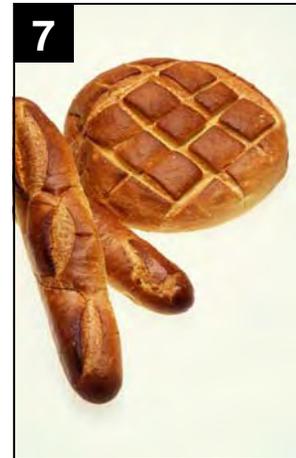
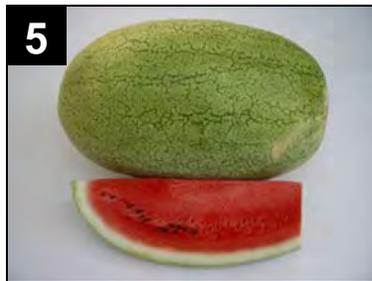
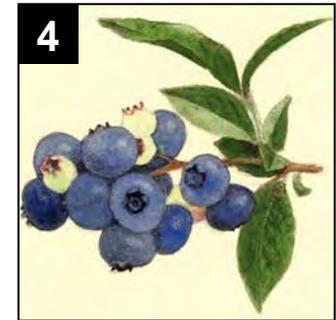


Thank USDA for Your Dinner



- (1) Charles Clark began breeding potatoes in 1910 to improve heat tolerance and disease resistance. In 1923 Frederick Stevenson continued the breeding program and released 'Katahdin' and 'Chippewa' in 1932 and 1933, respectively. Because of their resistance to virus disease, these cultivars are the foundation parents of most of the potatoes grown today.

During the 1950's, Miles Willard, James Cording, & John Sullivan developed a process for creating instant potato flakes. Today the average American consumes about 15 pounds of dehydrated potatoes per year.

- (2) Edward Ryder began breeding lettuce in 1959 for disease resistance. In 1975 he released the crisphead or iceberg-type lettuce 'Salinas'. 'Salinas' is the world's most widely planted lettuce.

Frederick Pritchard began breeding tomatoes to create disease resistant types in 1915 and released the first wilt-tolerant tomato ('Marglobe') in 1917. In 1923, William Porte continued the breeding program and released the first wilt-resistant tomato ('Pan American') in 1941. This cultivar is in the background of nearly every commercially grown tomato. In 1955, Porte released an extremely popular cultivar 'Roma' that has now become a new 'type' of tomato.

- (3) Lore Roger began a series of experiments in 1902 to improve the flavor and self life of butter. He demonstrated that the traditional use of sour ripened cream in butter making caused a shortened shelf life compared to using sweet cream. This led to a major change in butter processing, one that is still used today.

Harvey Wiley in 1884 developed analytical methods and investigated food adulteration, including butter. He discovered that a significant amount of butter sold was adulterated with cheaper oils and fats. This research resulted in the 1906 Food and Drug Act that prohibited the interstate transport of food which had been "adulterated." In 1950, Congress passed the Oleomargarine Act that required labeling of oleomargarine to distinguish it from butter. Before this Act, cheap margarine was being sold as butter. In 2006 based upon USDA research, food labels were required to list trans fat content. Trans fats have been shown to increase the risk of cardiovascular disease. Some margarines contain trans fat.

- (4) Frederick Coville began breeding blueberries in 1906. He created the 1st man-made hybrid ('Pioneer') that was released in 1920. In 1937, George Darrow continued the breeding program and released one of the most popular cultivar ('Bluecrop') in 1952. Besides breeding, Coville developed the 1st commercial production protocols. Before Coville's research, blueberries were collected from the wild and were not commercially cultivated. As result of Coville's research, commercial blueberry production grew from about 250 acres in 1940 to about 95,000 acres in 2008.
- (5) Fred Andrus began breeding watermelon in 1938 to increase sweetness and disease resistance. In 1954, he released 'Charleston Gray' which was designed by the American Society for Horticultural Science in 2007 "the most successfully

vegetable cultivar ever developed.” Andrus was also responsible for developing the parents of the popular seedless watermelons.

- (6) Stanley Marsden began breeding turkeys in 1934. Using 16 different strains of turkeys, he developed a new type of turkey (Beltsville Small White Turkey) that had no black pin feathers and was more compact with increased breast and leg meat. Before the Beltsville Small White, the average weight of an adult tom turkey was 33 pounds with little breast meat. The new turkey was available to consumers in 1951 and was able to fit into home refrigerators and ovens.

Theobald Smith began studies in 1884 to determine the microorganism that were responsible for food safety. In 1900, he discovered *Salmonella*. He was responsible for training the first USDA food inspectors. During the 1920's, USDA was involved in determining safe cooking and storage conditions for stuffed turkeys and other foods.

- (7) William Saunders began a plant testing program in 1863. As result of that program, a unique wheat was found ('Tappahannock') and released in 1867. Unlike other wheats, 'Tappahannock' had significant disease resistance, high flour quality and was wide adapted to different environments.

In order to further improve winter hardiness of wheat, Mark Carleton went to Russia in 1898 to collect wheat cultivars. After further evaluation, two cultivars were released 'Karkov' and 'Kubanca'. As a result of these cultivars, wheat cultivation greatly expanded in the US from about 53M acres in 1900 to about 70M acres in 1950.

Leo Kline and Ted Sugihara discovered the active ingredient in San Francisco sour dough bread in 1970. Other USDA scientists then developed a simple new procedure for making the bread using sour whey and vinegar. As a result, supermarkets everywhere today feature, not only sourdough breads, but also rolls and English muffins.

- (8) After World War II, the availability of home freezers greatly increased; however consumer acceptance of frozen foods did not increase because of loss in flavor and changes in color and texture. The industry had production problems, too, and turned to the USDA for help. A large team of USDA scientists began a long term project to address these problems. After 8 years of research, they developed the Time-Temperature-Tolerance model. This model included selection of the right crop variety, handling produce between field and plant, blanching and freezing, packaging and storing, and transport of the products to market. They also invented processing equipment to improve frozen products. Because of this model, an almost unbelievable variety of quality frozen foods are now available.
- (9) William Saunders evaluated tropical fruits for possible US production. In 1869, he import orange trees from Brazil and selected a selected a seedling for further evaluation in California and Florida. This selection ('Washington Navel Orange')

was released as the 1st fresh-market, seedless, sweet orange. California noted that this “orange has done far more for the permanent development of the state than gold or other mining ever did.” In 2013, over 125,000 acres of Navel oranges were grown in California, worth over \$1.5M.

James Crump working with the Florida Citrus Commission during the 1940's developed a procedure for producing frozen concentrated orange juice. The first frozen juice was available to the public for the first time in 1946. Frozen concentrated orange juice created an industry that today is worth hundreds of millions of dollars a year in sales.

- (10) Herbert Bergman began breeding cranberries in 1929 for increased yield and disease resistance. In 1950, he released the first man-made hybrid ('Stevens'). As a result of this breeding effort, commercial production increased from less than 20 barrels per acre in 1950 to over 120 barrels in 2000. Today over half of the commercial acreage is planted in 'Stevens'.
- (11) Louis Romberg began breeding pecans in 1931. He developed the procedures used to create the first man-made pecan hybrids. One of his last hybrids bred in 1963 was released in 1984 as 'Pawnee'. 'Pawnee' produces a very large number of high quality nuts and is now the most widely grown pecan cultivar in the world.
- (12) Sewall Wright began experiments in 1915 to develop genetic methods for breeding animals. His methods resulted in the creation of new area of science called *Quantitative Genetics*. Helmut Rabild established the National Dairy Herd Improvement association in 1927. Based upon Wright's methods Rabild coordinated a national breeding effort. Through this effort, milk production per cow increased from about 5,000 pounds to 20,000 pounds from 1940-2005.

Beginning in 1934, Sewall Wright's methods were also used to improve beef cattle. USDA bred a bull (USDA line1) that is the foundation of today's Hereford cattle.

During the 1950's, Virginia Holsinger created a milk substitute for lactose intolerant individuals. Holsinger developed an enzymatic process to break down the lactose in milk into its respective sugars (glucose and galactose). This enzymatic process is basis for all lactose-free milk.