# The importance of Seed Saving



# Why Seeds Matters

- Our organic food future starts with seed.
- Most of our organic food isn't actually grown from seed bred for organic farming.
- There's not enough support or funding for organic seed research. By learning a little, spreading the word, and getting involved, we can improve the quality of the food we eat from seed to farm to table.
- SEED: We usually don't think about seed when we sit down to eat. The seed we sow affects the quality, nutrition, cost, and environmental impact of all the food we eat and every fiber we wear.
- FARM: The last several decades of industrial agriculture have developed seed that is suited to intensive chemical agriculture. While this has Unintended consequences include sometimes resulted in higher yields, it has come with very real costs. Air and water pollution, increased pesticide use, greater dependence on fossil fuels, degraded soil health, increased exposure to toxins in farm workers, and the loss of biological and genetic diversity.
- TABLE: Working with organic farmers, scientists, and nonprofits on organic seed solutions. Together we can improve the nutrition and flavor of our food, increase regional food diversity, while also reducing usage of pesticides, fertilizer, and energy.

# What the difference? Open-pollinated, heirloom & hybrid seeds

- Open-pollination is when pollination occurs by insect, bird, wind, humans, or other natural mechanisms.
- Because there are no restrictions on the flow of pollen between individuals, open-pollinated plants are more genetically diverse. This can cause a greater amount of variation within plant populations, which allows plants to slowly adapt to local growing conditions and climate year-to-year. As long as pollen is not shared between different varieties within the same species, then the seed produced will remain true-to-type year after year.
- An heirloom variety is a plant variety that has a history of being passed down within a family or community. An heirloom variety must be open-pollinated, but not all open-pollinated plants are heirlooms. While some companies create heirloom labels based on dates (such as a variety that is more than 50 years old), Seed Savers Exchange identifies heirlooms by verifying and documenting the generational history of preserving and passing on the seed.
- Hybridization is a controlled method of pollination in which the pollen of two different species or varieties is crossed by human intervention.
- Hybridization can occur naturally through random crosses, but commercially available hybridized seed, often labeled as F1, is deliberately created to breed a desired trait. The first generation of a hybridized plant cross also tends to grow better and produce higher yields than the parent varieties due to a phenomenon called 'hybrid vigor'.
- However, any seed produced by F1 plants is genetically unstable and cannot be saved for use in following years. Not only will the plants not be true-to-type, but they will be considerably less vigorous. Gardeners who use hybrid plant varieties must purchase new seed every year.
- Hybrid seeds can be stabilized, becoming open-pollinated varieties, by growing, selecting, and saving the seed over many years.

# Lost of Seed diversity

Hybrids have their benefits but:

- choosing open-pollinated varieties conserves the genetic diversity of garden vegetables and prevents the loss of unique varieties in the face of dwindling agricultural biodiversity
- Focusing on heirloom varieties creates a historical connection to gardening, food production and local culture, building a more sustainable future by carrying on our garden heritage
  - By choosing open-pollinated and heirloom varieties, you have the ability to help conserve biodiversity and to contribute to the stories behind our seeds.



## Seed Saving Tips trade seed and preserve plant diversity.

Beans	Let the pods age on the vine until they turn brown. You can also store the entire plant (with roots) upside down in a warm area until pods dry out. Cross-pollination could affect the purity of your bean seeds in the future. Pole beans are more likely to cross.	The table to the left lists several popular annual vegetables and fruits with
Cantaloupe	Best time to collect seed is when the stem dies and the fruit separates easily. Remove the membranes from the seed by rinsing and gently rubbing with your fingers.	easy-to-save seeds and a lower potential for cross- pollination in the home
Cucumber	Harvest seed when cucumbers are fully ripe and yellowed (too ripe for eating).	garden. They lower and
Lettuce	Let seed pods dry on the plant. Bag the plant to capture the seeds because they progressively fall off from bottom to top. Do not save seed from plants that bolt too soon. The seed you save may produce plants that go to seed prematurely.	year. General advice is given to maintain as much seed purity as possible when plants
Peas	Wait until the plant dies and collect the seeds. Peas do not cross-pollinate.	are more prone to cross
Peppers	Best time to collect seed is when peppers are full color and beginning to shrivel. Brush off the seeds from the inside stem and let dry. Peppers of the same species could cross. Grow one hot type and one sweet type to prevent cross-pollination.	Please seek out other references to enhance your knowledge of seed saving.
Pumpkin	Remove seeds three weeks after harvesting the pumpkin. Varieties within the same species can cross. Rinse off membranes and dry well.	~Save seeds from heirloom or
Squash (Summer)	Harvest seed when the squash has a hard skin and is too ripe to eat. Hold the seeds under water and rinse off the membrane. Avoid cross-pollination-do not plant these species together: Cucurbita Pepo, Cucurbita Moschata, Cucurbita Maxima and Cucurbita Mixta.	if you want them to stay true. Hybrid seed will not produce the same plant again.
Sunflower	Most sunflowers are hybrids. Save heirloom seeds if you want the flower to stay true. Hang flower heads upside down by a short length of stalk in a cool, dry spot. Once dry, remove the seeds and keep dry until planting.	~Choose the healthiest plants and the largest seeds. ~Air dry seeds on a fine screen or paper away from direct surlight
Tomato	Save seed when fruit is full color and firm, but still tender to the touch. Remove the protective gel covering the seed. Cross-pollination may occur with wild or currant tomatoes but most popular types will not cross. Ensure space between plants.	and as quickly as possible to reduce contamination. ~Label seed (drying and storage).
Watermelon	Remove fibers and membranes by rinsing. When dropped in a glass of water, viable	~Use containers that limit moisture. ~Drying may not be necessary if.

## Collecting Seed from Greens, Flowers & Herbs



Seeds for greens, herbs, and flowers are found in the flower heads.

Herbs and greens will send up flower shoots at the end of the season

Once the plant has flowered it will start to brown. It looks like it is dying, but it is creating seeds.

Wait until seeds are fully mature When ready, some seeds will rattle in their pods others will blow away quickly.

pay close attention to your plants!!

## How to Save Your Seeds? Simple Starter Tips:

Start with the Seed: to grow good seeds, you must plant good seed, look for *Heirloom* varieties.

## Basic Biology:

Insects and wind can Cross-Pollinate your plants. Isolate or keep distance between like plants you want to collect seed from. \*polle

## Watch Your Plants:

\*pollen carried from plant to plant will affect seed purity

Observation is important. Seeds are ready when the plant fully matures. Collect seeds from healthy plants.

**Storage:** Separate collected seed from all plant material. Let dry completely, then store in a cool, dry and dark place over winter. Remember to LABEL your seeds carefully.

**Repeat:** Come spring, you will have your own seed collection. Plant and share them. When they're ready save the seeds and keep growing.

# What are GMO's?



A TOMATO THAT LOOKS LIKE A TOMATO, KINDA TASTES LIKE A TOMATO, BUT CONTAINS THE GENES OF A FISH. I BET THAT DOES WONDERS FOR MY BODY.

WAKE THE WOLVES .com



## A FEW BRANDS THAT SUPPORT GMOS

(There's more. And um we used to eat this stuff.)





# In the U.S., GMOs are in as much as 80% of conventional processed food.



### A GMO IS:

the direct human manipulation of an organism's DNA in a laboratory environment.

### SCIENCE OF GMOS

Genetic modification may include the ADDITION OF DNA from species that would NOT BREED in nature.

Cross-species-or transgenic-genetic

manipulation has gone so far as to

COMBINE FISH DNA WITH STRAWBERRIES and tomatoes.

DNA enetic modification may so involve REMOVING PECIFIC STRANDS OF D Gene also SPE(

GMO foods have GMO life can only existed in be patented groceries since the late 1990's.

GMO varieties of corn and potatoes are engineered to PRODUCE THEIR OWN PESTICIDES.

### STUDIES OF GMOS

#### NO LONG-TERM TESTING.

It took decades for the dangers of Trans-Fats (another artificial food) to become understood.

Mice fed GM pesticideproducing corn over four generations showed **ABNORMAL** structural and chemical changes to various organs and significantly reduced fertility.

herbicide-resistant crops can cross-pollinate to create HERBICIDE-RESISTANT WEEDS.

TRANGENIC DNA HAS BEEN FOUND IN 80% OF WILD CANOLA IN NORTH DAKOTA



Genetically Modified Organism

#### PREVALENCE OF GMOS

Plants and animals that are traditionally bred

to achieve specific characteristics such as breeding dogs or cross-pollination of plants

You probably eat GMOs EVERY DAY.

A GMO IS NOT:

because of how many processed foods contain soy.)

PERCENT OF GMOS IN TOTAL CROP PRODUCTION 2011 (USA)

Soybeans 94% 90%

#### PUBLIC OPINION OF GMOS

88%

Polls consistently show that a significant majority of North Americans would LIKE TO BE ABLE TO TELL if the food they're purchasing contains GMOs.

OUT OF A CBS NEWS POLL:

87% want GMOs labelled

53% would not buy genetically modified food

NATIONAL OPINIONS OF GMOS:

The USA is the largest producer of GMO crops and does not mandate labels for GMO food.



countries there are bans or restrictions on the production of GMOs, because they are not considered proven safe.

DESIGN BY MCKENZIE LONG AT CARDINAL INNOVATIVE

INSECTS P Z

GMO