

PRODUCING AND SAVING YOUR OWN VEGETABLE SEEDS

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INTRODUCTION

There are many reasons why people should learn how to grow their own vegetable seeds. It is easy to learn how to produce seeds of high quality at low cost. Another reason is that the seeds from one tomato or two cobs of corn will produce enough plants for a backyard garden. Also, in Papua New Guinea commercial seed supplies may be unreliable. By saving your own seeds, gardening need not be interrupted. Learning how to grow seed for just one or two vegetables is a start.

For seed production there are two main groups of vegetables: tropical and temperate. Both can be grown here for eating, and seeds of tropical vegetables can easily be produced. However seeds of the temperate group of vegetables (including English cabbage, cauliflower, radish, carrot and bulb onions) cannot normally be produced in Papua New Guinea. They must be imported from overseas.

POLLINATION

In order to succeed in producing seeds, the pollination of each vegetable must be understood. There are two types of crops: those that are self pollinated and those that are cross pollinated.

Beans, lettuce and tomatoes are self-pollinated vegetables. They have complete flowers containing both male and female parts. Self-pollination occurs when the pollen of a flower fertilizes the same flower or another flower on the same plant.

Cross-pollination occurs when insects or wind transfer pollen from the flower of one plant to the flower of another. Vegetables such as pumpkin, cucumber and corn are pollinated in this manner. These vegetables have incomplete flowers with only male or female parts but not both.

A few crops such as Pak choy and mustard greens have complete flowers, but they need to be cross pollinated before they set good seeds.

(1) Self pollinated vegetables

Sometimes self pollinated vegetables can be cross pollinated by a different variety of the same vegetable grown close by. When you are saving seeds

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Female and male flowers of pumpkin

it is a good idea not to grow two varieties of the same vegetable together.

Self pollinated vegetables from which seed can be saved in the tropics include lettuce, tomato, capsicum, eggplant, okra and all the legumes (beans and peas). However dwarf and climbing french bean seed saved here is usually of poor quality.

(2) Cross pollinated vegetables

The cross pollinated crops must be well separated to prevent variation. Do not try and produce seed for more than one variety of a cross pollinated vegetable at a time. With cross pollinated crops at least two good parent plants are needed to produce seed. If some of the plants are not good, they must be removed before flowering so they do not cross pollinate with good plants. If you do not remove them you will not produce a good type of seed.

Some cross pollinated vegetables and their method of

pollination are listed below:

<u>VEGETABLE</u>	<u>HOW POLLINATED</u>
Pak choy	insect
Pumpkin	insect
Cucumber	insect
Watermelon	insect
Melon	insect
Corn (maize)	wind
Amaranthus	wind

PLANT SELECTION

The most important step is to choose the best plants to save for seed.

The qualities listed on page 3 should be considered. To decide which plants are best, look at them carefully right through the growing season. It is better to choose seed from a plant which has produced many large and healthy fruits than from one which has produced just one very large and healthy fruit.

Qualities to look for when
selecting parent plants

- Vigorous plant
- Less disease
- Early bearing
- Good size
- Long storage life
- Good to eat
- Less insect attack
- Good yield
- Late in going to seed
(Pak choy, lettuce)
- Good colour

SEED COLLECTION

After selecting plants from which seed is to be saved, it is a good idea to mark these plants so that they are not harvested by accident. The next step is to choose the correct time to harvest the seeds. Seeds harvested too early will be thin and light in weight. They will be more likely to germinate poorly, produce weak seedlings, and deteriorate quickly in storage.

The fruit or pods must be well ripened when picked, but not so old that they rot or blow away.

In the tropics it is better to collect seed in the dry, rather than in the wet season. This avoids many disease problems. It is also a good idea to collect the seed on a dry, sunny day after the dew has evaporated. Seeds should be labelled as soon as possible after collecting to avoid mixing them up.

Seeds of beans, okra and other crops which produce seed in pods are picked when they are ripe, shelled, dried and then stored. An exception is peanut

which is better stored in its shell until sowing.

With corn it is important to save the cobs from several plants. Shell the cobs and mix the seed before storing it. If you only save the cob from one corn plant the crop will not be as good the next time you grow it.

For capsicum, tomato and eggplant it is best to select only one or two good plants and save the fruit from them for seeds. Choose ripe capsicums, cut open the fruit, scrape out the seed, and dry.

Tomato seed is obtained by squashing soft ripe fruit into a jar. Leave the pulp to ferment in its juice, stirring occasionally. Two to three days later fill the jar with water, stir then allow the seeds to settle to the bottom. Carefully pour off the water containing the flesh. Repeat several times until all the flesh is removed. Carefully drain off most of the water, or pour through a piece of mosquito netting. Dry the seeds on newspaper or clean, dry river sand.

For eggplant, choose well ripened fruits and squeeze them to soften the flesh. Cut the fruit into sections longways. Scrape out the seed into a jar of water. Like tomatoes, the seed will settle and any flesh will float.

Cucumbers and pumpkin must be left on the plant until the fruit is fully ripe. By that time cucumbers will be yellow and pumpkins yellow-orange or grey. The cucumber is cut longways and the soft flesh containing the seeds is scraped from the fruit and left to dry. When it is dry rub it between your hands and separate the seed from the old flesh.

After harvest, the pumpkin should be scored in a cool, dry place for 2-4 weeks to allow the seed to mature before it is scraped out and dried. Fresh pumpkin seed has a very low germination rate.

Lettuce and amaranthus seeds are produced in small heads. The seed is picked when ripe, dried and rubbed between your hands to separate out the stems. Winnowing will remove the rubbish.

F₁ HYBRIDS

Some vegetable seeds sold by commercial firms are labelled hybrid or F₁ hybrid. These seeds have been produced by crossing two different parent lines. Crops from these seeds are often better than from ordinary varieties.

Hybrid seed only comes true during the first generation. If you save seed from your crop and then grow that seed (second generation) you will find that the new crop will be different and not as good as the original one from the bought seed.

In Papua New Guinea many cabbage and chinese cabbage varieties are F₁ hybrid, as are some watermelon and cucumber and a few tomato, eggplant and capsicum varieties. If the seed you bought is labelled F₁ hybrid, do not try to save seed from your crop.

Seed storage

Even while they are stored, seeds are still living. Well dried seeds kept in a cool place get old much more slowly than wet seeds kept in a warm place. Seeds should be well dried in a warm, windy place. After drying they should be hard when bitten between the teeth.

After drying put the seed in an airtight container. If it is available a refrigerator is best. But do not freeze seeds.

The treatment of seeds to protect them against insects is discussed in the following article by Mr. J. van Greve.

How long seeds live depends on the conditions of storage. Seeds stored at high temperatures in a damp place will go bad in a few months. However, under good conditions seeds can be kept for one to two years.

CONCLUSION

By raising and saving seeds and by careful choice of plants over several generations, crop selections will be produced which are best suited to the local climate and gardening conditions.

FURTHER READING

Grubben, A.J.H. (1978). *Vegetable Seeds for the Tropics*. Bulletin 301. Department of Agricultural Research, Royal Tropical Institute, Amsterdam.

Hartmann, H. and Kester, D.E. (1975). *Plant Propagation*. Prentice-Hall Inc., Englewood Cliffs, N.J.

Lorenz, O.A. and Maynard, D.N. (1980). *Knott's Handbook for Vegetable Growers*. John Wiley, New York.

Rogers, M. (1978). *Growing and Saving Vegetable Seeds*. Garden Way Publishing, Charlotte, Vermont, U.S.A.

U.S. Department of Agriculture (1961). *Seeds, Yearbook of Agriculture*. U.S.D.A., Washington, D.C.