

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**

3/16







23 yes

2 No

92%



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 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



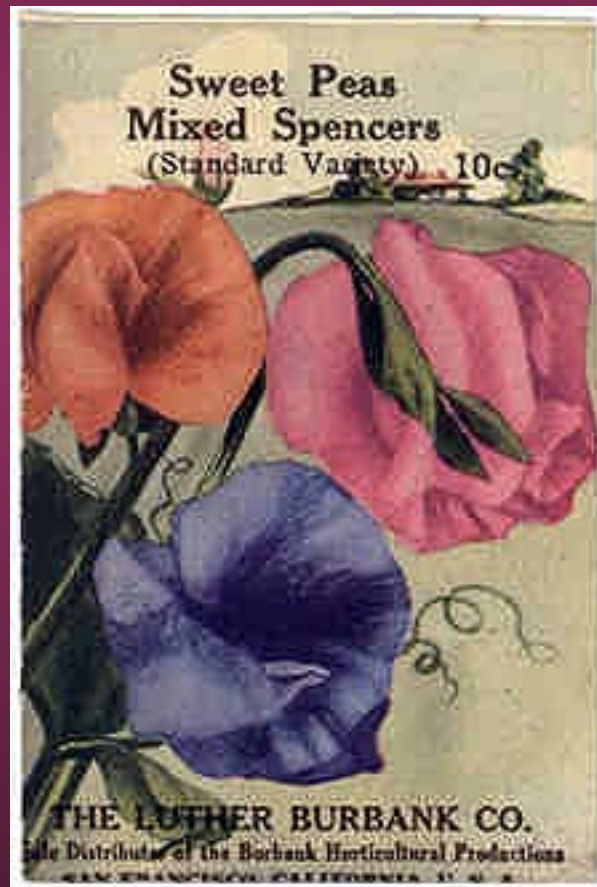
On Burbank's death in 1926 he was buried near his greenhouse on the grounds of his home



He loved working with the plants
to get the right characteristics in
his creations



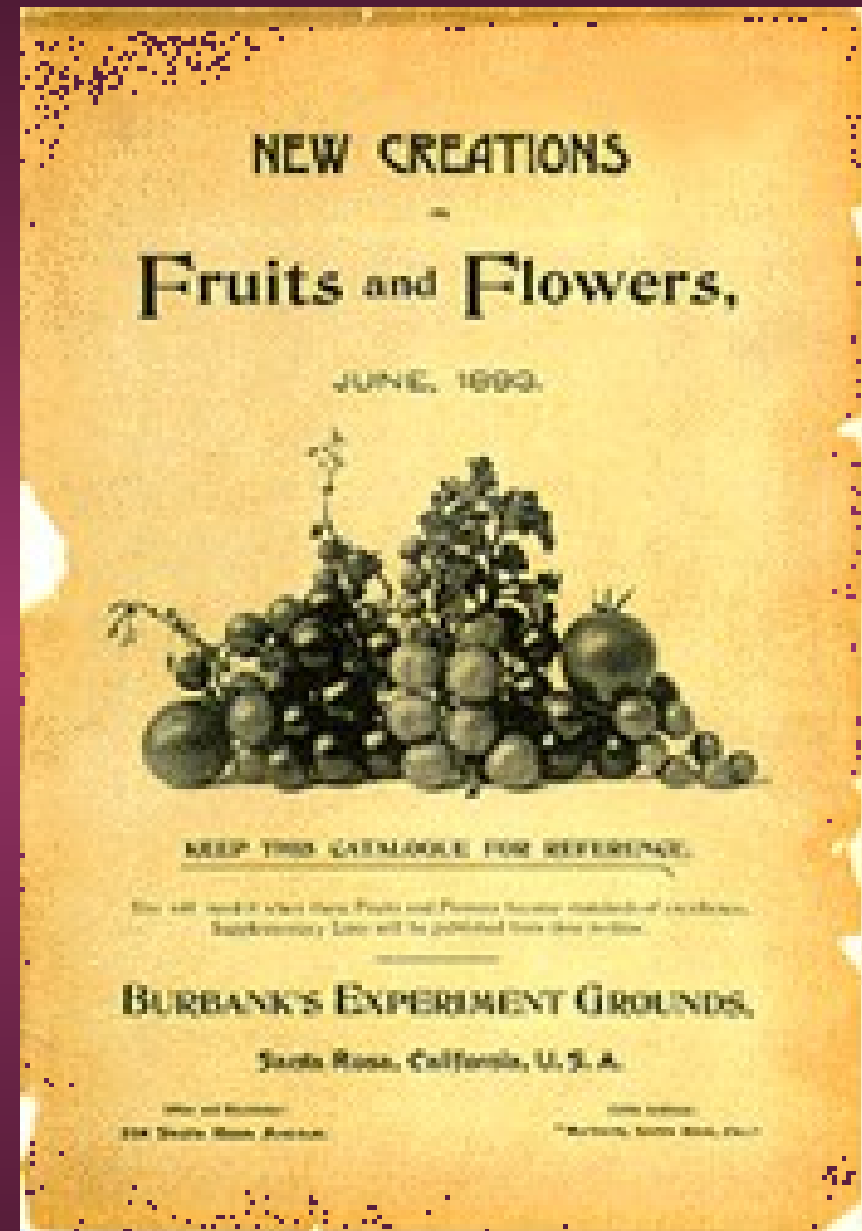
Although he wanted to spend all his time experimenting with plants, he had to earn a living



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!

PRICES

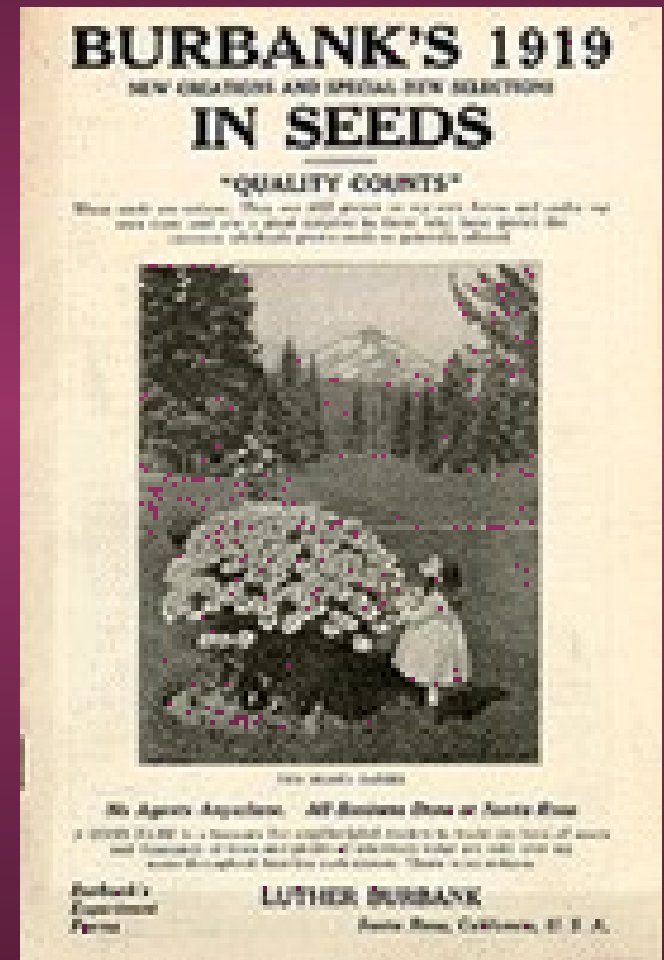
OF ALASKA, CALIFORNIA AND WESTERN MOUNTAIN, HARDY, TENDRIL-LESS, OUT-DOOR GREEN PLANTS, BY MAIL OR EXPRESS

One plant	\$.75	Six plants	\$ 3.00
Two plants	1.25	Ten plants	2.50
Three plants	1.50	One hundred plants	15.00

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



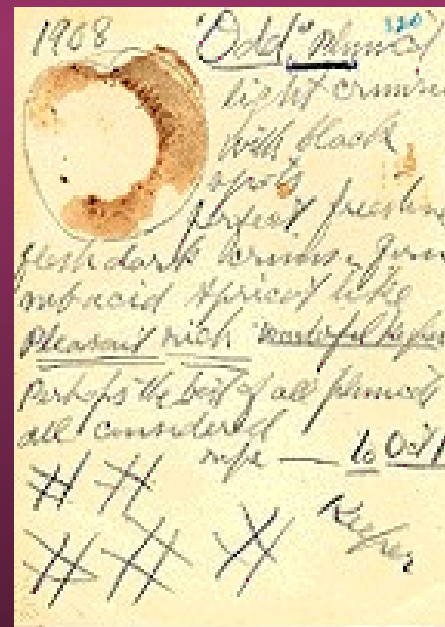
The Shasta Daisy Mobil Honoring Burbank



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

The Plant Patent Act of 1930 amended US patent law to permit protection of new and distinct varieties of asexually reproduced plants, other than tuber-propagated plants

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