

## Project Coordinator

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## SWEET POTATO CULTIVATION GUIDE



# Sweet Potato Cultivation: Useful Facts

## Climatic Conditions

Sweet potato requires both warm days and warm nights for a quality and quantity yield. Moist tropical environment of the islands with favorable abundant rain is suitable for cultivation throughout the year.

## Soil Characteristics

To obtain maximum yield and better quality roots, well-drained soil is essential. Sandy-loam or slit-loam soils are best for growing sweet potatoes. Poor surface drainage and poor internal drainage will result in high moisture content and poor aeration, which will affect both quality and quantity of the yield. Poor surface drainage may cause wet spots while poor internal drainage could lead to large, misshapen, rough skinned cracked roots.

## Field Preparation

It is ideal to prepare field at least two weeks before planting. The field should be cleared of trees, shrubs and grasses. It should be then dug 15-20 cm deep with a roto-tiller. Since the Micronesian islands have only 10-15 cm topsoil, it is highly recommended to prepare beds for sweet potato cultivation. 20-25 cm high ridges are made spaced 150 cm apart. For making a 90 cm wider bed, 30 cm soil from each side should be lifted and placed on the bed to achieve required ridge height. The ridges should be allowed to settle for 7 days and then the tops should be flattened.

## Preparation of the Planting Material

To avoid disease transmission through roots and facilitate the availability of required number of plants, slips (transplants) should be used as planting material. These slips should be taken from hardened micropropagated plants that should be maintained in pots filled with mixture of fine sieved sand and compost in nursery cum greenhouse. Slips of 25-30 cm length with at least 5-6 leaves should be cut and planted immediately in a newly prepared field in case of local plantations. However, 1-2 days old slips that are packed carefully and kept moist could be used for outer island plantations.

## Planting

Plants should be set 30 cm apart in the row with one third of the basal portion covered with the soil. The plants

should be watered immediately to establish good soil-to-root contact. A starter solution (1-2 tablespoons of low-analysis fertilizer such as 12-12-12 nitrogen, phosphorus, and potassium per 4 liter of water) could be used to water the plants.

## Fertilizer Application

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 more profitable and prevents too rapid growth. Considering the poor, nutrient deficient nature of the island soils, it is ideal to make first application of compost (5-7 cm layer all over the bed) along with fertilizer 5-10-10 (nitrogen, phosphorus, and potassium, at the rate of 1.25 kg per 30 square meter), two weeks prior to planting time, and few centimeters under the ridge. Application of only inorganic fertilizer is not rewarding because of porous texture of island soils. Sweet potato requires only moderate amounts of nitrogen. Excessive nitrogen amounts may result in vigorous vine growth leading to cracked, misshapen roots of poor storage quality. To ensure good yield, second dose of compost (15 kg per 10 linear meter) and fertilizer 5-10-10 (nitrogen, phosphorus, and potassium; 400 gm per 10 linear meter) should be applied to both sides as side dressing with a distance of 15-20 cm from plants when plants attain an age of two weeks and fresh growth has begun.

## Weed Control

Manual weeding could be done for initial 1 month and after this period; weeding is hardly needed since the vines cover the ground surface. If sweet potatoes of more than one variety are planted in the same field, to prevent mixing of the varieties vines are lifted to their original ridges, whenever the need arises.

## Insect-Pests and Diseases

Three to five year rotation cycle is recommended to prevent soil-borne pathogens. Farmers are encouraged to use disease free planting material, such as slips from micropropagated plants and are advised to inspect transplants and/or roots for disease symptoms (soft rot, dry rot, discolored lesions) and should discard all diseased planting material. Cultivation of different varieties in a single farm also restricts the occurrence of insect-pest and diseases. Sweet potatoes in Micronesia have few insect-pests. The most common are sweetpotato hornworm, *Agrius convolvuli* (Linn.); sweetpotato blue moon butterfly caterpillar, *Hypolimnas bolina* (Linn.); and sweetpotato tortoise beetle, *Metricona circumdata* (Hbst.).

## Harvesting

Harvesting should be usually done 5-6 months after planting to obtain maximum yield, although smaller storage roots could be harvested up to a month earlier. Delayed digging is not advisable

since excessive moisture of the wet soil can prevent digging injuries from healing eventually leading to decay of the roots. Digging should be done to remove the soil around the plant and expose the storage roots, which should be then pulled out gently avoiding skinning and bruising, otherwise, wounds can become easily infested with microorganisms. Harvested roots should be kept in baskets lined with rags to avoid scratching the roots. Roots should be allowed to dry and cure before removing excess soil to prevent damages in freshly dug sweet potatoes. Since, sunlight for over an hour can cause sunburns; the roots should be picked up simultaneously as they are dug.

## Curing

Curing is essential to heal the wounds and improve the taste. After removing the excess soil, storage roots should be covered with newspaper to maintain required high humidity (85-90%) and should be packed in boxes. The boxes should be kept in shaded areas for 2-3 weeks where temperature should be maintained between 18-24°C.

## Storage

Only sound, whole roots that are free from disease and insect-pests are advised to be stored for long-term use. Framers are advised to wrap cured sweet potatoes in the newspapers and store them in a closet in which temperature should be between 13-16°C as sweet potatoes are subject to chilling injuries below 10°C. Out door pits are not ideal for storage due to dampness that becomes more aggravated in islands due to frequent rains.

(Reference: International Potato Center, Peru)

