

Seed Saving Guideline No. 14

Carrots

Daucus carota

Family: *Apiaceae* (*Umbelliferae*)

Carrots are biennial, in the first year producing a storage root that must be kept over winter. In their second year they produce spectacular 'umbels' made up of many tiny flowers. They will easily cross-pollinate with any other carrot in flower, and also with the wild carrot *Daucus carota*.

Carrot flowers are **protandrous**, that is the anthers (male part) open first and shed their pollen before the stigma (female part) of that flower is receptive. They are, therefore, predominantly cross-pollinating.

Growing & Roguing

- Sow seed at the same time you would for main crop carrots in your area – May/June in central England.
- For small quantities of seed sow into modules and plant out before tap roots start to develop.
- Grow the plants on as you would for a crop grown to eat.
- Rogue out plants that bolt or have foliage that looks unhealthy or differs from the rest.
- Lift and store roots at the end of the first year and trim off foliage. Store in a box of moist leafmould, coir or sand in a cool, frost-free and rodent-free place.
- Small, misshapen or sprouting roots should be removed and eaten; those roots that store best and have the best shape, colour and size are the ones to use for seed production. You can remove the bottom quarter of a carrot for tasting and still have enough left to replant for seed production.
- Carrots are outbreeders; use at least 20-30 to maintain the health and diversity of the variety and prevent inbreeding depression.
- Replant the selected roots in the early spring, making sure they are well firmed in, with the crown at or just below the soil surface, spacing at 45cm each way (in a block if you need an isolation cage). It is the primary 'king' umbel that produces the best seed, and a close spacing encourages the king umbel at the expense of the secondary side umbels.
- Plants will need staking as they can grow to 1.5m or more.

Roots sometimes rot in storage, or do not develop sufficient root hairs after replanting, leading to a collapse of the flowering stalk just as it comes to maturity. To avoid this sow the seeds in large (25cm) pots in August. Allow the carrots to over-winter in their pots and in spring either leave them in their pots under a suitable tent, or plant into the open ground taking care not to disturb the root ball.

Pollination & Isolation

Carrot flowers are perfect but do not self-pollinate; they rely on insect visits for seed set. The recommended minimum isolation distance for carrots is 1000m. If this cannot be achieved, grow them in complete isolation and hand-pollinate or introduce pollinators.

Isolation can be best achieved by enclosing plants in a cage constructed of fleece or fine mesh. Use bamboo canes to build a tepee over the plants as they are coming into flower and wrap the framework with spun fleece or netting. Ensure the flowers do not touch the sides as it is possible that they may be visited by insects from outside, through the mesh.

To hand pollinate gently rub your palm over the flowers moving back and forth between inflorescences. Alternatively, flies can be used as pollinators. Buy from an angling shop as maggots (buy 'whites') and put them somewhere to encourage pupation (become castors). Transfer them to your cage before they hatch into flies. Put them into a margarine tub with a hole cut into the side to protect them from the rain and allow them to fly out when they hatch. Make sure that the shop knows how you intend to use the maggots as some are treated to prevent them hatching. When introducing them in to the cage take care to prevent other insects entering. You will see seeds beginning to form if pollination has been successful.

Crossing with wild carrots will show up in the first generation because the fat, coloured roots of cultivated carrots are recessive to the spindly white root of wild relatives; coloured roots will still be pure. You may, however, not be able to detect crossing between different cultivars so it is best to use the cage method to ensure complete isolation.

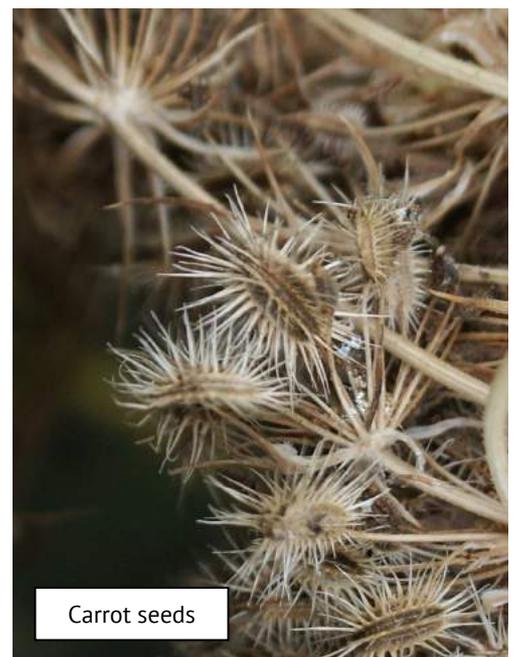
Harvesting

Once flowering is over remove the cages, allowing air to dry out the umbels. The developing seeds can be susceptible to fungal diseases and the airflow will help minimise the risk. The seed is ripe when it turns brown, the umbels become brittle and the barbed seeds come free of their stalks

Harvest repeatedly over several weeks. This will maximise the seed quantity and improve quality. If you must harvest all the seed at once do so when most seeds have ripened; few will do so once the stems have been cut.

Cleaning

Cleaning carrot seed is a straightforward operation; they are quite free of chaff and fall easily from their stalks. Remove the seeds by gently rubbing the flower heads and allow them to fall off into a paper bag or sack. Fine debris can be removed by reverse screening with a small mesh sieve that retains the seeds, but allows small pieces of chaff through



Carrot seeds

Carrot seed is bearded and carefully scarified to remove the beard for commercial packets of seed. Spines can be rubbed off when sieving, so always wear a dust mask to prevent inhaling them.

Storage

The seeds can be stored in a cool, dry place for up to three years after which viability will fall off very rapidly.

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.