Outline
09/10/2014 Louisville Seed Library
Seed Saving

Define the following:

1. Heirloom Seed
    a. An heirloom is generally considered to be a variety that has been passed down, through several generations of a family because of it's valued characteristics. Since 'heirloom' varieties have become popular in the past few years there have been liberties taken with the use of this term for commercial purposes.
    b. Commercial Heirlooms: Open-pollinated varieties introduced before 1940, or tomato varieties more than 50 years in circulation.
    c. Family Heirlooms: Seeds that have been passed down for several generations through a family.
    d. Created Heirlooms: Crossing two known parents (either two heirlooms or an heirloom and a hybrid) and dehybridizing the resulting seeds for how ever many years/generations it takes to eliminate the undesirable characteristics and stabilize the desired characteristics, perhaps as many as 8 years or more.
    e. Mystery Heirlooms: Varieties that are a product of natural cross-pollination of other heirloom varieties.
    f. (Note: All heirloom varieties are open-pollinated but not all open-pollinated varieties are heirloom varieties.)
2. Open Pollinated Seed
    a. Open pollinated or OP plants are varieties that grow true from seed. This means they are capable of producing seeds from this seasons plants, which will produce seedlings that will be just like the parent plant.
3. Organic
    a. Organic
        1. USDA Definition and Regulations:The Organic Foods Production Act (OFPA), enacted under Title 21 of the 1990 Farm Bill, served to establish uniform national standards for the production and handling of foods labeled as “organic.” The Act authorized a new USDA National Organic Program (NOP) to set national standards for the production, handling, and processing of organically grown agricultural products. In addition, the Program oversees mandatory certification of organic production. The Act also established the National Organic Standards Board (NOSB) which advises the Secretary of Agriculture in setting the standards upon which the NOP is based. Producers who meet standards set by the NOP may label their products as “USDA Certified Organic.”
        2. USDA National Organic Standards Board (NOSB) definition, April 1995“Organic agriculture is an ecological production management system that promotes and enhances biodiversity, biological cycles and soil biological activity. It is based on minimal use of off-farm inputs and on management practices that restore, maintain and enhance ecological harmony.
        3. “Organic” is a labeling term that denotes products produced under the authority of the Organic Foods Production Act. The principal guidelines for organic production are to use materials and practices that enhance the ecological balance of natural systems and that integrate the parts of the farming system into an ecological whole.
        4. “Organic agriculture practices cannot ensure that products are completely free of residues; however, methods are used to minimize pollution from air, soil and water.
        5. “Organic food handlers, processors and retailers adhere to standards that maintain the integrity of organic agricultural products. The primary goal of organic agriculture is to optimize the health and productivity of interdependent communities of soil life, plants, animals and people.”

b. Heirloom Seed
    1. Refer to 1 above
c. Open Pollinated Seed
    1. Refer to 2 above
d. Hybrid Seed
    1. Refer to 4 below

4. Hybrid
    a. A hybrid plant is a cross between two or more unrelated inbred plants. Hybridization has brought huge improvements, including more vigorous plants, improved disease resistance, earlier maturity, more uniform growth and increased yield.
    b. Seed saved from the first cross-pollination of two unrelated open-pollinated plants is called F1 hybrid seed. (F1 stands for Familial 1.) Each of the parents contributes attributes that, when combined, produce an improved type of plant.
    c. **Survival Seed Vault** www.mypatriotsupply.com
    Don't Wait for an Emergency- Secure your Food Supply Now!
    d. A frequent characteristic of F1 hybrids is much-increased vigor. This can take the form of faster growth to maturity, larger root and top growth and increased productivity. The gains from what is called heterosis greatly exceed the sum of what the parent plants might be expected to produce. Despite recent advances in the understanding of plant genetics, there is still no agreement among scientists about what causes heterosis.
    e. Like other living things, plants are vulnerable to a range of diseases that can cause disappointment in a home garden and huge financial losses in agriculture. One trait that is constantly sought in plant hybridization is resistance--or at least tolerance--of diseases that can affect productivity. In seed catalogs, resistance is noted in an abbreviation after the plant variety name. For example, "Arbason F1 Hybrid, FW (races 0, 1), VW, TMV" means that this tomato has resistance to fusarium wilt races 0 and 1, verticillium wilt and tomato mosaic virus.
    f. While the taste and appearance of open-pollinated and heirloom plants is highly valued, the size and growth rate of fruit and leafy parts can vary widely. Hybridization can stabilize growth factors, so the grower can harvest much more uniform produce.
    g. In agriculture, the ability to produce a crop early in the season has considerable marketing advantages. The first corn, the first tomatoes, the first strawberries always command higher prices. Hybrids can be created to achieve this, as well as higher yield, although it is often true that this extra-early produce does not have the full taste of later varieties.
    h. The seed of open-pollinated or heirloom plants can be saved, and when sown will produce plants that are essentially identical to the parent plant. The seed from F1 hybrid plants, called F2 hybrids, will not produce a copy of the parent. Instead, the F2 plant will exhibit "break-up" in the form of random characteristics from either parent or possibly an even earlier trait. What this means is that F1 hybrid seed has to be created from scratch every year by laboriously hand-crossing the parent plants. This helps to explain why hybrid seed can be so expensive.
    i. Read more: Definition of Hybrid Plants | Garden Guides http://www.gardenguides.com/88581-definition-hybrid-plants.html#ixzz3Cwi44hxq

5. GMO (Genetically Modified Organism)
    a. A GMO (genetically modified organism) is the result of a laboratory process where genes from the DNA of one species are extracted and artificially forced into the genes of an unrelated plant or animal. The foreign genes may come from bacteria, viruses, insects, animals or even humans. Because this involves the transfer of genes, GMOs are also known as “transgenic” organisms.
    b. This process may be called either Genetic Engineering (GE) or Genetic Modification (GM); they are one and the same.
    c. The term “genetic modification” is used both commonly and legally to refer to the use of recombinant DNA techniques, in ways that are not possible or desirable in nature, to transfer genetic material between organisms. This concept of genetic modification brings about alterations in genetic makeup and in the properties of the organism developed. This technique using genetic

engineering is highly mutagenic and leads to unpredictable changes in the DNA and the proteins produced by the GMO that can lead to toxic or allergic reactions.

d. GM proponents will argue that "genetic modification" has been used for centuries in an attempt to blur the lines and create confusion. Traditional genetics used selective breeding, tissue cultures, hybridization and other methods that assists nature but does not circumvent natural laws.
e. The methods used to transfer the genes of modified DNA of a genetically modified plant are imprecise and unpredictable. These unintended changes are possible differences in the food's nutritional values, toxic and allergic effects, lower crop yields and unforeseen harm to the environment that cannot be recalled.

What seed can you save and why?

1. Heirloom and Open Pollinated Seed
2. Organic Heirloom and Open Pollinated Seed

Why?

f. Hybrid seed has been manually manipulated to express specific qualities of the parents.
g. If you save the seed and plant it the next year it will express traits of a parent but will not grow true to type.
h. GMO's are patented seed and cannot be saved. Seed companies will prosecute if they determine your saved seed has genetic material from their patented seed.

Can my seed cross pollinate?

1. It Depends
    a. Plants that are self fertilizing
    b. Plants that need to be pollinated
        i. Regardless of pollination requirement if you are growing more than one variety of plant the possibility exists for them to cross pollinate and it won't be evident until the seed is grown out next year.

When to harvest seed?

1. It Depends
    a. Examples of easy seed to save
        i. Corn
        ii. Dried Beans
        iii. Squash

Links to seed saving and seed saving webinars

1. http://www.seedsavers.org/

Recommended resources

1. Seed to Seed Seed Saving and Growing Techniques for Vegetable Gardeners by Suzanne Ashworth