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SWEET POTATO: Its classification and description

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CLASSIFICATION

Family	: Convolvulaceae
Genus	: Ipomoea
Species	: batatas
Scientific name	: **Ipomoea batatas** (L.) Poir

COMMON NAME : Sweet potato
LOCAL NAMES : "Kamote" (Bisaya), Kamoteng baging (Tagalog), Wakay (Batanes)

DESCRIPTION

The sweet potato which is a spreading and prostrate herbaceous plant is a native of tropical America. It is cultivated in most warm countries and is grown extensively throughout the Philippines.

ROOT

From the standpoint of function, the root system consists of two types: absorbing and fleshy or storage.

When sweet potato is propagated from vine cuttings, adventitious roots emerge from the nodes after a day or two. These roots grow rapidly and form the initial fibrous root system of the plant necessary for growth and development. Some roots develop into tuberous form while others remain fibrous and wiry (Fig. 1).

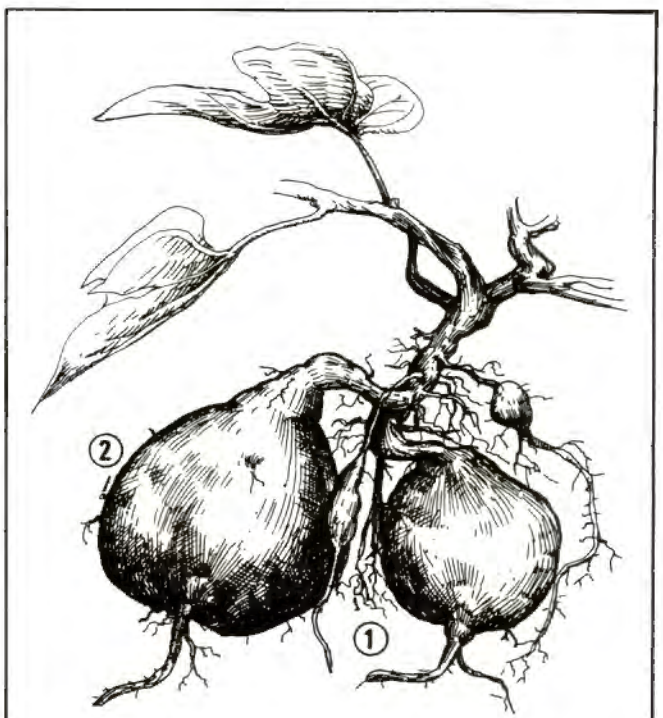

Fig. 1. Types of roots (1) fibrous (2) tuberous

Roots vary in shape and size according to the variety and the type of soil where the plant is grown. They may be (1) spherical (round or ball-shaped) (2) cylindrical or spindle-shaped (fusiform) (3) carrot-shaped or triangular (napiform) and (4) elongated (Fig. 2). The roots are attached by a stout stalk to the stem of the plant. The color of root skin as well as root flesh ranges from white, cream, yellow, peach or golden, reddish orange, pink, dark purple and violet. The root surface is covered by a thin corky layer and may be smooth or irregularly ribbed or ridged.

STEM

Sweet potato has two types of stems: one that is long with thin stems which trail along the soil surface and another with short, thick stems and internodes with semi-erect growth habits. The length of the vine ranges from about one meter to over six meters depending upon the variety. The stem whose surface may be glabrous (smooth) or pubescent (hairy) is circular or slightly angular in cross section. Its color is predominantly green but there are varieties with purple stems and purplish pigmentation.

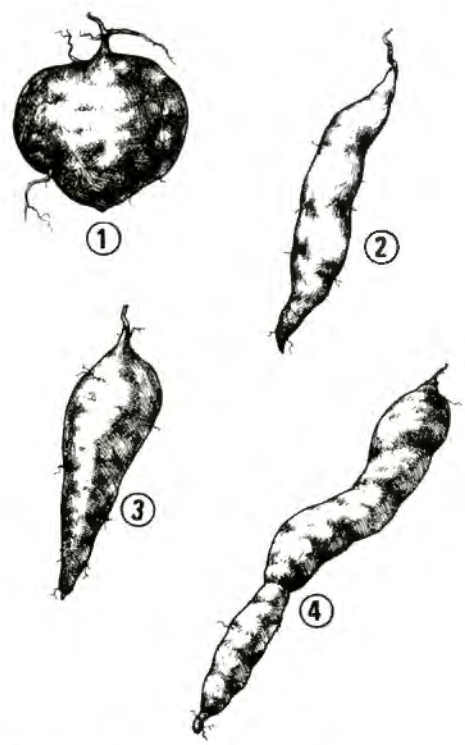

Fig. 2. Tuber shapes **(1)** round **(2)** fusiform **(3)** napiform **(4)** elongated

LEAF

The first leaves are cordate while those formed later may be hastate, cut or lobed. This implies that leaf shape varies with the age of the plant. Leaves are very variable in color and the degree of purple pigmentation. In some varieties, the leaves are purple when young, turning green towards maturity. Leaf color is yellow, green or purple with different vein colorations on the upper and lower leaf surfaces.

The leaves are arranged spirally in a pattern of 2/5 phyllotaxy along the stem supported by long or short petioles exposing the leaf lamina to the sunlight. The petioles vary in length, thickness, color, and degree of erectness according to the variety. Leaf size and degree of hairiness differ among varieties. Varieties with thick stems usually have thick but not always long petioles, whereas varieties with thin stems have relatively thin and usually short petioles. The leaf lamina is extremely variable in size and shape.

The leaves are cordate, lobed, deeply-cut or parted (Fig. 3).

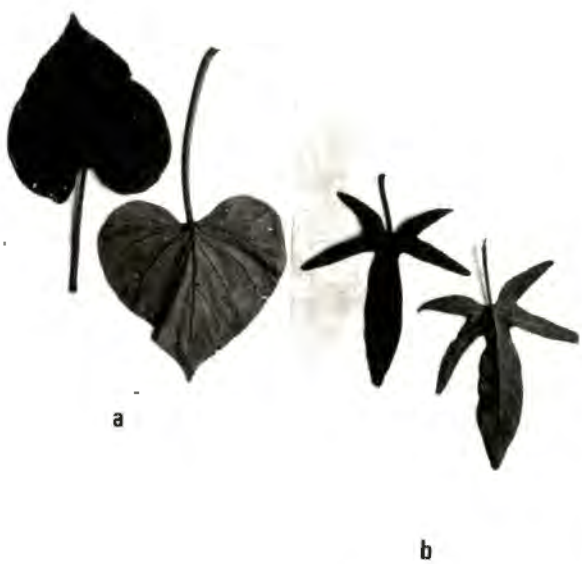

Fig. 3. An entire leaf (A) and deeply lobed leaf (B) showing marked differences in leaf shapes

FLOWER

Flower formation may be solitary or cymose. In general, the primary, secondary and tertiary flower buds are borne on relatively thick erect axilliary peduncles. The secondary buds are formed within bracts of the primary buds and the tertiary buds are formed within the bracts of the secondary buds.

Each flower bud has 5 sepals, 5 petals, 5 stamens and a compound pistil. The sepals which are about 1 cm long, greenish and leaf-like with acuminate lobes, remain attached to the floral axis after the petals have withered and fallen.

The petals are borne on the edges of the axis of the floral primordium and are united forming usually pink throated trumpet-shaped corolla. The corolla is about 4 to 5 cm long, pink-purple and whitish. The stamens which are attached to the corolla independently vary in height with reference to the stigma, depending on the variety and genotype (Fig. 4). They bear round pollens with minute papillae on their surfaces. The compound superior pistil consists of 2 carpels and each carpel contains 1 locule which in turn contains 1 or 2 oval ovules. The style is relatively short while the stigma is relatively broad with elongated epidermal cells called papillae.

Sweet potato varieties differ in flowering habits. Some are non-flowering while others flower sparsely or profusely.

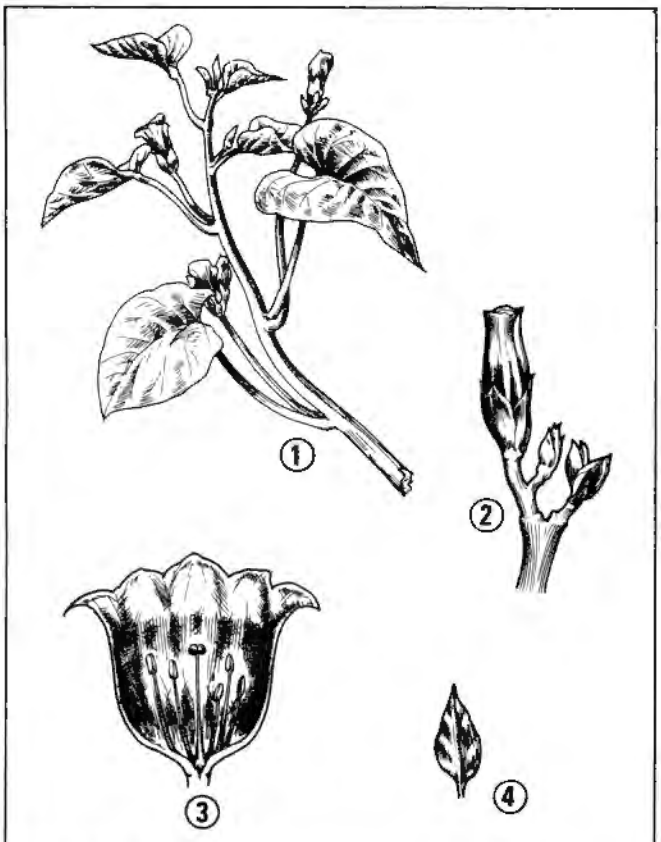

Fig. 4. Flower buds (1) are borne on the axilliary peduncles. (2) Primary, secondary and tertiary buds (3) a cross-section of a flower showing the pistil and five stamens which are very much shorter than the style (4) leaf-like sepal

FRUIT

The fruit is a relatively small, hairy or non-hairy two-loculed ovary called a capsule (Fig. 5). False septa may divide the locules so that the fruit may appear as a 4-celled, 4-valved capsule with a seed in each locule. It is a glabrous or hirsute dehiscent capsule 5-8 mm long.

Fig. 5. The sweet potato fruit is a small, hairy or non-hairy two loculed ovary called a capsule.

SEED

The seed is about 3.0 mm wide (Fig. 6) flat on one side and convex on the other. In general, the coat is hard and corneous, and apparently, almost impervious to water and/or oxygen. If the coat is scarified either mechanically or by concentrated sulfuric acid and the seeds are immediately exposed to favorable conditions (temperature levels, water and oxygen for germination) prompt and rapid growth of the embryo takes place.

Fig. 6. The sweet potato seed is small, hard and corneous. It is flat on one side and convex on the other.

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