

The Ridge to Reef Watershed Project (R2RW) is a five year (with an optional sixth year) activity contributing to the achievement of USAID/Jamaica's SO2 – "improved quality of key natural resources in areas that are both environmentally and economically significant". R2RW comprises three Components contributing to the achievement of the results under SO2. Component 1 assists targeted organizations identify and promote sustainable environmental management practices by resource users. Component 2 focuses on identifying and supporting solutions to improve the enforcement of targeted existing environmental regulations, primarily in the Great River and Rio Grande watersheds. Component 3 provides assistance to key organizations to support, coordinate, and expand watershed management efforts in Jamaica. For more information about R2RW, please contact one of the following organizations:



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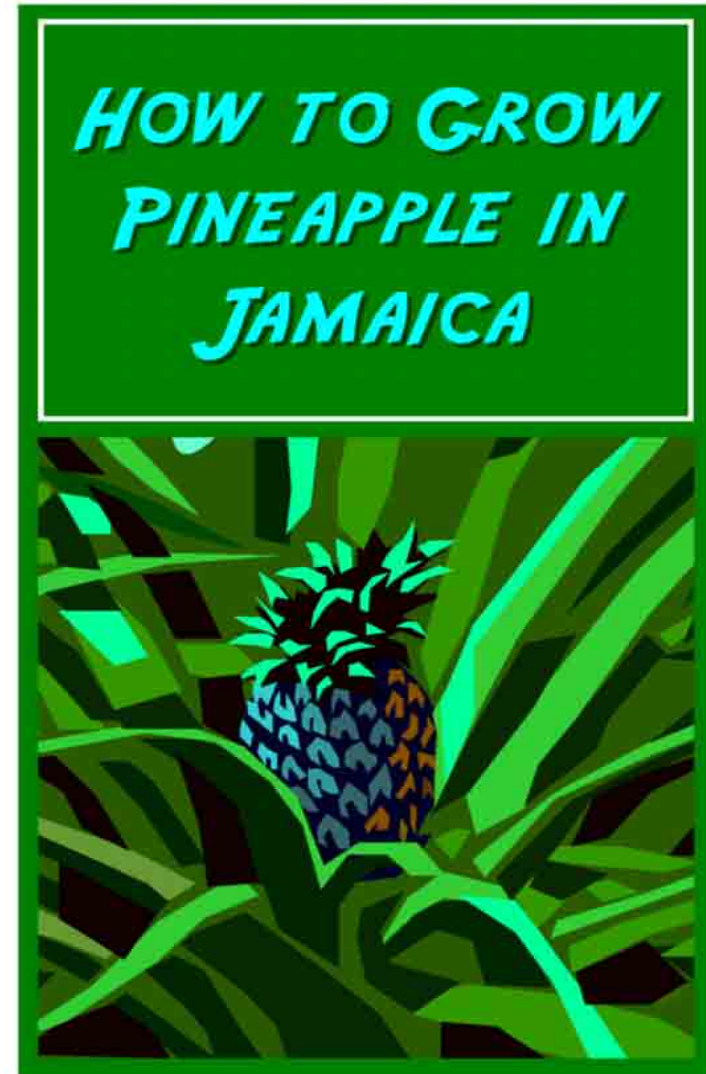
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The pineapple (*Ananas comosus*) fruit is popular both locally and abroad, in fresh or processed forms. For many years it was exported to North America and Europe, but production has gradually decreased until presently there is hardly enough to satisfy local demands. The smooth cayenne variety was exported to some Caribbean islands to start their production of the crop. The soils and climate in Jamaica are ideal for growing pineapple, and there is good demand for it at a high price. It is hoped that this guide from the Ridge to Reef Watershed Project will encourage and assist in restarting a viable pineapple industry.

Pineapple can be grown in orchards on flat or raised beds, along fences and roadways, or on the contour as a soil conservation practice. It finds ready market at farm gates, with higglers, in markets and supermarkets, almost everywhere. Planting materials of some varieties are available.

Successful production of pineapple requires the following knowledge and inputs.

### FIELD SELECTION

Pineapple can be grown on almost any type of soil, but does best on acid soils (pH 4.5-5.5), where soil borne diseases will not be problematic. A free draining soil is preferred, but in areas of high rainfall and where the soil is not well drained, planting on ridges or raised beds will improve drainage. Although the crop will tolerate low soil fertility levels, best production is obtained with high levels of nutrition. It can be grown on level land in orchards, and on steep slopes up to 60 metres (2000 feet) above sea level as a soil conservation method.



is obtained by not applying a hormone until 6 weeks after the last application of a nitrogen fertilizer. In case it rains soon after a hormone application, it should be treated again.

### DISEASE AND PESTS

Fortunately there are no serious pests or diseases of the crop in Jamaica. Occasionally gummosis a gummy substance is noted, but is caused mainly by mechanical damage to the tissue of young fruits. Multiple crowns may occur occasionally, but this is not serious and the cause is not known. These crowns should not be used as planting material. Mealy bugs *Dysmicoccus sp* attended by a biting ant *Solenopsis geminata* can be a problem mostly in weedy overpopulated fields. These can be controlled by spraying with a contact pesticide such as malathion, diazinon or sevin.



### MATURITY AND REAPING

Pineapple fruits take between 6 to 8 months from flowering to maturity. However, with chemical forcing, this time may be shortened. Fruits may be reaped from the fit-green stage to half-ripe depending on market demand. They can be twisted from the fruit stalk or cut with a short piece of stalk attached. Colour change starts from the fruit base and moves toward the top. Reaped fruit should be kept in cool places. Those intended for the fresh fruits market should be packed upright in rigid crates to avoid squeezing damage. The crown can be kept intact or sometimes the leaflets are trimmed. Fruits for processing can be piled for transportation, but they should not be damaged or kept too long before they are processed. Undamaged mature green fruits can last for two weeks if kept in a cool place.



### PLANT NUTRITION

Organic mulch will not only control weeds and conserve moisture and the soil, but when it rots it will add plant nutrients as well as improve the soil structure. Good pineapple production is aided by the application of selected fertilizers. A soil analysis will indicate what the needs are and in what amounts they are needed. It is recommended that at the time of planting, about 100 gm (3 ounces) of NPK 16-19-18 or 16-5-19 is added to the planting hole and properly stirred in the soil. Three months after planting about 100 gm (3 ounces) of nitrogen alone should be applied to each plant, placed in the soil above the root. After six months of growth, 100 to 120 gm (3 to 4 ounces) of the recommended NPK fertilizer should be applied, and repeated every six months unless otherwise advised. The amount may be reduced with each ratoon, but allowing enough for fair production. Fertilizer may be applied as a foliar spray, broadcasted, or buried in the soil. The latter is strongly recommended for plantings on the slope. Iron is an important trace element in pineapple production. It is applied by spraying the leaves at the rate of 4.5 kg (12 pounds) of ferrous sulphate in 550 litres (150 gallons) of water. It can be mixed with sulphate of ammonia at 9 kg (25 pounds) in the same 550 litres (150 gallons) of water and sprayed together at monthly intervals or less as recommended.



### HORMONE TREATMENT



Pineapple production especially for out-of-season markets, can be controlled (forced) by the use of chemicals known as hormones. These should only be used when the plants are well-grown and healthy, in order to produce acceptable size fruits. They include a mixture of ethylene in water, powder of acetylene or calcium carbide. In some areas the best result

### PLANT PROPAGATION

In Jamaica the crop is grown from three types of suckers. These are crown suckers produced at the top of the fruits, slips produced at the base of the fruit, and plant suckers produced at the base of a plant near the ground. Plant suckers produce fruits the quickest, usually within one year of planting. Slips take between 18 months and two years, and crown suckers take two years and more. A regular practice in pineapple production is to strip the lower leaves from the slips or plant suckers to expose about three rows of root shoots, dipping them in a fungicide to prevent root rots, allowing them to dry in the shade for a few days and then planting them in the field. For crown suckers, it is best to remove whatever fruit is left on them, but setting them and small slips in nursery beds for about a year before planting.



There are several pineapple varieties, but the most common ones in Jamaica are the red Spanish (cow boy), sugar-loaf, cheese and riple. The smooth cayenne was once popular here, but it has become very scarce.

### LAND PREPARATION

Various forms of land preparation can be used depending on prevailing conditions. Flat lands can be ploughed, harrowed and bedded. Sloping land can be forked and refined and ridges or beds made along the contour. On steeper lands, only the planting holes should be dug (minimum tillage) along the contour, and the plants set in single or double rows, with adequate space between the bands.



Pineapple suckers are usually free from nematodes and insect pests, but these and some diseases can attack them in the field.

Where an examination shows the presence of damaging organisms, it is best to treat the soil before planting. Various nematocides, fungicide and insecticides are available for this purpose. They should only be used where necessary, in recommended dosage and by the proper method.

### FIELD LAYOUT

Field layout is influenced mostly by the slope. On level land and new fields, the area may be arranged in straight beds with convenient intervals or roadways and waterways. Usually the beds are made to



accommodate two rows of plants with adequate space between to allow for easy access and cultural practices. Allowance is made to set the plants 30 to 35 cm (12 to 14 inches) along the row, the rows lined 50 to 60 cm (21 to 24 inches) apart, and each pair of rows 130 to 150 cm (54 to 60 inches) apart. On hillsides this spacing or a little wider either way, can be done along the contour, with the intervals or roadways and waterways also lined along the contour. It will also be necessary to protect the gullies.

### PLANTING

Plants of a single variety and of uniform size should be set out in a plot of land. Only healthy suckers should be used. The weak ones should be destroyed or set in a propagation bed for later selection. The suckers should be set in rows, evenly spaced, and the soil pressed firmly around them. They should not be placed too deep for soil to get between the leaves or too shallow for them to fall over. In cases where plastic mulch is used, the plastic should be laid over the beds first and holes punched in it to accommodate the plants.



A proper planting schedule allows for one plant crop and not more than two ratoons (plants growing from the origi-

nal planting). As mentioned under plant propagation, the best suckers are the plant suckers, derived from near the ground level. By the second or third ratoon, these suckers are produced further up the plant, and unless they fall over, these suckers will not be near enough to the ground to develop adequate roots for good production. Unless the crown or slips suckers are deliberately set into the ground, they will not develop into good plants.

A recommended practice is to select crown suckers and slips from each planting, set these in nursery beds, and when large enough, use them to establish new fields.

### MULCHING

As mentioned before, plastic can be used as mulch. Other suitable materials include dried vegetation of any sort (weed leaves, small branches) paper, bagasse, and sawdust. The organic mulch helps to control weeds, conserve moisture, add organic matter and is excellent for soil conservation.

### WEED CONTROL

Weeds can be a problem in pineapple production as the spines on the pineapple leaves are sharp, dislodge easily and can cause severe pain. Mulching helps to reduce weed infestation. There



are special tools like push hoe and wheel hoe with long handles which can be used to remove weeds among plants and in the intervals. Great care is necessary in using these tools so as not to damage the shallow growing roots. Several herbicides including Diuron and Gesapax Combi are now available for weed control in pineapples, but these should be used carefully.