

# WHAT IS A SEED?



Genesis 1:12      And the earth brought forth grass,  
and herb yielding seed after his kind, and the tree  
yielding fruit, whose seed [was] in itself, after his kind:  
and God saw that [it was] good.



A seed is a flowering plant's unit of reproduction, capable of developing into another such plant.

Synonyms: pip, stone, kernel; ovule

Example: "apple seeds"



**Day 1**



**Day 7**



**Day 20**



**A seed's main purpose is to reproduce the parent plant.**





# WITHOUT SEEDS THERE WOULD BE NO LIFE!





# WHICH SEEDS SHOULD YOU BUY TO SAVE?

1. Open pollinated
2. Heirloom
3. Hybrid
4. Patented



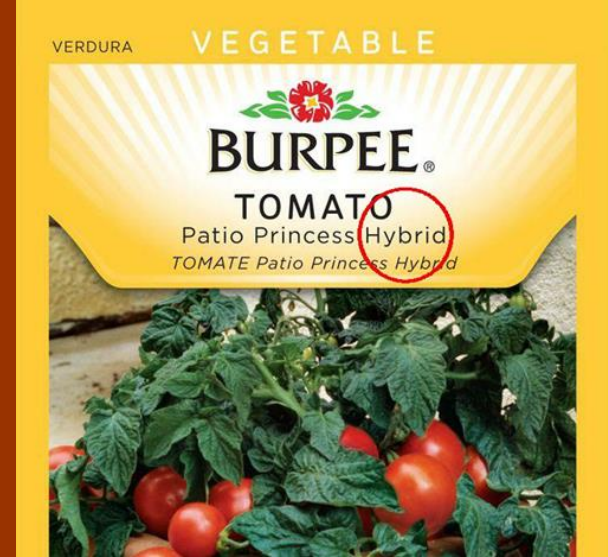
# OPEN POLLINATED

- Open Pollinated varieties grow out true from year to year.
- Can save seeds which will be true to the parent plant.
- There is a range of variation in the plants and fruits.





# F1 HYBRIDS



- The first filial generation made by crossing two different parent varieties.
- Must be hand-pollinated with the original cross repeated each season.
- Are bred for unique characteristics of each parent.
- Seeds planted from hybrids may revert to various ancestral forms may not produce what you want.



- Always open-pollinated.
- Generally means a variety that is at least 40-50 years old.
- Sometimes preserved and handed down from generation to generation in a particular region.
- Often have superior flavor, color, or texture, but may lack disease resistance, holding ability, early maturity, or other characteristics that would make them commercially viable.

# PATENTED SEEDS & PLANTS

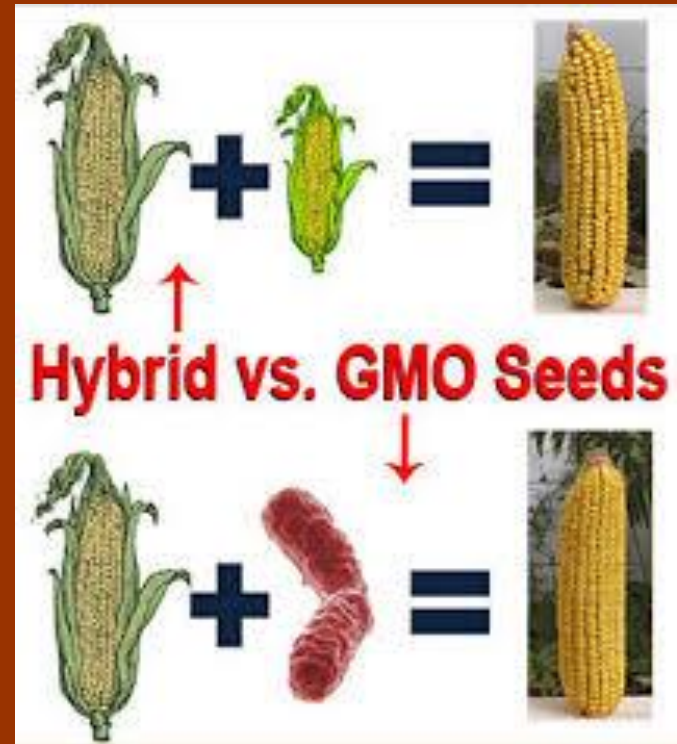
- Illegal to save seeds from patented seed varieties, or to propagate in any way.
- Patents are good for 20 years.
- Especially prominent with fruits: blackberries, muscadines, fruit trees, raspberries, etc.





# GMO SEEDS

- Produced by major industrial seed companies.
- Unnaturally devised at a cellular level.
- Not sold in seed catalogues.
- Patented.
- Not available to the public.

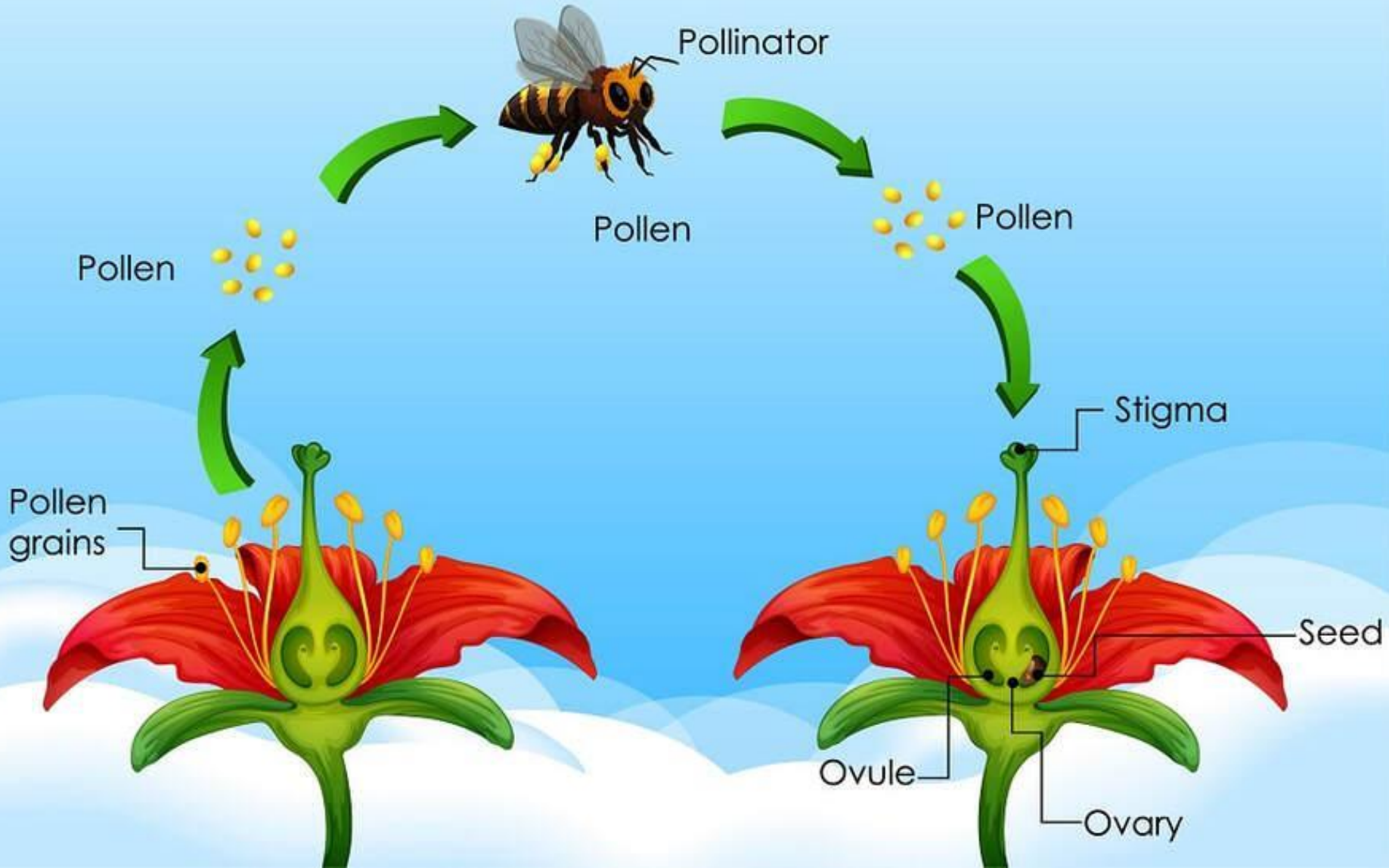


# POLLINATION

The transfer of pollen to allow fertilization.



# POLLINATION

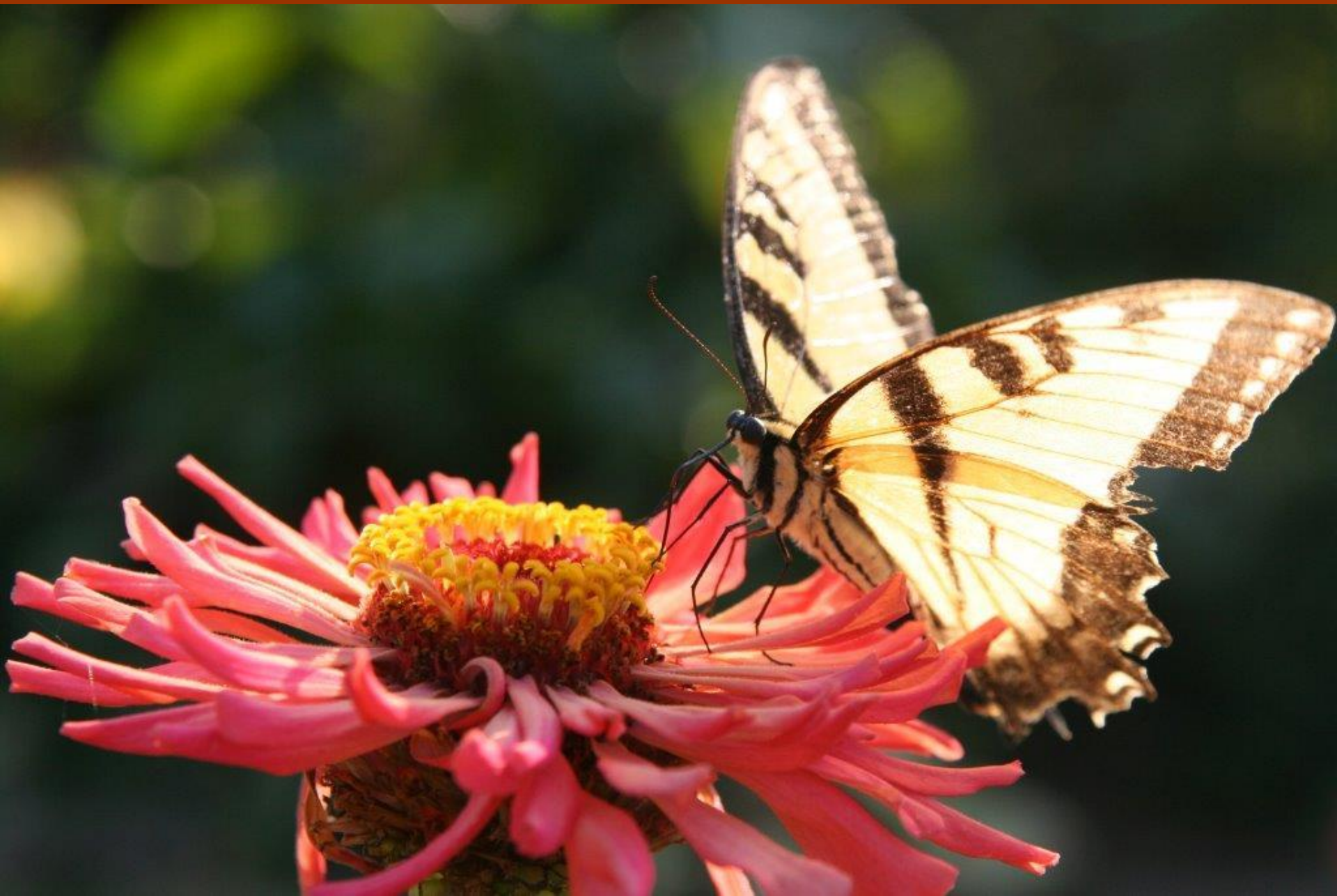






# POLLINATORS























**CROSS POLLINATION** is when one plant pollinates a plant of another variety. The two plants' genetic material combines and the resulting seeds from that pollination will have characteristics of both varieties and is a new variety.

<https://www.gardeningknowhow.com/edible/vegetables/vgen/cross-pollination.htm>

**Cross pollination occurs only between members of the same botanical species.**

# CROSS POLLINATION

- Any vegetable that has the same genus and species names can cross pollinate.
- For example cabbage is *Brassica oleraceae* and broccoli is also *Brassica oleraceae*. The first name is the genus and the second name is the species. Broccoli and cabbage have the same genus and species names.
- This means they will cross pollinate! So if you plant these next to each other in the garden and let them go to seed you may end up with F1 hybrid seed that will not be either cabbage or broccoli.



# EXAMPLES OF GENUS & SPECIES

The Cucurbitaceae, also called cucurbits or the gourd family, are a plant family consisting of about 965 species in around 95 genera, including:

- Cucumber: *Cucumis sativus*
- Cantaloupe: *Cucumis melo*
- Watermelon: *Citrullus lanatus*
- Squash: *Curcurbita pepo*, *C. moschata*,  
*C. maxima*, & *C. argyosperma*
- Gourds: *Lagenaria siceraria*, *Luffa cylindrica*, *Luffa acutangular*

Pollen is required for a flower to produce fruit.

- **Self-pollinating vegetables** have what is called “perfect” or “complete” flowers because each individual flower contains both the male (anther) and female (stigma) flowering parts necessary for fertilization and fruit production.
- Pollen must pass from the anther to the stigma for fertilization to occur.

*<https://harvesttotable.com/self-pollinating-vegetables/>*



# FRUITS/VEGETABLES THAT ARE NOT SELF-POLLINATING

- Some vegetables—squash plants for example—produce separate male and female flowers. Those flowers must be pollinated by insects, or by hand.
- Some plants with incomplete flowers may be pollinated by wind (corn).





- If self-pollinating vegetables are not producing fruits, you can help them along. When a self-pollinating plant is flowering you can simply give it a gentle shake to help the pollen drop.

<https://harvesttotable.com/self-pollinating-vegetables/>

- Self-pollinating vegetables include tomatoes, peppers, eggplants, beans & peas, and peanuts.

# WHAT CHARACTERISTICS DO I LOOK FOR IN THE SEEDS THAT I SAVE?

Varieties and individual plants within a variety

- Shorter days to maturity.
- Plants should produce well and abundantly.
- Plants should show disease resistance.
- Easy to pick.
- Free from defects in shape, color, etc.
- Good flavor.

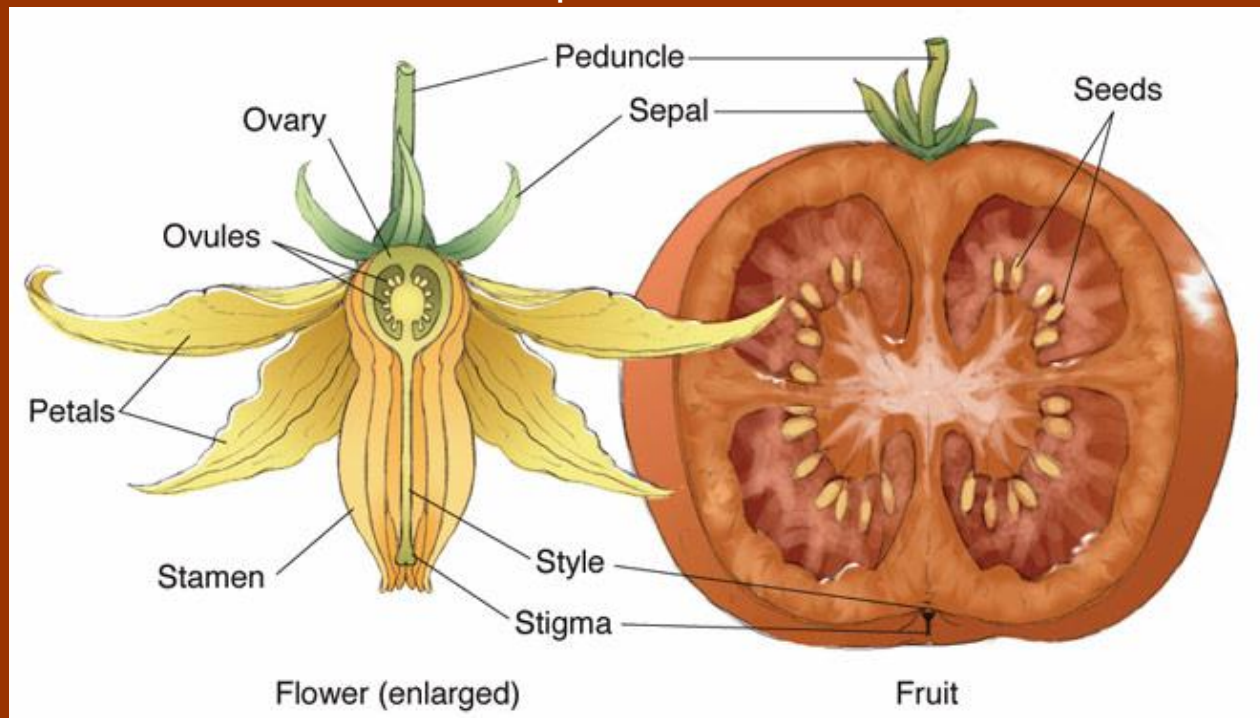


# HOW MANY PLANTS DO I NEED TO GROW TO SAVE SEED?

- **Self-pollinating OR do not pollinate with other flowers easily:** You can save seeds from only 1 plant, since they have complete flowers and usually self-pollinate (examples are beans & tomatoes).
- **Not self-pollinating OR self-pollinate but are frequently pollinated by insects:** It's best to save seeds from as many plants as possible to maintain genetic diversity.

**TOMATOES are self-pollinated at the rate of around 96% of the time.** Tomato flowers are complete flowers that have both male (stamen) and female (pistil) parts within the same flower. The yellow anthers (produce pollen) of the stamen wrap around the pistil which is in the center of the flower.

<https://extension.umd.edu/resource/problems-pollination-high-tunnel-tomatoes#:~:text=Tomatoes%20are%20self%2Dpollinated%20at,the%20center%20of%20the%20flower.>



# TOMATOES

There are as many as 3,000 open-pollinated tomato varieties.





# TOMATOES

- Collect seeds from fruits that are fully ripe. Choose your best-looking tomatoes from the healthiest plants. Mark tomatoes so you won't pick & eat them by mistake.
- Tomato seeds are enclosed in a gel-like sack that contains growth inhibitors to prevent the seeds from sprouting inside the tomato.
- Scoop seeds into a jar and add up to a cup of water to help separate the seeds from the pulp. Then set the jar of tomato seeds and pulp in a warm, out-of-the-way spot.
- Allow 2 to 4 days for fermentation to take place.

- Pour seeds from jar into a sieve and rinse well.
- Pop out onto a piece of cardboard, spread out with fingers, and let dry.
- Remember to label both jar and then cardboard with the variety.
- When seeds are dry (a few weeks), store in a jar or plastic bag, and label variety and year saved.









TAHITIAN  
BITTER NUT  
Very Sweet  
medium size  
2023



DELUXE  
MIXED NUTS  
SEA SALT

Member's Mark



## Additional characteristics I look for in a tomato (personal preferences):

- Small core.
- Resistance to splitting, even with lots of rain.
- Drought resistance.
- Smooth shape—lots of ridges look pretty but are harder to cut, especially for canning.



# CUCUMBERS

- Mark cucumbers that you want to save for seed. Let remain on vine until very mature—large & yellow or orange.
- Cut cucumbers and scrape out seeds into a jar.
- Follow instructions for tomato seeds.









# OTHER CHARACTERISTICS THAT ARE IMPORTANT TO ME IN A CUCUMBER

- Resistant to Downy Mildew Disease.
- Resistant to Powdery Mildew Disease.

Separate varieties for seed by at least  $\frac{1}{4}$  mile or grow only 1 variety.



# EGGPLANT

- Wait until the eggplant is overripe and inedible before you start collecting eggplant seeds.
- The eggplant should look dull and off colored.
- Overripe purple eggplants turn tan or brown while white and green eggplants take on a yellowish hue.
- An overripe eggplant is typically hard and shriveled.

<https://www.gardeningknowhow.com/edible/vegetables/eggplant/saving-seeds-from-eggplant.htm>



- Let the eggplants stay unrefrigerated for a few days until they feel a little softer.
- Slice open the eggplant and separate the flesh from the seeds.
- Put the seeds in a bowl of water and wash the pulp away.
- Strain the seeds and spread out onto a piece of cardboard.



# WHAT I LOOK FOR IN AN EGGPLANT VARIETY

Resistance to flea beetles!

Can it survive them?



# GREENS GROUPED BY GENUS/SPECIES

***Brassica oleracea***: Broccoli, cabbage, cauliflower, kale, collards, Brussels sprouts, kohlrabi

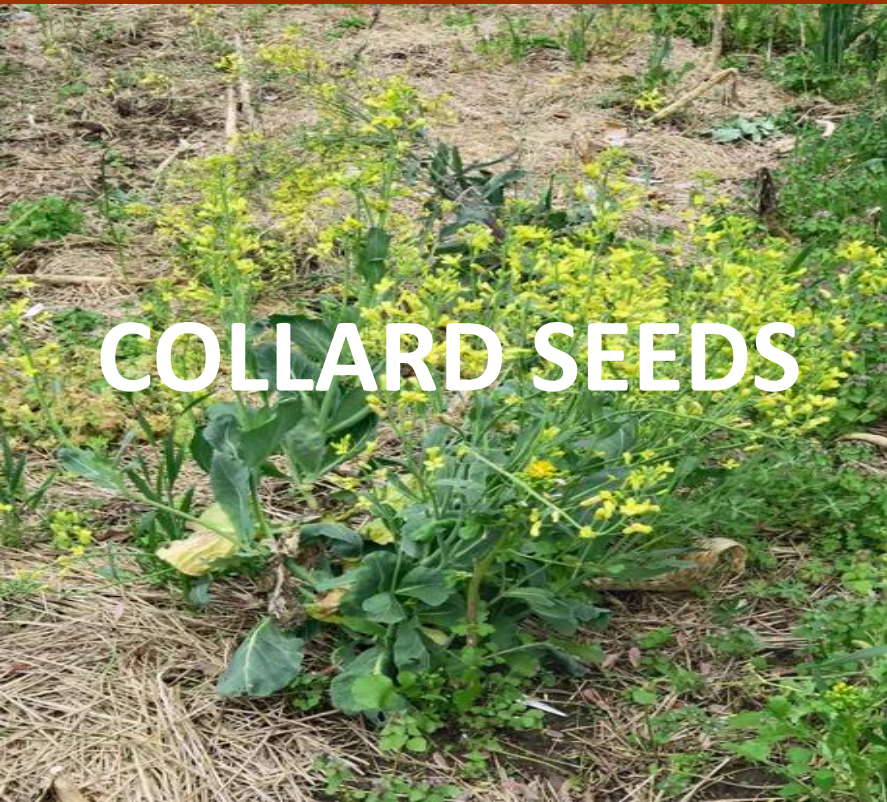
All are biennials and must overwinter in order to be able to make seed except for broccoli and cauliflower which will go to seed the first year.

***Brassica rapa***: Turnips, napa cabbage, bok choy, rapini, Chinese mustard, mizuna, tatsoi

***Brassica juncea***: Mustard greens including red and green varieties, ruby streaks, etc.



# COLLARD SEEDS





***Beta vulgaris:*** Beets, Swiss chard. Biennials and must overwinter to produce seeds.

***Eruca sativa:*** Arugula (annual).

Arugula is self-sterile—insects must be able to reach the flowers of different plants for pollination to occur. Gather seeds as soon as dry since they drop seeds quickly. Seeds viable for 4 yrs.

***Raphanus sativus:*** Radishes. Dry on stalk until brown. You may have to cover them to keep the birds from eating them. Plant in spring—will go to seed spring or summer.

# BEETS





# RADISHES







**ARUGULA**





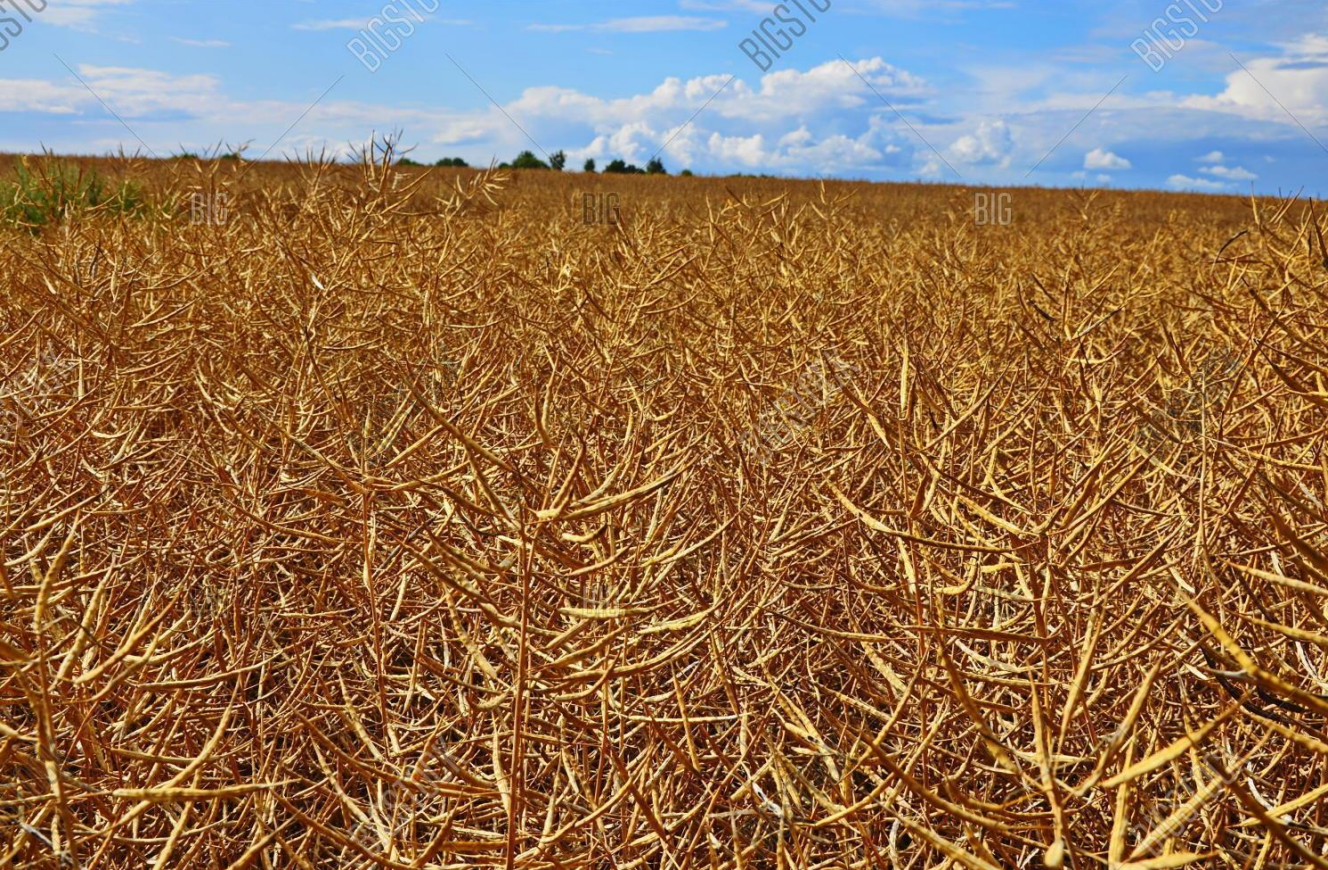
***Amaranthus:*** Amaranth is mainly self-pollinating and has numerous intricate flowers, which make crosses more difficult than in other crops. There are many different species, but sometimes will cross pollinate with each other.



# LEAFY GREENS SEEDS

- Greens will send up shoots and make little pods where the flowers were.
- Let the pods turn brown.
- Collect pods in large bowl or paper bag.
- Let the seed pods dry thoroughly before removing seeds.
- Rub very dry seed pods between the palms of your hands.
- Seeds will fall to the bottom of the container.
- Lift the chaff on top out and put in the compost.
- Save the seeds in a jar or plastic bag.













# BASIL

- ***Ocimum basilicum***: Basil relies on insects for pollination.
- Different basil varieties will cross with each other.
- Harvest seed heads as they dry and allow to finish drying in a warm, dry spot.
- Seeds are easily removed by crumbling the dried flower heads and then blowing away the chaff.
- A branch or two of each plant can easily be left to go to seed while collecting leaves for cooking with leaves from the rest of the plant. Takes a long time so same from early in the season.
- Basil seeds will last up to 5 years.





# DILL

- Dill will go to seed quickly as warm weather approaches.
- Yellow flowers will appear on umbels on the ends of shoots.
- To harvest dill seeds, wait until the seeds start to turn brown; as the seed clusters gain weight, they may need staking to keep them high and dry.
- Gather the ripe seed heads by clipping them into a paper bag, and place the bag in a warm, dry place indoors for a week or more.



# DILL



# PARSLEY

- Parsley is biennial and must overwinter before making seed.
- In the spring it will start putting up shoots that will flower and form seeds—it looks a lot like dill going to seed.
- Flowers will form seeds which should turn brown before harvesting them.
- Collect brown seed heads in a paper bag or bowl. Store in a bag or box until very dry.
- Seeds can be rubbed out; chaff can be blown away.





# PARSLEY



# LETTUCE

- Isolate varieties by at least 10' for home use, 25-50' for absolute purity. Lettuce does not easily cross pollinate.
- It's time to harvest lettuce seeds when the flower head turns yellow, or dries out, and the white cotton puffs come out around the top.
- Pick one and break it open with your fingernail.
- It should be full of little seeds (colors vary).
- Pick and dry in a paper bag, on newspaper, or in a flat box.











# SQUASH

- There are 4 species of squash within the genus *Curcubita*. You can grow 1 variety of squash from each species without risking cross pollination.
- *C. pepo*: Includes most summer squash, some small gourds, and some pumpkins.
- *C. moschata*: Includes different butternuts, Seminole pumpkins, and cheeses.
- *C. maxima*: Includes Hubbards, Buttercups, Turban Gourds, and some other winter squash.
- *C. argyrosperma* (mixta): Includes most cushaws.

## Summer Squash:

- Let the squash mature on the vine until the skin is hard like a winter squash.
- Choose the best squash from the best plants. Mark and leave on the vine until the vine is dead.
- The squash will get very hard so you may have to break it open with a hatchet to remove the seeds.
- Rinse the seeds and spread them in a shallow cardboard box.
- Let dry for a few weeks, then store.











## Winter Squash:

- Cure and store winter squash as usual. When you cut them to cook, scoop out the seeds, rinse, and spread out in a shallow cardboard box. Let dry for a few weeks, then store.
- For seed saving, choose the squash that taste the best and keep the best. I eat some of each squash before deciding if I want to save the seeds from it or not.







# CORN

- Zea mays: All corn
- Different types of corn include, dent, flint, sweet, and popcorn. All will cross-pollinate. Can be separated for seed saving by time or a lot of distance. Pollinated by wind and insects.
- Days to maturity range from about 70 – 120 days.
- Most experts say you must grow at least 200 corn plants to preserve the genetics (500 is better).
- Another thought that I read was to grow different varieties and let them cross pollinate for better genetics.



# CORN

- Save seed from as many different plants as possible.
- Also, you definitely do not want your flint or dent corn (for cornmeal) to cross with sweet corn or popcorn. This would make your sweet corn not sweet and your popcorn might not pop.
- Corn is the only common grain that can easily be grown and harvested in the home garden. Buckwheat and amaranth are both seeds (pseudo-grains) but have possibilities.





























# BEANS & PEAS

- Bean flowers are perfect and self-fertile, meaning they can pollinate themselves. While bees will visit bean flowers, cross pollination does not happen very easily. Different bean varieties only need to be separated by 10-20ft to avoid cross-pollination.
- The seeds are ready to harvest when the pods are fully dry and brittle. It is best if this can happen on the vine. However, if heavy rains threaten a mostly dry seed set, pull the vines or pods and continue to dry under cover.
- Bean seeds will store for 3-6 years.











# OKRA

Okra plants have perfect flowers (both male and female parts on the same flower) and will readily self-pollinate. However, pollinators are often drawn to the showy flowers, so cross-pollination between plants does occur.







- Choose pods to save from the healthiest, nicest plants.
- Choose 1 pod from each of several different plants.
- Tie something around those pods so that you'll remember which ones you are saving.
- Start early in order to have plenty of time for the seeds to mature before frost (I usually start sometime in August in Tennessee).
- Allow the pods to totally dry on the plant. When dry enough pods will split along the ribs.
- Collect the pods and lay out in a flat box for a few weeks.
- Split open and save the seeds.
- Store in a cool dark place.

# ASPARAGUS











RED JAPANESE 3.12.20

PURPLE SOLDIER

MEXICAN GOLD

12.20

STARTED FEB 10 12 RNT

PEPPER

00021



# WAYS TO STORE SEEDS

- Always make sure seeds are totally dry before storing. I leave them in shallow boxes for a few weeks before putting them in plastic bags, which then go into other containers (usually tins). This insures no moldy seeds.
- Store seeds in a cool, dry location away from direct sunlight. Exposure to temperatures above 90 degrees Fahrenheit will greatly decrease the viability of your seed.
- Low humidity is important.

- Seeds can be stored in sealed containers, plastic bags, and wax or paper envelopes.
- Silica gel packets can be added to the bags, containers, etc.
- A refrigerator can be a good option for seed storage that can extend the storage life by several years. Seeds stored in the refrigerator should be in a sealed container. When seeds are removed from cold storage, let the container reach room temperature before opening the container to avoid condensation on the seeds within the container.



- If you have grown and harvested the seeds yourself, make sure that they are thoroughly dry before storing the saved seeds.

<https://extension.sdstate.edu/how-store-leftover-garden-seeds#:~:text=Store%20your%20seeds%20in%20a,and%20wax%20or%20paper%20envelopes>.

- If you want to **check for viability** before planting, do a germination test.

<https://hortnews.extension.iastate.edu/how-store-seeds-and-test-germination-rates>









BLACK  
SUNFLOWER  
SEEDS

TOMATO

HERNUT  
SQUASH

ITALIAN  
HERB LEAF  
TOMATO





cilantro

beets

dill

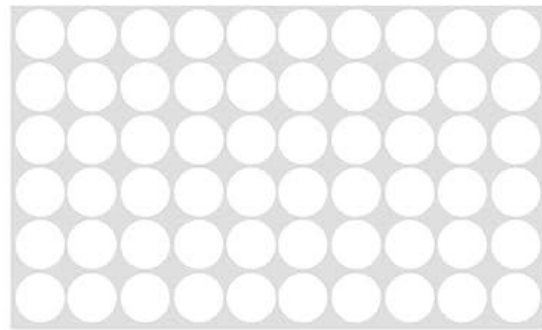
Tomato

cucumber

KALE

Lima









BULLHORN PEPPERS

Butternut

PINK PONDROSA

COSTOLUTO GENUOSE

Red Zebra

1102 7710





VEGETABLES

RUTABOGAS

HERBS

PAPRIKA

WINDSOR

KIDNEY BEANS

CANNONBALL

Red Dragon F1  
Hot Dill - Bergout

KIDNEY BEANS

GREENS

HERBS

GREENS

HERBS

FLOWERS

WINDSOR

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WINDSOR







Corn Strawberry Popcorn  
Great for Fall Celebrations



BAKER CREEK HEIRLOOM SEEDS  
MANSFIELD • MISSOURI 65704

THROWBACK ROAD



PEPPERS

2020

TOMATOES

2021

OKRA

TOMATOES

2021

MELONS

TOMATOES

2020

HERBS

SQUASH, W.

GOURDS

SQUASH, W

2021

CUCUMBER

SQUASH, W.

2021

ALLIUMS

RADISH

ALLIUMS

PEPPERS

2021

50T

25T



15T



# RESOURCES FOR BUYING OPEN POLLINATED SEEDS

- Sandhill Preservation Center:

<https://www.sandhillpreservation.com/vegetables>

- Sandhill has all open pollinated seeds, specializing in growing and selling varieties that are not commonly found elsewhere. They carry 202 varieties bean/pea seeds, 173 varieties corn, 206 varieties squash/pumpkins/gourds, to name just a few. Most seed packets are \$3 or less. You have to order the old fashioned way, by mail.

## BAKER CREEK HEIRLOOM SEEDS:

<https://www.rareseeds.com/> Carries only heirloom seeds; free shipping.

## SOUTHERN EXPOSURE SEED EXCHANGE:

<https://southernexposure.com/> Almost all open-pollinated seeds. Specializes in seeds for the mid-Atlantic and Southeast.

MIGARDENER: Many open pollinated seeds; mostly \$2 seed packets with lots of seeds, and free shipping with a minimum order of \$20.

There are many companies, large and small, that sell open pollinated seeds. These are just the ones with which I am more familiar.



# RESOURCES FOR GROWING AND SEED SAVING INFORMATION

- **Seed to Seed** by Suzanne Ashworth. A much quoted book on seed saving techniques.
- **PAM DAWLING:** Website is excellent. More on growing than seed saving.  
<https://www.sustainablemarketfarming.com/>
- Pam was the farm manager for 20 years for Twin Oaks, an intentional community of 100 people, located in Virginia. She has shared an enormous amount of valuable information in her blog. Her book is also available on the website.
- Both **Baker Creek** and **Southern Exposure** have good growing/seed saving information on their websites.

- **Johnny's Selected Seeds** has good growing information, although they carry mostly hybrid seeds.
- **Seed Saver's Exchange** is another source of growing and seed saving information.
- Many seed companies include growing and seed saving information on their website.



Matthew 13:4-8      And when he sowed, some seeds fell by the way side. . .some fell upon stony places, where they had not much earth. . .and some fell among thorns. . .but other fell into good ground, and brought forth fruit, some an hundredfold, some sixtyfold, some thirtyfold.

