Seed Saving Guideline No. 13

Cucurbits

Squash - *Cucurbita maxima, moschata & pepo*
Cucumber - *Cucumis sativa*
Melon - *Cucumis melo*
Watermelon - *Citrullus vulgaris*

Family: *Cucurbitaceae*

The cucurbits all have fleshy fruits surrounding large seeds. Cucumbers and melons are easily recognisable, but there can be some confusion over squashes. Pumpkins, marrows and squashes are all members of the same genus *Cucurbita*; for convenience, we refer to them all here as squashes. Summer squashes (including courgettes) are often intended to be eaten immature and do not store very well even when mature. Winter squashes (including pumpkins) are eaten mature after they have formed a hard skin and can be stored for long periods.

Provided you have a long enough growing season squashes are easy to grow and harvest seed from, but great care is required to keep varieties pure.

Growing & Roguing

- The plants can be grown as you would for a crop grown to eat.
- Allow as long a season as possible so the fruits can develop to maturity. Squashes grown for eating are normally picked when immature. Protection from spring and autumn frosts with fleece or cloches will help length the growing season.
- Grow as many plants as possible – professional growers consider six plants as a minimum. However, squash do not suffer too much from inbreeding depression and if saving seed for yourself you can grow just two or three plants.
- Rogue out plants whose foliage is very different from the rest.
- Remove plants that look unhealthy. Crumpled and/or yellow mottling on leaves may indicate cucumber mosaic virus, which can be seed borne.

Pollination & Isolation

Each plant produces separate male and female flowers. The female flowers can be distinguished by the ovary, a swelling behind the petals which will form the fruit. The male flower sits upon a simple stalk. Individual plants often produce a profusion of male flowers first, a device that helps cross-pollination. The flowers open early in the morning and insects, mainly honey bees, move the pollen around.


Female squash flower

All members of one genus (for example all cucumbers, or all squashes) will accept pollen from any other member of that genus. There is much debate as to whether the various species of squash will cross-pollinate with each other, and disagreement amongst some reputable sources. We therefore recommend hand pollination of all cucurbits to ensure varietal purity is maintained.

The four main species of squash are as follows:

Cucurbita maxima

These have very long vines, huge, hairy leaves and soft, round, spongy, hairy stems. Seeds are thick, white, tan or brown with cream-coloured margins and a thin, cellophane-like coating.

Cucurbita mixta

These have spreading vines and large, hairy leaves. The stem of the fruit is hard, hairy and slightly angular and flares out only slightly where it is attached to the fruit. The leaves (slightly lighter in colour than *C. moschata*) have a rounded tip and hardly any indentations along the sides. Seeds are white or tan and have a pale margin and cracks in the skin coat or the flat sides of the seeds. They are covered in a thin, cellophane-like coating.

Cucurbita moschata

These display spreading vines and large hairy leaves. The stem flares out noticeably where is attaches to the fruit and is hard, hairy and slightly angular. The flower has large leafy green sepals at its base. Leaves are slightly darker than *C. mixta* and have a pointed tip and slight indentations along their sides. The small, beige seeds are oblong and have a dark beige margin.

Cucurbita pepo

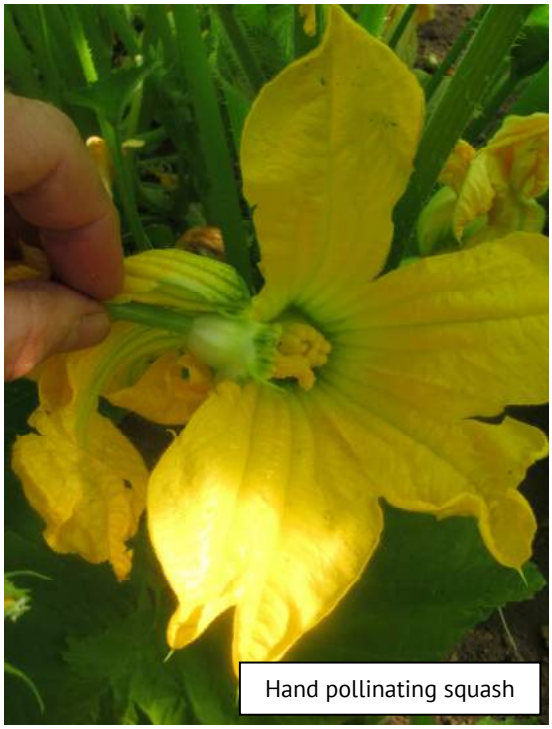
These have prickly leaves and stems, particularly when mature. The fruit stem is hard and has five sharply angular sides. Seeds are cream with a white margin. Included in this species are soft-shelled, stripy and warty decorative gourds and nearly all of the commonly grown summer squashes.


Male squash flower with petals removed

Squash

For successful hand pollination, select at dusk a female and male flower that are both about to open. It is best if the flowers are from different plants, but they **must** be of the same variety. Flowers that are about to open may be very slightly split, are still quite green and show a lot of orange colouration around the tip of the unopened petals. If the flowers are completely orange and slightly curly, they are past the viable stage. With a piece of masking tape, seal the flowers to prevent them opening and mark them with a cane so you can easily find them again.

Next morning, remove the male flower with its stalk and carefully remove the petals to reveal the pollen-bearing stamen in the middle. Take this over to the female flower and carefully remove the tape from the petals, but only when you have the male flower ready for immediate pollination. Bees and flies find squash flowers irresistible and can invade a flower as soon as it is opened, sometimes right in front of your nose!


Hand pollinating squash

Brush the pollen onto the style of the female flower and reseal the petals immediately with tape to prevent entry by insects. Mark the pollinated flower with a piece of coloured tape or wool loosely around the stem so you know which ones should be saved. One male flower can be used to pollinate several females if there is a shortage of male flowers. However, if you can, pollinate one female flower with several male flowers.

Alternatively, French bread bags tied over the flowers isolate them very well. They will need to be removed as the fruit starts to swell.

Melon and cucumber

These have tiny flowers that are much trickier to pollinate Melons are also likely to reject about 70% of hand pollinations. You may have to be persistent.

If pollination has been successful, the fruit will start to swell within a couple of days and develop as normal, otherwise it will go yellow and drop off. You can ensure as early a fruit set as possible by starting the plants off indoors and pollinating the first females to develop.

Harvesting

Squash

Harvest the fruits once they are mature; the fruit stalk will begin to shrivel and the skin of the fruit will be hard. Do not remove the seeds immediately. Leave the fruit in a warm dry place, in a greenhouse or under a cloche, for about three weeks – during that time the seeds continue to increase in size and strength.

Melon

Seeds are mature when the fruit is ripe to eat. Over-ripe fruits have 2-10% more ripe seeds, but are not so good to eat, and after all the effort of growing a melon you might as well enjoy eating it.

Cucumbers

Keep on the vine until over-ripe. The fruits will be large and starting to go soft. Like squashes, leaving them for a couple of weeks after cutting increases the number of fully mature seeds.

Cleaning

Squash

Seeds should be removed from the flesh and rinsed in a colander to remove any flesh or strings adhering to them. If they are still sticky or dirty, rub them gently in a sieve under a stream of water. Squash seeds are large and have a tendency to go mouldy before drying. Try laying the seed out on a flat tray with a cool fan gently blowing over them, turning the seeds twice daily for a couple of days

Melon

These may need a little more work to clean them. Rub them gently and put them in a large bowl with plenty of water. Hollow seeds and the pulp will float while fertile seeds sink to the bottom. Pour off the debris and repeat a couple of times until you are left with only good seeds.

Cucumber

The seeds are encased in a gelatinous sac, most easily removed by fermentation. Place the seeds into a large bowl and add about as much water as you have seeds. Put the bowl somewhere warm, but out of direct sunlight, to ferment. Be warned, this can be somewhat smelly. Stir the mixture occasionally. One or two days is generally sufficient. Add as much water as possible and stir the mouldy mass well. Good seeds will sink to the bottom so carefully pour off the debris. Repeat until you are left with clean seeds.

Storage

For all cucurbits, tip the seeds onto a plate or baking tray to dry, avoiding temperatures greater than 32°C (90°F), which will damage the seeds. Turning the seeds and providing a cool breeze will help seeds dry evenly. Seeds that break in half rather than bending are dry enough to be stored, but flat, 'empty' seeds will not be viable. Store in an airtight container in a cool dark place.

Cucurbit seeds should last in storage for 5-10 years.

Returning Seed to HSL

It is vital that seed returned to HSL is not cross-pollinated. So not send seed to us that you suspect might have crossed.

Seed must be completely dry and fully cleaned. Seed that retains moisture can go mouldy in transit and will have to be discarded. It can take a few days for seed to get to us in the post so pack seed in breathable material, e.g. a paper envelope or cotton bag, and place it in a padded envelope or stout box to protect the delicate seed from impact damage.