HORTICULTURE NOTE NO. 24

HOW TO ESTABLISH A VEGETABLE NURSERY

John W. Sowei, Agronomist, Department of Agriculture and Livestock,
Laloki Agricultural Research Station, P O Box 417, KONEDOBU. N.C.D.

ABSTRACT

Most introduced vegetables need proper care and attention especially during nursery establishment. Usually small vegetable seeds have to be raised carefully in the nursery to obtain healthy seedlings before transplanting. This can be achieved through the use of proper nursery techniques which most vegetable farmers should acquire. The basic principles are outlined in this horticulture note and should provide a useful guide for commercial and backyard vegetable farmers, educationists and food crops extension workers serving throughout Papua New Guinea.

NURSERY ESTABLISHMENT

The key to successful vegetable farming is for the farmer to be able to raise healthy seedlings in a nursery before transplanting. Remember that a healthy plant has a better chance of surviving adverse environmental factors such as moisture stress, pests and diseases.

Vegetables grown from seeds can either be direct seeded or transplanted into the field. Usually vegetables with small seeds such as tomato and eggplant have to be raised in the nursery and transplanted te the field. Watermelon and pumpkin for example can either be planted direct or transplanted.

POTTING MIX

Most soils, for example in Central Province contain large proportion of clay. This is obvious because when the soil is wet it is very sticky and becomes very hard when dry. Therefore to prepare a good potting mix, a first hand rule to follow is to mix 3 parts soil to 1 part fine sand. If pure chicken manure is available mix 1 part chicken manure to 20 parts soil/sand mix. Chicken manure should be fermented before using in the potting mix. This can be done by putting fresh chicken manure into a heap, then add some water and cover with leaves or empty bags and leave for 1 week. If chicken manure is not available than use garbage ash. Sandy loam soils are suitable for use as potting mix, remember also to add fermented chicken manure or ash.

The soil can be sterilized by steaming in a half 44 gallon drum split lengthwise. Fill the drum with potting mix, put some water to make the soil moist. Light a fire underneath and the soil should be ready within 2 hours. To be sure if the soil has been sterilized properly, put some sweet potato tubers into the soil before lighting the fire. The soil has been sufficiently sterilized once the tubers are cooked. This method is used to kill unwanted organisms, fungal spores and weed seeds.

However, seedlings have been raised successfully without sterilizing the soil in Central Province by farmers in the Tubusereia area. The soil was collected from virgin land.

GERMINATING SEEDS

Single jiffy pots, plastic pots or vegetable nursery trays can be used to germinate seeds. Seed boxes can be used also but one disadvantage is that if seedlings are pulled incorrectly from the seed box during transplanting, roots may be damaged and seedlings are likely to suffer transplanting shock and may not grow well. A pot enables the seedling to be tipped with the soil intact, therefore minimizing root damage during transplanting. Before sowing, soak the seeds overnight in water and plant the next day. For most transplanted vegetables, plant only one seed per pot or in a single spot in vegetable nursery trays. Recognized seed companies have guaranteed germination percentage (>80%) for most vegetables but three seeds may be required per pot for some vegetables such as tomatoes. Thin two seedlings and leave the healthy looking one if all three seeds germinate. After sowing keep the potting mix moist by watering once every day in the afternoon. The

seeds should germinate within 2 to 4 days after sowing depending on the type of vegetables.

NURSERY SHADE

A simple nursery shade can be constructed using available bush materials. Farmers who can afford nursery shade cloth should use a light type (40%) to protect young seedlings from excessive heat and dehydration. If heavy shade cloth (50-75%) is used, seedlings may have to be hardened for one week before transplanting. Hardening is the process by which young seedlings are gradually exposed to the sun by removing the shade cloth or putting the seedlings out in the sun during the day. The process prepares the young seedlings to adopt to field conditions after transplanting.

WATERING

A watering-can should be used to water seedlings, usually once every day in the afternoon. However, the frequency of watering will depend on the type of soil used in the potting mix. Too much water can cause "damping-off", a soil born fungal disease of young seedlings. Stop watering two days before transplanting. By doing this the young seedlings are temporarily deprived of water so that once water is made available after transplanting, more roots will grow and the seedlings will establish quickly in the field.

WHEN ARE SEEDLINGS READY FOR TRANSPLANTING

As a common rule, most vegetable seedlings should be ready for transplanting after five full leaves have developed, usually between 15 to 30 days after sowing depending on the type of vegetable. A temporary shade of coconut fronds or other material may be required to protect the seedlings after transplanting from excessive heat and dehydration for the first few days, but this is usually not necessary.

PEST AND DISEASE CONTROL

Spraying with broadbase insecticides and fungicides may be required to protect young seedlings against pests and diseases while in the nursery. This may be applied once or twice depending on the situation during nursery establishment.