

# Seed production

## Introduction



Keeping your own seed is central to your independence as a farmer. You can choose which crops you like and which varieties/ types of crop and you do not need to go to the shop to buy seed.

There are still many varieties of seed that farmers keep or that you can buy from a shop that you will be able to keep for yourself once you have grown the crop.

### Open pollinated vs hybrid crops

Originally all crops were **open pollinated**. Many plants propagate themselves using distinct male and female parts. Pollen from the male parts of flowers needs to reach the female parts of the flower. This pollination usually occurs through wind or insects of various kinds; but mostly bees.

Flowers can be **self pollinating**; when the male and female parts are on the same flower. Here fertilization takes place within each flower and does not depend on insects or the wind. A good example is beans, where the flower is fertilized before it even opens.

### SELF POLLINATED CROPS

green beans, cry beans, cowpeas, peanuts, peas, tomato and lettuce



Many vegetables produce separate male and female flowers on the same plant. **Cross pollination** then needs to happen with the aid of wind or insects. Pumpkins are an example. If you have two different types of pumpkin for example they will cross with each other. The seed that is produced will grow and produce a plant with a fruit that is a mixture of the two types of pumpkin you have grown. This happens with all cross pollinated crops.

### CROSS POLLINATED CROPS

Aubergine (eggplant), cabbage, carrot, chilli, green pepper, kale, leeks, maize, mustard greens, onions, spinach (Swiss chard),



**Hybrid crops** have been cross pollinated by humans in a controlled environment. These are crops that will NOT NORMALLY cross pollinate. This means that you can not keep seed from a hybrid plant. The seed will either be sterile or will produce many surprises. The plants grown from hybrid seed will not look like their parents and often are not very strong. You know that a packet of seed contains hybrid seed when it has a sign on it that says **F1**.

### Pollinators

Bees are the best pollinators of vegetables. As they fly around and collect the nectar (sweet juice) from the flowers of plants, pollen collects on the sticky hairs on their legs. When they visit the next flower some of this pollen is rubbed off and cross pollination occurs.

### INSECT POLLINATED CROPS

Aubergine (eggplant), cabbage, carrot, chilli, green pepper, kale, leeks, mustard greens, onions, spinach (Swiss chard),



Many grains (such as sorghum and maize), grasses (such as Napier fodder and sweet reed or imfe) and trees are dependent on the wind for pollination. Pollen picked up by the wind can travel vary far (many kilometres) on air currents before coming to a rest.

#### **WIND POLLINATED CROPS**

Beetroot, spinach (Swiss chard), amaranthus (imbuya)



## Harvesting seed

Seed should be carefully harvested. The seeds should possess the same quality as the variety that was planted. If you planted a long, purple aubergine, collect seed from a long purple fruit. If the fruit looks different, the seed will also be different.

You should harvest seed from at least 6 plants of each variety or type that you want to keep.

Keep the following in mind:

- Harvest seed only from strong, good looking plants.
- Harvest seeds from plants that look like the plant you want.
- Harvest seed only from healthy plants; if the leaves or fruit have rotten spots or a mottled appearance do not use these plants. These diseases are carried in the seed and will appear next time
- Do not harvest seed from plants that have bolted. Bolting is when the plant goes to seed much quicker than it normally should. It could be due to stress, such as hot and dry conditions, but is also inbuilt. So if you take seed from plants that have bolted you are selecting for a plant that bolts, or goes to seed very easily. This is important for crops such as mustard spinach and lettuce.
- Harvest the seed when it is ready. Immature seed will usually not germinate as it has not fully formed. Over mature seed tend to go rotten before you plant them
- Do not harvest seed that has been damaged by insects or in any other way. They can only germinate if they are whole and undamaged
- Do not harvest seed that have diseases, such as brown blotches or mould growing on them.

## How to know where to find the seed

Fruit contains the seed.

Some plants carry pods which contain the seed; like beans and peas.

3. Leafy crops like cabbage, lettuce, mustard spinach and Swiss chard will send out a stalk from the middle of the plant. The flowers and seeds will be produced on these stalks. Sometimes you will have to wait. Cabbage takes almost two years to produce seed.
4. Root crops like carrots; here the bulb will start to go woody and harder and send out a long stem on which flowers and seed will develop. This takes around 9 months; so you will need to be patient.
5. Root crops like beetroot; here a number of stems start to develop from where the leaves were growing. Flowers and seed form on the end of these stems. This takes around 9 months.

## How to know when your seed is ready

The fruit has a hollow sound and or is disconnected from the branch: Examples; pumpkins, cucumbers. For these fruits it also helps to leave the seed inside the fruit for several weeks after picking.

Colour, size and shape of fruit: Examples; tomato and chillis (red), aubergines (purple or yellow). Green peppers need to be left until they go red. They are immature when green!!!

Shattering of pods: Examples; beans, peas, cowpeas

Dryness: Examples; carrots, coriander, lettuce, swiss chard, cabbage (seed head goes brown and dry)

## Special cases for harvesting

Fruit; such as tomatoes and cucumbers. Here the seeds are encased in the flesh of the fruit and have a slippery jelly around them. This jelly needs to be removed before the seed will germinate. It is designed to go through the gut of birds and animals before being excreted. Then it grows. We can do this by fermenting the jelly off the seed.

Place the seed in a container. Cover with water. Add one to two tablespoons of sugar and stir until it is dissolved. Now leave this mixture for 3-5 days (NOT LONGER!!!). It should ferment and become a bit mouldy. Wash the seeds thoroughly. They should now be clear of their jelly covering. Dry them in a cool place and store in an airtight container like a glass jar.

## Storing seed

The length of time that seed can be stored depends on

- The seed type

- The quality of the seed
- The storage conditions.

Most seed can be stored for a period of 3-5 years and remain viable. **Viability** is the ability of the seed to germinate. Your seed may look perfect, but if it is not viable, it will not grow.

If you store your seed in hot, light (sunny) and wet conditions they will lose their viability very quickly. You may even not be able to plant them in the following season. They like cool, dark and dry conditions.

## Storage conditions

### **Moisture**

Even if the seeds are dry, if you store them in a damp environment they will absorb that moisture/water. This seriously affects how long your seeds will be viable.

Mostly we can only dry our seeds in the air. Do not dry them in the sun, but in a shady place where the air can move (ventilated). When the weather is very wet with a lot of rain and mist, it will be difficult to dry seeds, especially the larger ones like beans and peas.

The life of seed doubles when the moisture content is lowered by 1%

### **Temperature**

Seeds last longer in cold, but not freezing conditions. Choose a cool place such as near a river, under trees, under the ground or inside a clay jar.

The life of a seed doubles when the storage temperature is lowered by 5 °C.

### **Pests**

Storage weevils, fungi and bacteria shorten the life of seeds.

- Weevils begin to multiply when the moisture content gets high enough (10% or more)
- Storage fungi/ moulds begin to grow when the moisture content is high enough (around 13% or more) and bacteria start growing around (20% moisture). Mostly we cannot measure the moisture content of our seed. All we can do is keep our seed as dry as possible.

**Store your seeds in dry, clean, airtight glass jars or other airtight containers. AND LABEL THEM – Give them names!! By next year you will not remember what it was.**

Materials that stop the growth of pests can be used:

- Dry ash: this absorbs moisture inside the container and also prevents the growth and increase of weevils. Add ½ a kilogram of ash for 1 kilogram of seed.

- Lime; can be used in the same way as dry ash. Mix 15 teaspoons (50 grams) with every kilogram of seed.
- Cooking oil; mix cooking oil with your seeds to prevent increase of weevils. Use only 1 teaspoon of oil for every kilogram of seeds.
- Dried and powdered leaves of different aromatic plants; weevils are sensitive to aromatic or strong smelling plants. Try the following
  - CHILLI: mix 4-6 teaspoons of chilli powder with 1 kilogram of seed.
  - WORMWOOD (MHLONYANE): Dry and crush the leaves and mix with seed. Use 4-6 teaspoons for every kilogram of seed.
  - Aloe: As above.