Project Director

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PINEAPPLE CULTIVATION: USEFUL FACTS

Pineapple Cultivation: Useful Facts

Climatic Conditions

Native to the American tropics, the cultivation of pineapple is limited to low elevations between 30°N and 25°S. The plant is drought tolerant and produces fruit under yearly precipitation rates ranging from 25 to 150 inches, depending on the cultivar, location and degree of atmospheric humidity. With a temperature range of 65-95°F as the most favorable temperature, the plant can be grown throughout the year in Micronesia.

Soil Characteristics

A well-drained, sandy loam with a high content of organic matter is best for pineapple cultivation. The soil should be friable for a depth of at least 2 feet with a pH within a range of 4.5 to 5.5. Alkaline soils should be treated with sulfur and consistent application of organic fertilizers to achieve the desired pH level. Pineapple plants would not survive waterlogging and if there is impervious subsoil, drainage must be improved.

Field Preparation

The field preparation for pineapple is similar to that for most dry land crops. The land should be well prepared at the outset because the pineapple is shallow-rooted and easily damaged by post-planting cultivation. Existing vegetation should be turned under with a moldboard or disc plow, or by spading. Most soils benefit from adding compost at this stage. During soil preparation, potassium fertilizer can also be added, if required. After turning, leave the soil for a few days to allow for decomposition, and then break soil clods by harrowing or rotovating or, with a hoe or rake in small gardens. After the soil has been pulverized, the surface should be smoothed in preparation for pineapple planting. If the soil is imperfectly drained, beds at least 10-15 inches high should be formed. If nematodes are present in the soil, it should be sterilized, fumigated, or treated with a nematicide. Fumigation of the soil contributes to high quality and high yields.

Preparation of Planting Materials

Traditionally pineapple has been propagated through crowns, slips, suckers and ratoons that are prepared or obtained from the mother plants. Selected planting materials should come from preferred varieties that are disease and pest resistant, and vigorous and high yielding, with good productivity with respect to the final product. In recent years, owing to the advantages of disease-free planting material along with uniformity in growth and higher yields, the use of tissue culture multiplied seedlings as the planting material for pineapple has become increasingly popular among farmers. Tissue culture multiplied seedlings are planted when they are 15-18 months old.

Planting

Considering the frequent and heavy rains, and poor drainage in the Micronesian region, the pineapple seedlings are recommended to be planted in twin rows on raised beds. The plants should be spaced in the rows at 2.0 feet apart and staggered, not opposite, and with a distance of 3 feet between the two rows. A 6 feet wide alley is to be maintained between pairs of rows.

Irrigation

Pineapple is generally a rain fed crop grown and in areas with high rainfall it does not require irrigation if good water management is maintained. Pineapple plantations in Micronesia do not require irrigation under normal conditions, except perhaps during the initial establishment period or in drought prone areas. The plantations should not be allowed to become waterlogged for any extended length of time. For best crop establishment, maintain adequate soil moisture throughout the growing period.

Fertilizer Application

Soils should be analyzed for fertility status to determine nutrient requirements for the growth and productivity of pineapples. Pineapples requires good soil fertility. In a tropical climate, it is better to apply small quantities of fertilizer often, rather than to add a large quantity in one treatment. This makes the fertilizer application more profitable and prevents too rapid growth.

Weed Control

Pineapple grows slowly, especially in the first 3-4 months after planting. Growth can be greatly slowed by competition from weeds. Yield losses can exceed 50% in extreme cases. Weeds may also serve as 'reservoirs' and reproduction sites for certain pests such as mealybugs, symphylids, nematodes, etc. Weed control is, therefore, essential and must be performed preventatively to minimize their spread and growth. Eradicate weeds by hand pulling or cultivating with a hoe. After the crop has attained the maximum vegetative stage, the lush foliage will shade out weed growth, and cultivation for weed control should be minimized to avoid injuring the roots.

Insect-Pests and Diseases

Constant and frequent scrutiny of pineapple plantation is necessary to identify any incidences of disease or pest in the crop at an early stage and to take immediate action to control them. Integrated pest and disease management principles need to be applied at all stages of cultivation to maximize productivity and minimize crop loss and for ensuring sustainable pineapple production. Phytosanitary measures, such as physical removal of pests, affected plant parts, and of infected plants (virus-infected plants, severely disease-infected or pest-infested plants, including plants affected by wilt) is important to control the incidents.

Harvesting

In Micronesia, pineapple fruits are harvested 4-7 months after flower initiation or after 15-22 months of planting. Fruit is harvested by bending it over by hand and twisting to remove it from the stalk. Pineapple (*Ananas comosus* cv. Hawaiian) fruit is ripe when the individual eyes become flattened and glossy, and when shell color turns yellow-red or yellow-orange from dark greenish-purple. Pineapple (*Ananas comosus* cv. Kosraean) fruit is ripe when the individual eyes become flattened and glossy, and when shell color turns yellow to yellow-orange from dark-green. Color development for both cultivars starts at the base and moves toward the top.

Ratoon Crops

The plant crop after harvest can be retained as ratoon crop for two more years. After the harvest of the plant crop, chopping the side leaves of the mother plant should be done for easy cultural operations. The suckers retained should be limited to one or two per mother plant. Excess suckers, if any, should be removed. The development of the first ratoon sucker begins when the first crop is harvested after 15-22 months of planting. Plant nutrients are applied and if needed, insect and pest control chemicals are also applied. The second crop is harvested 32-36 months after the initial planting. The same practices are repeated if the crop is kept for a second ratoon, and third crop is harvested 40-44 months after the initial planting. Then the field is cleared to minimize carryover of pests and diseases.

Storage

To ensure that normal ripening progresses during and after storage, harvested pineapples should be stored at a temperature between 44-46°F, 80-90% relative humidity with adequate air circulation. At best, pineapples may be stored for no more than 4-6 weeks.

(Reference: Bartholomew, D.P., R.E. Paull, & K.G. Rohrbach (eds.) (2002). The pineapple: Botany, production and uses. CABI; Morton, J. (1987). Pineapple. In: Fruits of warm climates. Julia F. Morton, Miami, USA)