



# What's in Season from the Garden State

Seasonal Highlights from Cooperative Extension, a unit of Rutgers New Jersey Agricultural Experiment Station

June 3, 2013



*Jersey strawberries have long been a seasonal treat. Top left: Strawberry stand at Cubberly Farm, Mercer County. Circa 1930s-50s. Top right: Potential buyers looking over crates of strawberries at Cedarville Auction Market, Cumberland County, 1948. Bottom: Picking strawberries at Hugo Schmidt's strawberry farm at Dilts Corner, Hunterdon County, 1944. Source: New Jersey State Archives, Department of Agriculture photographs*

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## New Jersey Department of Agriculture's Jersey Fresh Availability Report

Current:		Forecast:
Arugula	Kale	Basil - Mid-June
Asparagus	Leeks	Blueberries - Mid to late June
Baby Arugula & Baby Spinach	Lettuce	Cabbage - Mid-June
Beets	Mint	Cucumbers - Early June
Cilantro	Parsley	
Collards	Radishes	
Dandelions	Spinach	
Dill	Strawberries	
Escarole & Endive	Swiss Chard	
	Turnips	



## Jersey Strawberries: The Breed Goes On

The season for strawberries in New Jersey is short, but sweet – lasting from late May to mid-June. With year round abundance of California and Florida strawberries in supermarkets, Jersey strawberry season goes by hardly noticed, except by aficionados who seek them out. While not quite scarce, the commercial production of Jersey strawberries has decreased to the point where New Jersey agricultural statistics are no longer kept since production fell below 300 acres in 2007. But it wasn't always this way – New Jersey was once lush with strawberries.

Strawberries are native to New Jersey. The original native people, the Lenni Lenape had no need to cultivate the plants, as the wild strawberries were so abundant. A mix of crushed wild strawberries with ground cornmeal was used for a bread that is considered the inspiration for strawberry shortcake. The first colonists in America shipped the larger wild strawberry plants back to Europe as early as 1600. Wild strawberries were small, acid and seedy compared to the hybrid cultivars that came later, but were still considered better than European varieties.

According to the book, *The Strawberry in North America*, published in 1917, the first strawberries marketed in New York City were wild berries picked from New Jersey in Bergen County. Special splint berry baskets with handles were hung from poles and sold throughout the city. Demand quickly outstripped the supply of wild strawberries as the population of the city expanded. As a result, North Jersey was first to feel the stimulus of the increasing demand.

Around 1820 commercial cultivation of strawberries began with farmers around Hackensack, NJ shipping berries by wagon and sailing vessel to the city. Strawberries and cream was a prized dessert, which helped fuel the demand. In the mid-1800's the introduction of refrigerated railroad cars turned New York into a strawberry shipping center and commercial production spread to southern states, but New Jersey's strawberry production continued to flourish. Strawberry acreage increased over the next few years, while gradually moving to South Jersey. In the 1860's, Burlington County had the most strawberry acreage than any other county in the US.

## Strawberry Breeding in New Jersey

Before 1858 nearly all strawberries on the American market were selections made in Europe from the North American wild strawberry. These were considered large-fruited, but small by modern standards. For the past 200 years, many Americans, including the growers themselves, have tried by repeated crossings to get more productive, more disease-resistant, better-tasting and larger-fruited strawberries.

*Continued on page 2*

# RUTGERS

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*Strawberry breeding from start to finish: Dr. Jelenkovic's strawberry selections begin in the greenhouse by crossing existing strawberry varieties with desired traits. Pollen is removed by cutting out the male flower parts and crossing with female flower parts of another variety.*



*The seeds of the berries that grew from the crossed pollinated varieties are saved, labeled and dried. They are then sown in flats in the greenhouse.*



*The strawberry seedlings in flats are transplanted into pots to ready them for planting in the field for variety trials, where plants that display the most promising qualities such as taste, disease resistance, yield and berry size are selected for further study.*

*Continued on page 3*

While work with strawberries at the New Jersey Agricultural Experiment Station (NJAES) dates back to 1870, in terms of fertilization, irrigation, insects and variety trials, strawberry breeding didn't begin at Rutgers until around the late 1920's, with the objective of a good commercial strawberry variety which would ripen after the harvest period of the varieties of the day. In the spring of 1930, the first seedlings included "a number of very late ripening ones, which had good quality and shipped well."

Some of the noteworthy strawberries bred at Rutgers NJAES include 'Sparkle', introduced in 1942 which continued as a leading late-season cultivar in the US for many decades. It is still available today as an heirloom strawberry. Like many old-time cultivars, Sparkle has great flavor and high yields, but the berry size was considered small compared to newer varieties, hence it was favored by small commercial growers who catered to local tastes. 'Jerseybelle' was introduced in 1955, and because of its attractive color, high gloss, and large size, quickly became the leading variety in New Jersey and in 1963 constituted 60 percent of the acreage. In 1968, the 'Raritan' strawberry, was released. It was considered productive with the fine taste of an heirloom strawberry, with small berries. However, the plants were susceptible to a range of diseases and this strawberry is no longer available.

### **Bringing Back the Jersey Strawberry: New Varieties with Outstanding Flavor**

Now, in the 21<sup>st</sup> century, strawberry production in New Jersey is a shadow of its former glory. The remaining acreage in strawberry production is mostly planted with Chandler strawberry, a California variety, developed for berries firm enough for shipping long distances, but not bred for flavor. An additional handicap for New Jersey commercial growers is the competition that floods the market year round. Pete Nitzsche, Rutgers NJAES agricultural resource management agent explains, "Wholesale production has declined in New Jersey because of competition from large scale producers in Florida and California. These production areas are able to lock in sales at very low prices with supermarket chains before the New Jersey strawberries get to market. Many consumers unknowingly buy shipped in strawberries at low prices during the New Jersey season and wonder why strawberries don't taste like the used to. Reversing this trend presents some real marketing and production challenges."

Rutgers professor emeritus Gojko Jelenkovic who retired in January, 2013 has been working for over 35 years to breed improved strawberry cultivars for production in eastern North America. Dr. Jelenkovic has utilized traditional breeding techniques with the aim of improving strawberry fruit quality, yields, disease resistance and most importantly, flavor. During his retirement, Jelenkovic continues his work on these varieties in the campus greenhouse, where he spends most mornings. This breeding presents special challenges because modern strawberries are "octoploids", having eight alleles for each gene, which according to Jelenkovic, "is like a lottery for how they will express themselves."

*Continued on page 3*



*The strawberry variety trials of Dr. Jelenkovic's selections are being conducted on New Jersey farms as well as research farms at Rutgers, North Carolina State, Ohio State University and University of Maryland.*



*Bill Hlubik displays the strawberry variety field trial conducted at the EARTH Center of Rutgers Cooperative Extension of Middlesex County. Comparison plots include several of Dr. Jelenkovic's selections, as well as control plots of Chandler strawberries.*



*The field tested Rutgers bred strawberry varieties are displaying improved qualities such as flavor over the standard Chandler variety.*

Dr. Jelenkovic's work has resulted in several advanced selections worthy of commercial production. Supported by a grant from the New Jersey Small Fruits Council, a team of Rutgers researchers have been conducting further evaluations of these selections with a goal of releasing some of them to farmers and gardeners. Rutgers NJAES agricultural resource management agents Nitzsche and Bill Hlubik have been running strawberry variety trials for several years on New Jersey farms, and in 2013 a trial was added on an organic farm. These farm trials help determine which of Dr. Jelenkovic's strawberry varieties will be competitive with Chandler. In addition to the New Jersey farm trials, the team is working with North Carolina State, Ohio State University and University of Maryland to examine the potential of these varieties for the mid-Atlantic region. From these trials, several varieties have shown improved size, shape, color and greater sweetness over Chandler.

According to Hlubik, "The goal of our NJAES strawberry breeding program is to provide more flavorful cultivars for farmers to offer their customers. Our focus on flavor versus storage and large scale wholesale production is especially important for direct market operations in New Jersey and throughout the East Coast."

The names of the new varieties are not yet official, and they are in the process of obtaining patents. Now that they have undergone commercial testing, the next step is to work with nurseries to produce germplasm for commercial production. Anticipated release onto the market is around 2015 – 2016.

Can New Jersey become lush with strawberries again? Growing varieties that are bred for the specific region can be a boon for local farmers and gardeners. As these new strawberry varieties become available over the next few years, the Jersey strawberry can increase its standing as a local treat to celebrate the season. The best places to find Jersey strawberries are farm markets or farm stands, independent restaurants that use *Jersey Fresh* (<http://www.jerseyfresh.nj.gov>) as part of their menus, and some supermarkets that have special promotions of local produce, such as Wegmans. A great way to enjoy local strawberries is to go to a Pick Your Own farm. The New Jersey Department of Agriculture's *Jersey Fresh* website has a Pick Your Own web page searchable by commodity and location: <http://www.jerseyfresh.nj.gov/agriculture/jerseyfresh/find/pickyourown.html>.

*Celebrate the spring time with Jersey Strawberries!*

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