commercial yield is available from second year to fifth year of transplanting. Generally 3–4 pickings per year be taken up, depending upon the growth. On an average 15–20 t/ha fresh leaf can be obtained from second year plantation by adopting fully the recommended practices for its cultivation. Fully developed mature leaves should be harvested for extraction of juice.

MARKETING

In view of international demand, there is now a lot of scope for its cultivation and marketing. However, ascertain its demand in the local/ distant markets before taking up its commercial cultivation.

PROCESSING

The term 'Aloe' used in medicine stands for the dried juice, which flows from the transversely cut bases of the leaves. For processing of "Aloe", the juice should be allowed to drain from the cut leaves into vessels and then concentrated by evaporation, either spontaneously or by frequent boiling. The fresh juice is colourless or yellow but changes to dark brown due to evaporation and boiling. Sun dried or concentrated "Aloe" juice over a fire gives an amorphous, opaque, waxy extract called 'hepatic' or 'livery' aloe. When the juice is concentrated rapidly over a strong fire, the product obtained on cooling is amorphous and semi transparent and is called 'glossy' or 'vitreous' aloe.

Besides the dried juice, the gel is also a very important product. The mucilaginous pulp from the leaf, which is mainly polysaccharides in nature, is used in cosmetic industries and in treatment of many human diseases. The leaves left over after the removal of their exudates can be cut open and mucilage is scraped out with a blunt edged knife for isolation of gel. Extracted mucilage is stirred vigorously in a blender to make it homogeneous mixture (solution). This mixture is strained through a muslin cloth and filtered. The gel is precipitated from the extract and is isolated by centrifugation. This gel is re-dissolved in slightly warm water and transferred to a tube of known weight and dried at a high temperature (< 100°C).

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ECONOMICS

A net profit of about Rs 8,000–12,000 per hectare from marginal to sub-marginal lands can be obtained by selling of leaves. The profitability may increase upto Rs 25,000 per hectare, when it is cultivated in medium fertile soil. In addition, one can earn by selling suckers as a planting material from second year onwards.

Caution: Cultivation of medicinal plants is undertaken by first assuring its market. The growers may like to establish buy back arrangements to minimize the risk of distress selling.