Developing New Varieties
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Somewhere in time, humans noticed they could put seeds in the ground and watch them grow.
Plant propagation is a fascinating process involving science, patience and in many cases a lot of luck.
Likewise, they could cut sticks, put them in the sand next to the river, and see them grow.
Early gardeners were no different from you or me, they always wanted something different.
What Is Good Seed?
Good Seeds

- One often-overlooked aspect of accelerating the gardening season is to select the best varieties for our area.
Good Seeds

- Whatever other methods you use, be sure to choose recommended varieties. This makes more difference than almost any other single aspect of growing plants.
Good Seeds

– Days to harvest are an important consideration. The number of heat units required for maturity and preferred growing temperature are also important.
Good Seeds

- Certain crops don't mature in our area even though our growing season is long enough because they do not get warm enough temperatures for a long enough time.
Luther Burbank was born in Massachusetts in 1849.

- He lived in Santa Rosa for more than 50 years and conducted plant-breeding experiments that brought him world renown.
Burbank’s goals was to manipulate plants and increase the world's food supply
Burbank developed a spineless cactus to provide livestock forage for in desert regions.
Burbank introduced more than 800 new varieties of plants
These included more than 200 varieties of fruits, many vegetables, nuts and grains, and hundreds of ornamental flowers.
On Burbank's death in 1926 he was buried near his greenhouse on the grounds of his home.
He loved working with the plants to get the right characteristics in his creations.
Although he wanted to spend all his time experimenting with plants, he had to earn a living
Burbank had the nursery, Santa Rosa Gardens, and a successful catalog business
He made horticultural history with the 1893 catalog entitled, "New Creations"
New plant creations? The idea of a human, not God, creating plants caused all sorts of controversy not unlike some of the breeding programs today.
During his lifetime, Luther Burbank couldn't "copyright" his new plant varieties.
The only way he made money from his "new creations" was selling plants from his nursery.

- This catalog, published from 1910-1912 featured a beautiful gladiola on its cover.
Developing the Shasta Daisy

• One of Burbank’s outstanding accomplishments was developing a new species, the Shasta Daisy, by breeding and selection.
Developing the Shasta Daisy

- He started with the wild oxeye daisy and crossed it with two European daisies to increase the size and beauty.
Developing the Shasta Daisy

• He then crossed these with a Japanese nippon daisy as a pollen parent to add the whiteness he wanted
Developing the Shasta Daisy

- After experimenting for more than 17 years, he introduced the first Shasta daisy varieties. These were an immediate success and are still popular today.
The 1904 catalog shows prices for Alaska, California, and Westralia Shasta Daisy.
The catalog states: "These new types have a remarkable resistant vigor and ability to overcome ill treatment"
These varieties are still sold in nurseries. One plant sold in 1904 for $075, a lot of money!

<table>
<thead>
<tr>
<th></th>
<th>Price</th>
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<tbody>
<tr>
<td>One plant</td>
<td>$0.75</td>
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<tr>
<td>Two plants</td>
<td>$1.25</td>
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<tr>
<td>Three plants</td>
<td>$1.50</td>
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<tr>
<td>Six plants</td>
<td>$2.00</td>
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<tr>
<td>Ten plants</td>
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<td>One hundred plants</td>
<td>$15.00</td>
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Purchasers in all cases to have the privilege of ordering all of one kind, or any proportion of each.
This is the cover of the 1919 Burbank Catalog

- It features a little girl standing by some Shasta Daisies, with Mount Shasta in the background and was said to be the favorite picture of his Shasta Daisies.
The Shasta Daisy Mobil Honoring Burbank
Burbank's 77th Birthday Cake
Decorated with Shasta Daisies
He developed better plants through natural selection and new varieties created through crossbreeding, or hybridization.
His first success was developed through selection. In 1871 he found a potato seed ball and planted the 23 seeds.
One produced large, firm tubers. Burbank replanted these and harvested his new variety.
He sold the rights to the potato for $150 for fare to California.
Burbank subsequently grew more than one-half million seedlings from a deliberate hybridization program without ever producing another successful variety.
His Santa Rosa experimental greenhouse, nursery, garden and farms were world famous.
He grafted these onto mature plants to assess hybrid characteristics
He carried on his hybridization and selection on a huge scale
He maintained as many as 3,000 experiments using millions of plants While working on plums, he tested 30,000 new varieties
Where seeds come from, who helps combine and selects their genetics and how they eventually get to the package that you plant from is a fascinating international story.
Daunting, careful, painstaking work creates new vegetable and flowers each year.
Like all living organisms, the DNA determines what will grow.
Open pollinated varieties are genetically true to their parentage.
Others are crossed to create hybrid varieties that will differ from either parent.
Some gardeners refuse to grow hybrids because they claim the varieties are created artificially.
Remember, hybrids occur in nature and increase the genetic variety of many organisms.
The strict definition of a hybrid is the cross between different species or genera.
More loosely defined, a hybrid is a cross between different subspecies or cultivars.
The closer the parent genetics, the more successful the hybrid.
Some crosses produce sterile hybrids; just as the mule is the sterile offspring of a mare and a male donkey.
Offspring of different species are usually sterile but reproduce by cuttings or grafting
Chemical, temperature or irradiation treatment makes some sterile hybrid plants fertile
So why do gardeners look for new hybrids for their gardens?
• Successful hybrids
  – Show hybrid vigor
  – Are larger and faster growing
  – Show superior colors
  – Have desirable ornamental characteristics
They may also be more resistant to insects, diseases or other problems.
Most corn, tomatoes, bananas, and sugar beets today are hybrids that bear much larger fruit than their parent stock.
Farmers improved crops through the ages by saving seeds from the best plants to sow the following year.
Breeding new varieties is now even more sophisticated

• Remember, there are old vegetables, fruits and berries and there will always be new vegetables, fruits and berries. Find the best ones for you based on flavor, keeping ability, eye appeal and other relevant factors.