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Plant Propagation Techniques for UBI

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Plant propagation is the art, science and business of multiplying plants to increase the number of outstanding fruit and crop varieties in order to perpetuate their desirable qualities such as high production, large fruits, and excellent eating quality that command better market price.

Ways to propagate plants

- **Sexual** – use of seeds (for papaya, mangosteen and for root stock for asexual propagation)
- **Asexual** – use of plant parts other than seeds. It does not involve exchange of genetic material, so it almost always produces plants that are identical to the parent.

Advantages of asexual propagation

- Plants are true-to-type
- More rapid means of producing planting materials for crops such as cassava, sweetpotato, and other root crops
- Plants start fruiting at a shorter time and mature into smaller trees, hence easy to manage (e.g., grafted fruit trees)

Asexual propagation methods for root crops

- **Divisions** – specialized or modified stems and roots are cut into pieces or sections, each with a growing point or bud.
- **Micropropagation or tissue culture** – a tiny piece of bud, leaf or stem that can produce incredible numbers of new plants in a small space in a short time using technical advances, specialized equipment, and sterile laboratory conditions.
- **Cuttings** – structural parts in detached vegetative parts such as stem cuttings, leaf cuttings, root cuttings, softwood and hardwood cuttings that can be regenerated.

Division of Ubi Tubers for Propagation

Ubi (*Dioscorea alata* L.) or water yam is grown primarily for its roots or tubers. It is a vine which produces both aerial tubers, called bulbils, and underground tubers or roots. The tubers can be eaten boiled, baked, or roasted, and can be processed into powder, flakes, or chips. Yam slices can be dehydrated or placed in heavy syrup for the preparation of food such as ice cream, cakes, pastries and other dessert; and the ubi skin or peeling can be used as a raw material for the manufacture of food coloring. The bulbils, on the other hand, are used as planting materials.

Bulbils will come out of the leaf axils 3 months after planting. They weigh a few grams to over a kilogram while the underground tubers harvested 6 months after planting weigh from 1 kg to 6 kg.

The ubi tuber has 70% moisture and 28% starch. It also contains traces of fat, crude protein, sugar, crude fiber, ash and Vitamin C, B1, and B2.

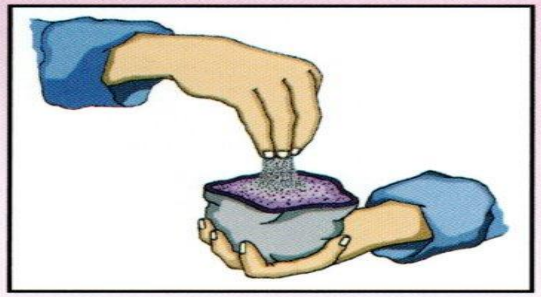
SOIL AND CLIMATIC REQUIREMENTS

- Ubi thrives anywhere in the Philippines and in a wide range of soil types and elevation. It thrives best in fertile and sandy loam or silt loam and well-drained soil at temperature ranging from 25°C to 30°C.
- It can tolerate adverse conditions such as droughts and pest infestations.
- It needs ample moisture throughout the growing season. It can be grown anytime of the year, but for best results, planting should be done at the beginning or just after the rainy season when it can obtain all the moisture it needs for growth.
- Photoperiodism greatly encourages crop development. A short-day length is favorable for tuber growth while a long-day length is ideal for vine growth. High light intensity is generally required in growing ubi.

NURSERY ESTABLISHMENT

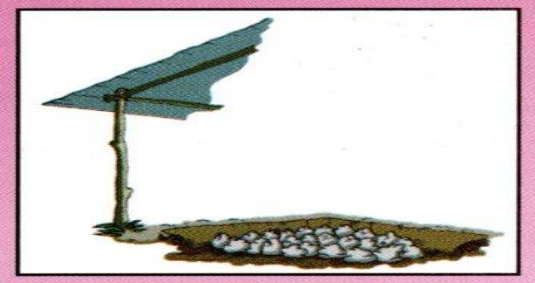
A nursery can be established to pre-sprout selected plants more rapidly.

Preparing setts/planting materials

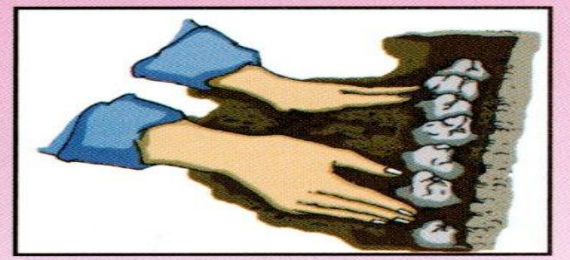


- Collect tubers from healthy plants.
- Divide or cut large tubers into pieces (60 g to 250 g each) and separate them into setts: head, middle, tail and whole. Smaller tubers that weigh less than 60 g are planted as whole.
- Each sett should have enough skin area.
- Treat cut sides of setts with ash or fungicide to protect them from disease-causing organisms.
- Air or sun-dry the setts until the cuts are dry.
- Pre-sprout or plant directly the setts after drying.

Preparing pre-sprouted setts for planting

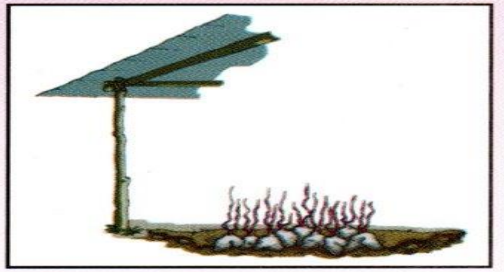


- Dig a shallow ditch in a shady area or clear the ground in a shady area by removing stones, weeds and debris.
- Place setts side by side in the presprouting bed.
- Group setts according to type. Plant setts either skin up or skin sideways. Plant whole tubers (60 g to 250 g) either crown up or crown side ways.
- Cover the setts with a thin layer of soil.
- Sprouts emerge from setts about 31/2 weeks after planting. Pre-sprouting the setts before they are planted is recommended to minimize weeding expenses before sprout emergence.



- With pre-sprouted setts, planting may either be staggered or done at one time. However, planting time depends upon the time tuber dormancy is broken and the start of rain in the area.

Care of plants



- Water the pre-sprouting bed at least once a week until most of the setts have sprouted.
- Remove setts that have sprouts from the pre-sprouting bed to prevent them from having too long/overgrown sprouts.
- Place the sprouted setts on a platform in a shady area.