Seed Saving Guideline No. 14

Carrot

Daucus carota

Family: *Apiaceae (Umbelliferae)*

Carrots are biennial, in the first year growing 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*.

Male anthers open first and shed their pollen before the female stigma of that flower is receptive (protandrous). They are therefore predominantly cross-pollinating.

Carrot flower heads

Growing and Roguing

- Sow when you would for main crop carrots in your area — May/June in central England.
- For small quantities of seed sow into modules — plant out before tap roots start to develop.
- Grow the plants on as you would for a crop to eat.
- Rogue out plants that bolt or have foliage that looks unhealthy or different from the rest.
- Lift and store at the end of the first year and trim off foliage. Store in a box of moist leafmould, coir or sand and put 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 or most typical shape, colour, taste and size are the ones to use for seed production. You can remove the bottom ¼ of a carrot for tasting and still have enough left to replant for seed production.
- Carrots are outbreeders; use at least 16 to maintain the health and diversity of the variety.
- 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 at a spacing of 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.

Pollination and Isolation

Carrot flowers are perfect but do not self-pollinate; they rely on insects for seed set. The recommended minimum isolation distance for carrots is 1,000m. 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. Take care not to let the flowers touch the sides as they will run the risk of being visited by insects from the outside through the mesh.

To hand pollinate, gently rub the palm over the flowers moving back and forth between inflorescences. Flies can be introduced as pollinators. Buy maggots from an angling shop (buy 'whites'), put them somewhere warm to turn into castors; then add them to your cage before they turn into flies. Make sure the shop knows how you intend to use them as they are sometimes treated so that they do not hatch. They will need to be protected from the rain but free to fly out when they hatch. An old lidded margarine tub with a hole cut in the side works well. When introducing them into the cage do not let in other insects from outside.

Crossing with wild carrots will show up in the first generation — the fat, coloured roots of cultivated carrots are recessive to the spindly white root of wild relatives. You may 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 disease and the air flow will help minimise this risk. The seed is ripe when it turns brown, the umbels become brittle and the barbed seeds come free of their stalks.

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

Cleaning

Cleaning refers to the removal of chaff and debris, leaving only seed. Cleaned seed keeps better.

Carrot seeds are fairly free of chaff as they fall easily from their stalks. Remove seeds by gently rubbing the flower heads and allow them to fall into a paper bag or sack. Fine debris can be removed by reverse screening with a fine mesh sieve that retains the seed but lets small pieces of chaff through.

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

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 overwinter 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 rootball.

Storage

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

Returning Seed to HSL

It is important that seed returned to HSL is not cross-pollinated. Do not send us seed 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. 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, before sending it in the post.