Gone to Seed – Seed Saving Workshop

12th May 2019

Why save seed?

- Learn a new skill – seed saving adds a new dimension to gardening
- Save money – seeds packets cost quite a lot and often there are too many in the packets that you buy
- Try growing something different – at the seed swap you might find seeds that you thought might not grow well or that you have not seen before
- Share your favourite varieties – if something grows well in your garden, and is really tasty, you can share it with others
- Heritage varieties – standard seed catalogues tend to have a very limited range and some of the older varieties are no longer available and are being lost – seed saving can help to stem the tide of reducing diversity.
- Local resilience – share seeds that are produced locally (many seeds bought commercially are produced overseas), grow well here in the NE and can be harvested over a longer time period (less liable to a glut)
- As the climate changes we will need these "open – pollinated" plants which are adaptable - they are genetically variable and therefore able to adapt to climate change, to particular landscapes and environmental conditions and evolve along with them.
- Develop a new locally adapted variety????

What do we want?

- A wide range of vegetable and flower seeds to share at the 2020 Seed Swap and Potato Day
- Seeds (especially heritage varieties) that produce healthy, tasty plants that are true to type and store well.

Definitions

Open pollination is the general term for the natural means by which plants reproduce and exchange characteristics from generation to generation.

Open pollinated varieties are inherently variable, although degree of variability depends on type of plant, eg, tomatoes have slight variation but brassicas a lot. It's best to think of them

as a group rather than clones. This variability is important as it allows them to adapt to disease, pests and stress.

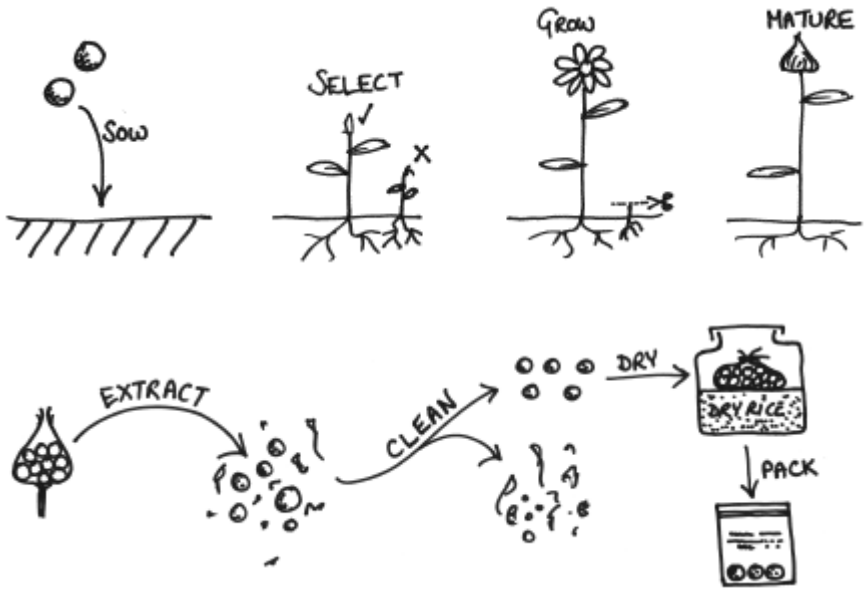
When they cross-pollinate with other plants in the same population (variety), their seeds breed true to type, which means the offspring from one generation to another will always closely resemble the parent plants and pass on their characteristics.

Self-pollination is the transfer of pollen from an anther to a stigma of the same plant. Sometimes this will happen within the same flower (eg. pea flowers are generally fertilized before they open).

Cross-pollination is the transfer of pollen between plants. To save seed that will grow true to type, you want to prevent cross-pollination between **two different varieties** in the same species.

F1 Hybrid varieties result from the controlled crossing of genetically distinct parents. They produce offspring very different than their parents. **You cannot save seed from these.**

How to save seed in a nutshell



(Source: www.realseeds.co.uk/seedsavinginfo.html)

Things you need to consider?

CROSSING	• Will these plants cross with any others? • Is this a good thing, or a bad thing? (Usually bad) • How does this happen? (Cross-pollination by Wind? Insects?) • What can I do to control this? Do I need to do anything? Isolation?

POPULATION	• Do I need a minimum number to get healthy seed? (e.g. do they breed as group?) • Or do the plants live on their own and self-pollinate? (so I can save seed from just a few) • Have I chosen the best plants for seed? Roguing.
SEED EXTRACTION AND DRYING	• Do I need to do anything special to the seed? Eg. leave pea and bean pods to ripen fully, remove gelatinous coating on tomato seeds. • Cleaning seed –winnowing. Use a sheet. • Is my seed well dried and well labelled?

Isolation

Isolation prevents unwanted cross-pollination and is the main way to keep varieties true to type. Isolation begins with an understanding of the distance required to limit or eliminate chances of cross-pollination between two varieties of the same species.

You can manage isolation through several methods:

- Distance - as a general rule, plants that primarily self-pollinate (inbreeders) require less isolation distance, while plants that primarily cross-pollinate (outbreeders) require greater distances. Wind-pollinated crops, such as spinach and beets, have very fine, lightweight pollen that is easily carried a great distance on air currents, often making the isolation distance for a wind-pollinated species quite long. Insect-pollinated crops may require less distance between varieties than wind-pollinated crops because insects often gather nectar and pollen within limited areas and focus on a particular crop.
- Timing – only let one variety flower at a specific time eg. lettuce – you can grow lots of varieties to eat but can safely only let one go to seed. Grow one early in season and another later eg. basil, but not that easy in NE. If you are growing plants which always flower eg. courgette, you could just grow one variety (remember they can also cross with squash and pumpkin).
- Containment - physical barrier (eg, wall or other high plants, paper or cloth bag over flower or isolation cage).

  Making an isolation cage: use net curtains or nylon fly screen – make into square cage, put over canes with string at top and along sides and fix down with stone/earths over the plants – see www.realseeds.co.uk/seedsavinginfo.html If using an isolation cage and plant needs to be insect pollinated will need to release fly larvae inside the cages to allow for pollination.

Population Size – Why it matters?

Need to save seed from enough plants to retain your variety's *genetic variability*. Eg. one plant of the Red Russian Kale variety may differ from another of the same variety in flavour,

vigour, resistance to insects and disease, tolerance to drought, or other important traits. There are two reasons that maintaining genetic variability is important:

- *Adaptability.* Genetic variability allows a variety to adapt to changing conditions.
- *Inbreeding depression*. Genetic variability in any given population also prevents inbreeding depression - results in a loss in vigour and fertility due to the mating of individuals that are closely related and too genetically similar. Strong outbreeders are most susceptible to inbreeding depression as they are adapted to a constant mixing of genes through cross-pollination. Strong inbreeders are the least susceptible as they have adapted to the inbred condition through thousands of generations of self-pollination. There are some exceptions, eg. Cucurbitaceae (cucumbers, courgette and squashes), these crops are largely outbreeders, but are not as severely affected by inbreeding. **Number of plants needed to save seed from is determined by this.**

Practical session: Roguing carrots and parsnips

What is roguing?

To "rogue" is to remove inferior or atypical plants from the population. Essentially, roguing involves removing the plants that you don't want to reproduce. Roguing helps eliminate the ill effects of accidental crosses that may have occurred in previous generations or undesirable genetic varients. If you do not rogue, your variety will deteriorate over time. Some helpful guidelines for roguing include:

- Rogue more than once eg, lettuce - early - remove those slow to germinate, mid season -remove those with foliage not true to type, late season - remove those affected by disease.
- Rogue before flowering
- Maintain population size – don't remove so many plants that you no longer have an adequate number of plants from which to harvest seed.

Carrots and parsnips:

During last growing season (2018) should have already removed plants which were slow to germinate, were atypical or were diseased. So this is final stage of roguing.

Which should be selected and why? Roots which look like the variety in question, are sound and of good size. All should look fairly similar.

How many? 40 if possible

What next? Plant at Walled garden in Oldtown in seed saving demo plots, let them flower and then collect seed. The palnst get very tall. Collect seed from first and second umbels of flowers to appear on each plant, as these will give the biggest and best seed. Beware of Queen Anne's Lace (wild carrot) as it will cross, producing thin white roots.

Practical session: What would you like to save?

Some tips

- F1 varieties – seed saved from F1 hybrid plants will not raise plants true to the parent type – only save seed from "open-pollinated" plants
- How much space can you spare– select suitable seeds to save? Remember, when plants produce seed they may be much bigger than if you just grow it to eat eg, carrots and radish. Some take two years (biennials).
- Decide what you want to save and grow plants for that purpose – much better than savings seeds at the end of the season when you have picked your produce - you can select best plants, seeds have longer to mature
- Do you have neighbours who might be growing plants that can cross? CHECK
- Make sure you know what you are growing – species name can help decide what plants may cross with each other.
- If a plant is biennial (eg. flowers in second year such as brassicas, parsley, beetroot, carrot, parsnip, onions, leek), make sure you don't save seed if they bolt in first year as will be selecting for early bolting.
- Self-pollinating plants may need wind movement to encourage good pollination, so if growing inside, shake the plants.
- Make sure you label the row of plants and bag of seed that you have collected.

Discussion and advice

Useful references:

https://seedalliance.org/wpcontent/uploads/2010/04/seed_saving_guide.pdf

http://www.realseeds.co.uk/seedsavinginfo.html

https://www.seedsavers.org/learn

Books:

Back Garden Seedsaving by Sue Stickland

Seed to Seed by Suzanne Ashworth