Save Your Own Seeds

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Topics

What to Save

How to Avoid Cross-pollination

Basic Seed Saving Methods

Storing Seeds & Germination Tests

Tips for Saving Seeds of Different Vegetables

Should You Save Seeds?

Home garden seed savers:

- Don't need to achieve same seed purity standards as commercial suppliers
- Can save what suits their garden conditions
- Save substantial money

But...it takes time and space:

- Best to save seeds from 5-12 plants, not from just 1 plant
- Plants occupy garden space for long periods until seeds ripen (biennials take up space for 2 growing seasons)

Annuals

- Flowers and seeds develop in the same season the plant is sown:

  E.g., Beans, peas, lettuce, summer broccoli, corn, cucumbers and squashes, mustard greens, arugula, radishes

Biennials

Flowers & seeds develop in the second growing season (after winter chill)→

- Roots: Beets, carrots, leeks & onions, parsnips, winter radish, turnips and rutabagas
- Cabbage family: Kale, cabbage, kohlrabi, purple sprouting broccoli, winter cauliflower
- Others: Swiss chard, parsley, endive, celery & celeriac

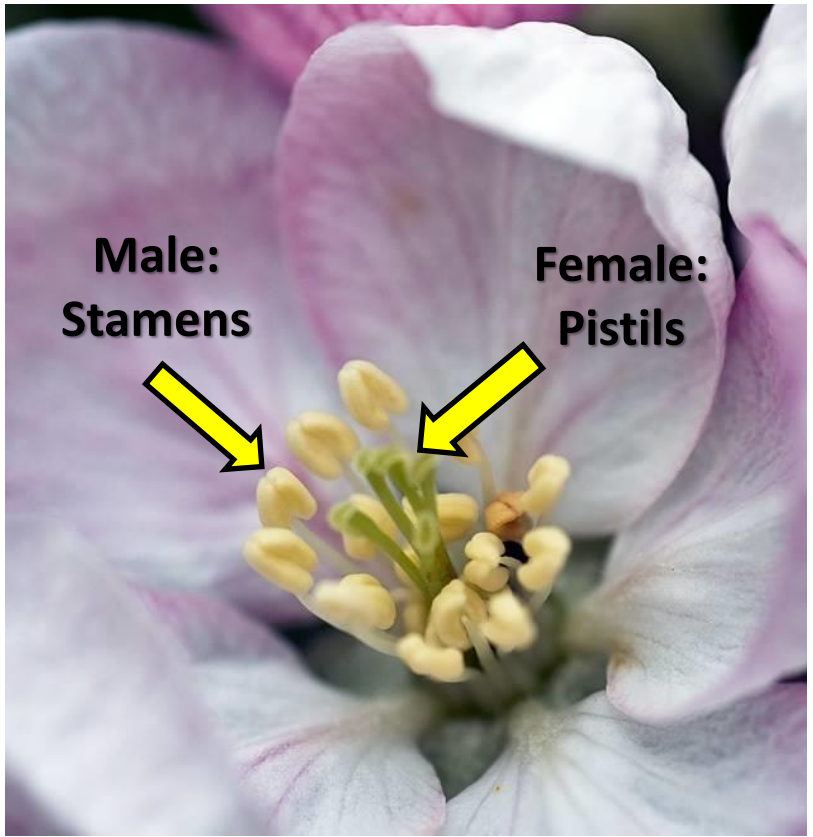
Tomatoes, Peppers…

…are perennials, but we grow them & save seed as for annuals

Most crop plants have 'complete' flowers…

…meaning both male & female parts are in the same flower

- Self-fertile: E.g., Tomato, lettuce, cabbage family, legumes
- Self-infertile: E.g., Apples, pears, cabbage, cauliflower have pollen that is genetically incompatible with their own egg cells



Some plants have separate male & female flowers

- Plants with both sexes of flowers on the same plant: Corn, cucumbers, squash & pumpkins, melons
- Large-fruited kiwi has male and female flowers on separate plants

Female flowers have a miniature fruit behind the blossom

What to Save?

OP vs. Hybrids (F1)

- OP: Open pollinated plants have male and female parents from the same variety. Seeds from OP plants produce predictable offspring if off-type plants are culled at each generation

- Hybrids: Parents are from 2 different cultivars [“breeds”]. When crossed, the offspring (F1 generation) are vigorous, with predictable characteristics, BUT plants grown from seeds saved from hybrids will be variable & not like the parent plants

Many plants hybridize naturally & gardeners can encourage hybridization to generate new varieties

Pippi is an F2 generation dog→

What's Your Goal?

To preserve a variety? For parents, choose plants most like the original type; remove off-type plants or don't let them flower

To improve a variety or save an unusual mutation? Choose parent plants that look the best, show the desired characteristics

What is a desirable depends on the plant:

- Early flowering = early harvest: useful for beans, peas
- Late flowering = longer harvest: summer lettuce, leeks
- Frost hardiness: winter lettuce, biennial broccoli
- Heat tolerance: summer lettuce, annual broccoli

Choosing Parent Plants

Consider:

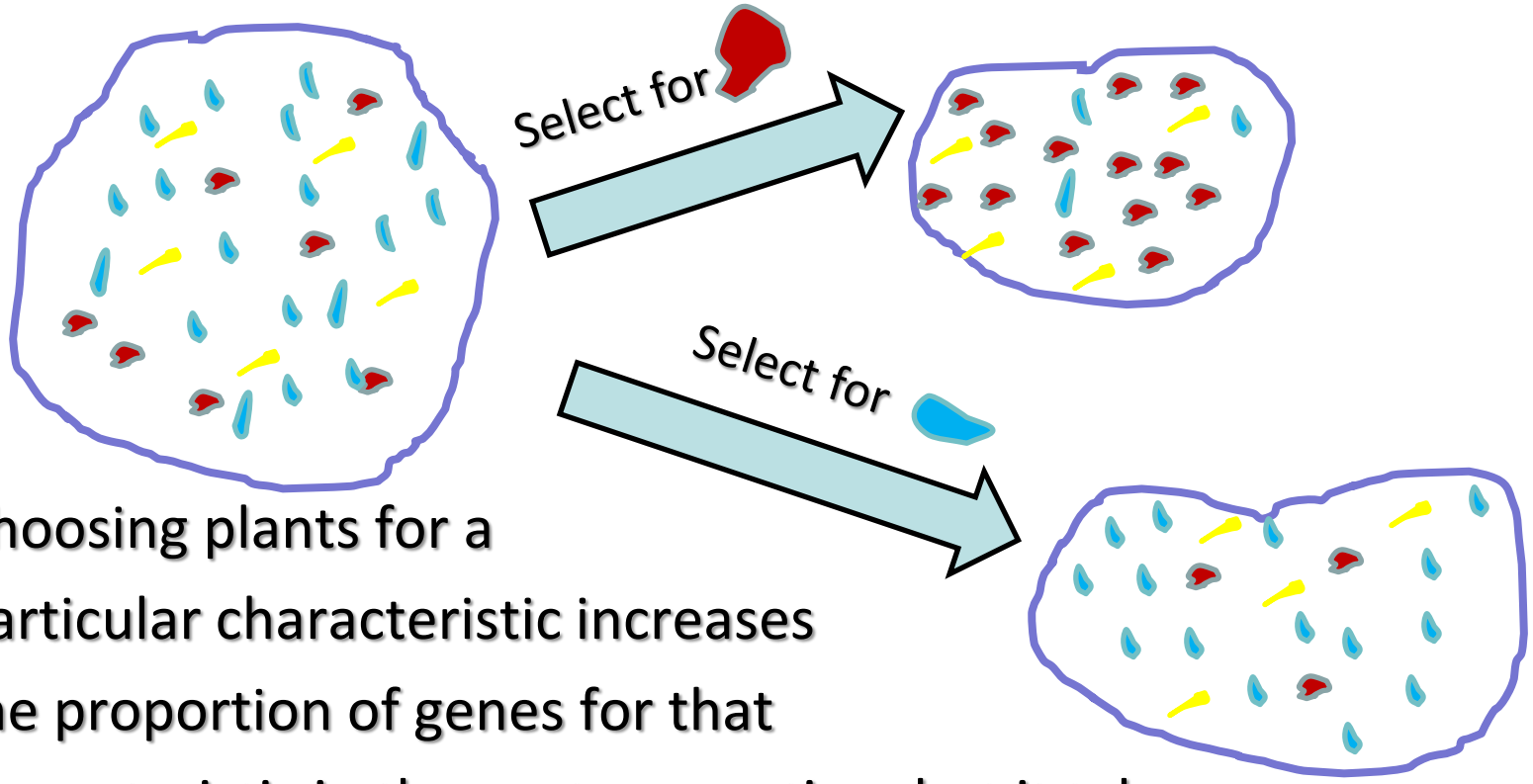
- Whole plant: Healthy appearance, size, vigour
- Leaves: Healthy colour, size
- Fruit: Normal or desirable shape, colour, flavour

Tie a label on desirable parent plants for future reference

Genetics 101

Genes in parents

Genes in next generations



Choosing plants for a particular characteristic increases the proportion of genes for that characteristic in the next generation, but it takes many generations to stabilize characteristics

The Cross-Pollination Problem

- Wind pollinated flowers: Beets, chard, all cabbage family including radishes, spinach, corn
- Insect pollinated flowers: Most fruit and some vegetables, including some that are wind pollinated

You can't control wind or bees, so varieties must be isolated to ensure seeds is 'true'

Isolating Parent Plants

- In time: Save seeds from plants with flowering times that don't overlap with related plants
- By distance: Grow seed plants 10 to 1,000 m away from plants that could cross
- With barriers: Cover parent plants with floating row cover, insect netting or window screen cages to keep out insects (hand pollinate)

Isolating Parent Plants

In home gardens:

- Plan to grow only 1 variety of each kind of plant for seed each season
- Remove flowers of all plants that could cross with those being grown for seed

In community gardens or neighbourhoods with a lot of gardens:

- Cover or cage your own seed plants

OR:

- Coordinate with other gardeners on what to grown out for seed each season

Hand Pollination

- Gently move pollen within or between flowers with a small, soft paintbrush
- Repeat several times for each flower to mimic pollinator visits
- Wash the brush before using on other varieties

Avoid Crossing with Weeds

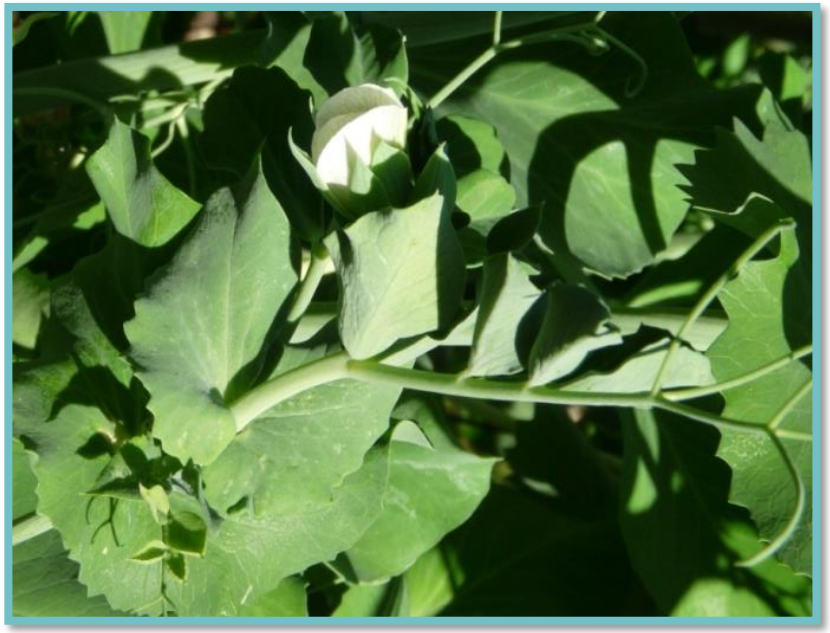
- Carrots cross with Queen Anne's lace/wild carrot
- Lettuce cross with wild lettuce/prickly lettuce
- Mustards, Chinese cabbage cross with wild mustards

Control weeds in the area to ensure pure seeds or cover parent plants and hand pollinate

Lowest Risk of crossing

Crops with self-fertile flowers that are not pollinated by insects:

- Peas & beans (except scarlet runner beans). Flowers are already fertilized when open
- Tomatoes & lettuce are wind pollinated; pollen falls within the flowers



Basic Seed Saving Methods

Seed Saving Steps

1. Choose and label parent plants
2. Wait until seeds mature on plant, then harvest
3. Label everything
4. Dry seeds thoroughly
5. Separate seeds from pods or hulls
6. Clean or winnow, if necessary
7. Package, label and store

When are seeds ripe?

- Open hulls to check: Ripe seeds are hard & should look like the seeds in packages
- Another clue: Birds start picking at seed pods
- Some plants ripen seeds over a very long period:
  - Shake or pick pods as they ripen OR
  - Harvest whole plant when 1/3 to 1/2 of seeds are ripe

Lettuce seed ripens over weeks

Drying Seeds

Dry seeds in warm conditions <30°C:

- Spread out on open trays
- Hang whole plants out of the sun
- For seed that drops easily, hang plants inside paper bags

Seeds must be thoroughly dry before they are stored

Shelling Peas, Beans

- Small amounts: Shell out by hand after pods dry
- Large quantities: Place dry pods in a burlap bag and flail or pound them to break up pods

Separating Seeds from Hulls

1. Pound, roll or crush thoroughly dry hulls

Kale seeds

2. Screen, sieve, filter to remove chaff

Cleaning Seed

- Various sizes of screens, colanders, kitchen sieves are useful

Winnowing

- Light breeze blows chaff away as seeds are poured from one container to another

Start cautiously, until you get a feel for the weight of the seeds, strength of the breeze

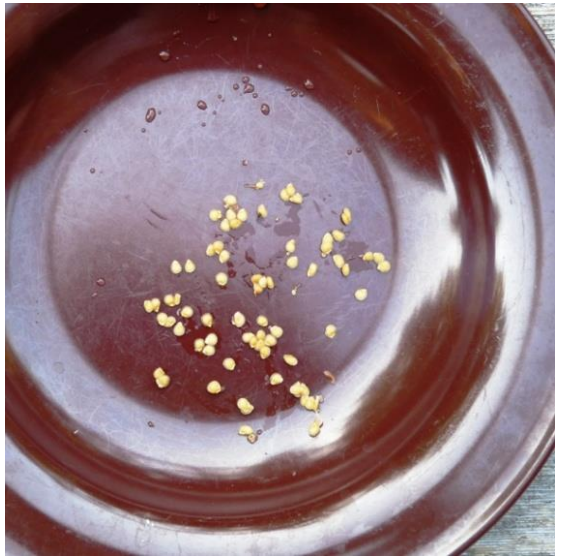
Seeds in Pulp: Tomatoes

Extract seeds by fermenting pulp: Removes pulp & may remove some seed borne diseases

1. Squeeze pulp with seeds into cup
2. Ferment for 2-5 days, until a fermented scum appears on the surface

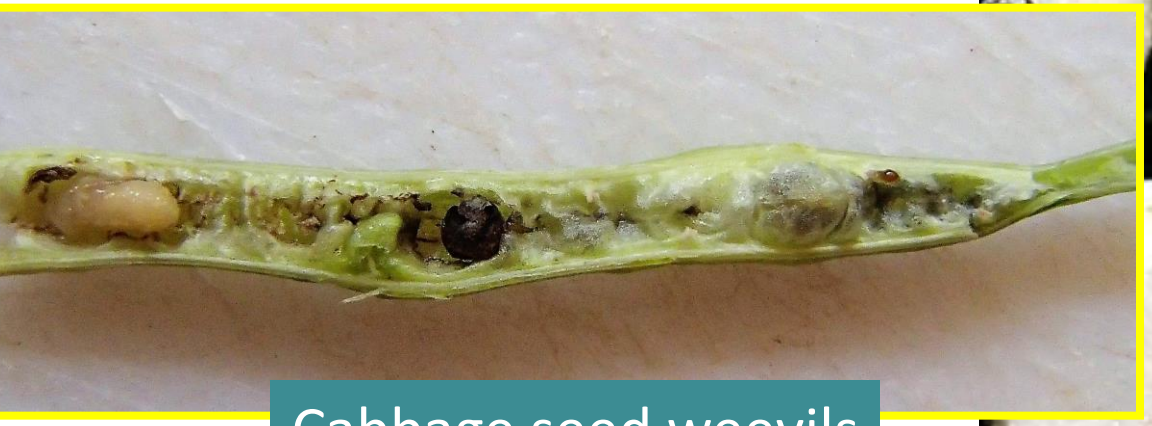
Tomatoes, cont.

3. Rinse off fermented pulp
4. Spread seeds on a plate to dry (they stick tight to paper or cloth)



Seed Pests

- Birds may peck at flowers, seed pods: Cover with bird netting
- Weevils can lay eggs in pods of peas & beans, Brassicas: Freeze thoroughly dry seeds for a week to kill eggs
- Prevent mould growth by making sure seed is thoroughly dry before storing



Cabbage seed weevils

Storing Seeds

Keeping seeds dry is essential:

- Seal in air tight containers
- Store in dry, cool, dark location
- Using desiccant packs to absorb moisture is a good idea

Freezers are good for long-term storage BUT, you must allow containers to reach room temperature before opening them to avoid condensation forming on seeds

Moisture is the enemy of seeds

Desiccant Packs

- Metal case; small size for 2-3 cubic feet containers [Lee Valley Tools lists them as “dehumidifiers” for tool boxes); re-activate annually for 3 hrs in a warm oven

- Heavy paper sachets are sometimes sold by seed suppliers

How long do seeds keep?

- Most seeds keep 3-5 years – but much longer if stored correctly
- Shortest viability (1-2 years): Parsnips, corn, onions
- Longest viability (>8 years): Brassica family

Germination Tests

To check % germination:

- Count out 5-25 seeds on a wet paper towel, hold in a container with lid or plastic bag, in a warm place
- Keep moist until seeds sprout (2-7 days for most vegetables)
- Count sprouted vs. unsprouted seeds

Is the seed still good?

- Germination rate above 75% is fine
- If lower, sow more seed to compensate
- Below 50%? Time to save fresh seed

If seeds took a long time to germinate, they are losing vigour: another clue it is time to save fresh seed

Tips for Different Vegetables

- Start with the easiest seeds: Beans, peas, lettuce, tomatoes, corn salad, dill, coriander
- Save only 1 variety from a plant family at a time to avoid crossing
- Save different varieties each year

Easiest: Umbelliferae

Dill, coriander, caraway, angelica, fennel, parsley

- Seeds dry on the plant; hold well to umbel

Lettuce

- Annual, self-fertile, low risk of cross-pollination
- Flower stalks grow tall from centre of plants
- Seeds ripen over long period

Bang seed heads [hard!] in a bucket to shake loose ripe seeds

Beans

- Different species don't cross: Common beans*, soy, lentil, lima, fava, runner, garbanzo beans are different species
- Active pollinators can cross beans, but it is a low risk: flowers are fertilized before opening

Runner beans are insect pollinated: Bag flowers & hand pollinate

*Common beans: green, purple, wax, bush & pole varieties

Beans & Peas

- Let pods dry on vine
- Nearly mature pods may rot on plants in wet weather; when pods become papery & change colour, pick & finish drying indoors

Peas: Little risk of crossing

Tomatoes

- Self-fertile, varieties with more open flower shapes can cross
- Separate varieties by >6 m or bag flower clusters (tap flowers to vibrate pollen loose within flower)
- Leave fruit on plants until overripe, squeeze out seeds & ferment in water to remove seed coating

Potato leaved varieties are more prone to crossing

Peppers

- Self-fertile, but flowers are cross-pollinated by insects
- Use cages or floating row covers over plants & hand pollinate
- Allow fruit to become over-ripe on plant
- Open fruit, separate seeds and dry

When handling hot peppers, use rubber gloves, good ventilation, & never, even touch your eyes!

Cabbage Family: Annuals

Chinese cabbage family: Bok choi, mustards, mustard spinach cross with each other, but not with broccoli

Broccoli: Will cross with biennials, such as kale, cabbage, cauliflower

Arugula: Won't cross with other cabbage family

Leeks

- Plants overwinter in garden, flowers develop in 2nd season
- Seeds mature in late summer
- Seeds are very hard to separate from husks; use pestle or mallet to pound dry seed heads

Swiss Chard, Beets

- Wind pollinated: Beets & chard can cross
- Overwinter plants outdoors; flowers appear 2nd summer
- Collect stalks when over half of seeds turn tan & are easy to detach from stalks

Beets: Dig up roots carefully in spring, choose the best roots & replant ones chosen as parent plants


More Advanced Seed Saving

Cabbage Family: Biennials

- Cauliflower, Brussels sprouts, cabbage, kales, collards, purple sprouting broccoli can all cross
- Plants overwinter in garden, flower in 2nd season
- Seeds mature mid-summer

Carrots, Parsnips

- Biennials, cross-pollinating
- Roots overwinter, flowers in 2nd season (seed stalks are very tall)
- To choose parent plants, carefully dig up & replant best roots in spring
- Insect pollinated:
  - Carrots cross with wild carrots; parsnips cross with wild parsnip
  - Cage parent plants if these weeds

    are present

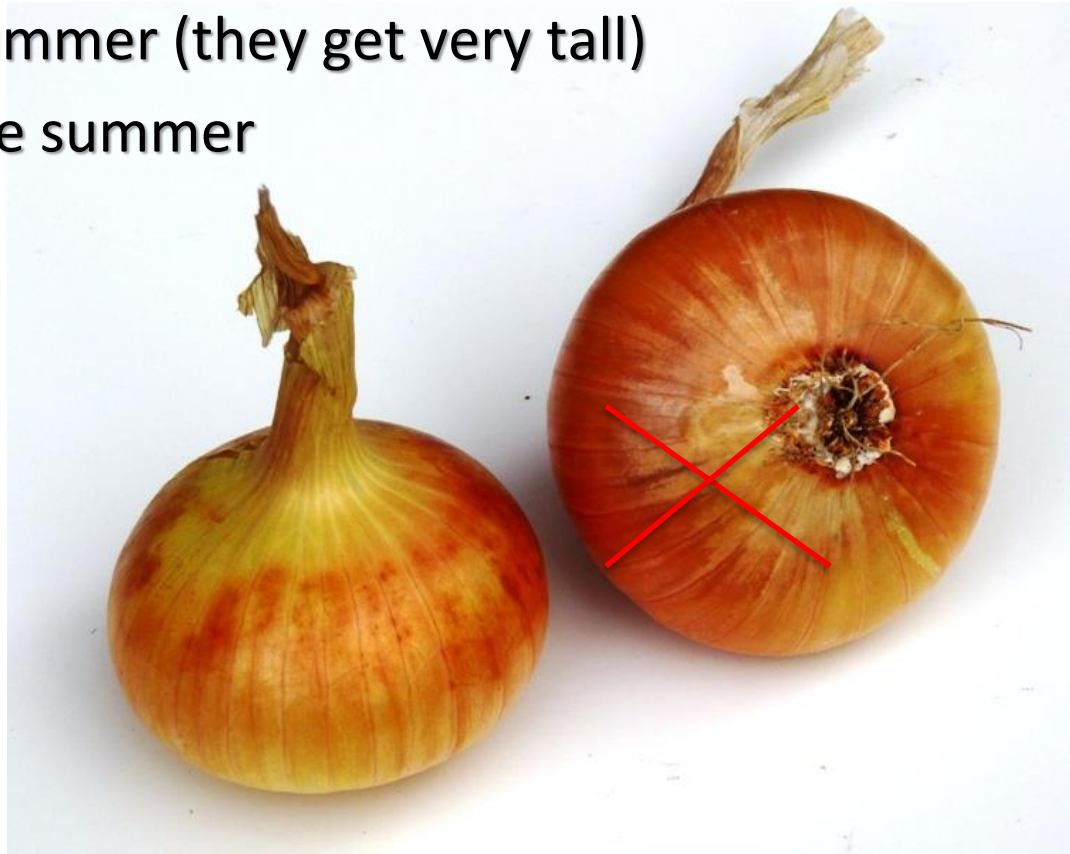
Onions

Biennials, cross-pollinating with other onion family plants

2-Year cycle:

- Keep best bulbs over winter & plant in early spring
- Flower stalks develop in summer (they get very tall)
- Collect mature seeds in late summer

Seeds are black & rock hard when mature



Squash, Pumpkin, Cucumber

Annuals, cross-pollinating:

1. Ensure no pollen is moved by bees: Tape male AND female flowers closed or bag them before they open

Organza gift bags are easy to use

Squash, Pumpkin, Cucumber

2. Hand pollinate in morning when flowers open
3. Re-close flowers & tape shut or bag pollinated flowers
4. Tag each fertilized fruit

Hand pollination: Pick a male flower & transfer pollen to center of female flowers

Squash, Pumpkin, Cucumber

5. Allow fruit to mature completely on vines
   - Stems are shrivelled & dry, seed coats hard
   - Ideally, fruit drops naturally from vine
6. Cure at least 3 weeks
7. Scoop out seeds
8. Clean from pulp (messy)
9. Dry seeds thoroughly

Happy Seed Saving!

To join Linda's List for garden tips: www.lindagilkeson.ca