

a flaking procedure developed at North Carolina State University.

Sweet potato chips are in the advanced stage of development at North Carolina State University. This product shows promise of becoming a highly desirable snack food similar to potato chips.

At this stage, the postharvest problems of sweet potatoes probably require more attention than any other single area of this crop. The education of handlers and consumers is needed to promote proper handling and storage conditions (especially temperatures) for enhanced

sweet potato quality maintenance and further reduction of losses.

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Sweet Potato Production in Hawaii

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This paper describes the general cultural practices of sweet potato production in Hawaii. Presented are cultivars grown, method of planting, fertilizer application, pest control, harvesting, and factors contributing to increased yield.

There are two types of sweet potatoes (*Ipomoea batatas*) grown for the market. The type referred to as sweet potato in Hawaii is dry-fleshed with white to pale yellow or purple flesh and is used mostly for boiling or frying. The other type, popularly called "yam," is moist-fleshed with orange flesh and used mostly for baking.

The sweet potato is grown all year round and is planted on all islands, with 71% being grown on the island of Oahu. Approximately 20 ha of sweet potato are harvested yearly with a production of 373 tons. Data for sweet potato production in Hawaii from 1965 to 1974 can be found in "Statistics of Hawaiian Agriculture, 1974." Approximately 246 tons of sweet potato are imported to the state of Hawaii annually from the United States mainland.

Cultivars

There are dozens of native clones of sweet potato in Hawaii. Many of these clones are still grown to a limited extent. Kona B is the best-yielding baking or yam-type sweet potato, whereas Waimanalo Red is the earliest, best-yielding, highest quality dry type. Other moist

type cultivars are Iliula and Onolena, whereas other dry-type cultivars are HSPA-3, Miyashiro, and Kaneohe Red. All of the cultivars mentioned above are of local origin except Waimanalo Red, which was introduced from Okinawa.

Planting

The sweet potato is propagated by means of tip cuttings in Hawaii because planting materials are available throughout the year and tip cuttings are relatively free from vine borers and diseases. The cuttings are about 8-12 inches in length with all except two or three of the terminal leaves removed from the vine.

The cuttings are planted at an angle with two-thirds of the stalks covered with soil. They are spaced 6-12 inches apart in the rows, with rows set 3 ft apart. Close spacing of plants in the rows encourages the development of roots that are of the best shape and size for the market. Wider spacings tend to produce extra large roots that are a lower grade and thus fetch a lower price.

Fertilizer Applications

A fertilizer with a medium amount of nitrogen and phosphate and a great amount of potash is best. Rates (kg/ha) of fertilizer recommended are: N 40-50, P₂O₅ 70-110, and K₂O 70-110.

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Weeding

Weeds are controlled with the use of herbicides such as diphenamid and dacthal. Once the vines close in, weeds are no longer a problem.

Insect Control

The insects that most commonly attack sweet potato are: weevils, stem borers, and red spider mites. There are two types of weevils. One is a small, grayish type known as the West Indian sweet potato weevil (*Euscepes postfaciatus* Furr) and the other is a larger metallic blue-coloured weevil, with an orange-coloured thorax called Cylas sweet potato weevil (*Cylas formicarius elegantus* Sum). Control of the weevils is by dipping the cuttings in diazinon before planting, by rotation of the crop, and by spraying with diazinon. Stem borers are controlled by spraying with diazinon and mites by sulfur dusts or sprays.

Disease

Diseases of sweet potato are usually not serious in Hawaii because most of the plantings are done by disease-free tip cuttings. In some areas, leaf scab caused by *Sphaceloma batatas* has caused abandonment of sweet potato plantings. No control of this disease is known.

Harvesting

Sweet potatoes are ready for harvesting 4–6 months after planting. The vines are usually cut at the base and either removed or rolled over into the aisles before digging, usually with a middlebuster (double moldboard plow) or,

on a smaller scale, with a spading fork or 4- to 6-pronged potato hoe.

Factors Contributing to Increased Yield

Cultivar Improvements

Introduction and the polycross method of breeding have been used successfully in Hawaii. The primary objectives of the breeding program are high yield, early maturity, red skin colour, and minimal vine growth. Recently, high carotene has become another goal.

Cultural Practices

Aside from the use of improved cultivars, the adoption of improved cultural practices has played a significant role in the steady increase of sweet potato yield. These are: (1) better use of fertilizer; (2) timely irrigation in nonirrigated fields; and (3) better control of the sweet potato weevils (*Cylas formicarius elegantus* Sum and *Euscepes postfaciatus* Furr). Further improvements in yield may be attained through: (1) reducing the growth period of 5–6 months to 4–4.5 months (the incorporation of early maturity with other horticultural characteristics is one of the goals of the breeding program); and (2) mechanization of most production phases (because of increased costs and shortage of labour).

Joint efforts among plant breeders, phytopathologists, entomologists, agricultural engineers, and economists are necessary to ensure the progress of sweet potato production in Hawaii.

IBPGR and FAO Programs for the Collection of Crop Germ Plasm and its Long-Term Conservation

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FAO's program in genetic resources started in 1961. Advised by the FAO Panel of Experts on Plant Exploration and Introduction, standards and procedures for long-term conservation of base collections were proposed in

1975 that included recommended condition for storage of "orthodox" seeds. Institutions that maintain "base" or "active" collections were determined by an FAO survey. Many of these institutions are willing to provide space for international storage. However, regions that have few stores of base collection standard include Africa, South and Southeast Asia, and Meso-America. Ideally, "orthodox" seed, stored ac-

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