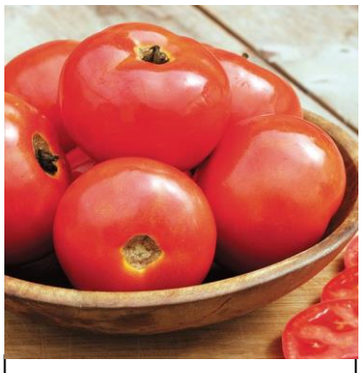
Tomatoes with Resistance to Several Fungal and Bacterial Diseases

There are several diseases of tomato occurring commonly in home gardens as well as production fields on Long Island. Late blight, early blight, and Septoria leaf spot are the most important fungal and oomycete foliar diseases in NYS. The Cornell tomato breeding/genetics program has been working to identify resistance to these diseases and to breed varieties with resistance plus good horticultural characteristics. Seed is now being marketed of the first varieties resulting from this work. The Cornell program is not a seed company; it does not create and market hybrids. When improved lines with useful new traits have been developed, they are released to interested seed companies.

Current Fresh Market Hybrids with Multiple Disease Resistance: All of the hybrids developed to date using Cornell resistant lines, and listed below, possess combined resistances to late blight and Septoria leaf spot, plus a strong tolerance to early blight that provides good protection of infection on stems and lesser control of blighting of foliage. The hybrids also possess resistance to Verticillium and Fusarium wilts that is standard in modern tomato hybrids. The hybrids differ considerably in other traits, such as maturity and fruit size, which are unrelated to disease resistance.



Iron Lady photo from High Mowing website

Stellar photo from PanAmerican website

BrandyWise photo from Fruition website

Iron Lady (High Mowing Organic Seed) is the first of the resistant hybrids commercialized. This slicer type was developed in cooperation with the tomato breeding program at NCSU, with Randy Gardner. See: https://www.highmowingseeds.com/organic-non-gmo-iron-lady-f1-tomato-a.html

Stellar (Pan American Seeds). This slicer is different from Iron Lady in fruit size and maturity, and has improved flavor.

See: https://www.panamseed.com/plant_ info.aspx?phid=062000001010320

BrandyWise (Fruition Seed Company) is the result of crossing the popular Heirloom Brandywine with a Cornell line. Eating quality is much like Brandywine, but the fruit have greatly reduced cracking and catface.

See: http://www.fruitionseeds.com/Organic-Brandywise-Tomato-p/t42.htm

Summer Sweetheart photo from Fruition website

Summer Sweetheart (Fruition Seed Company, A relatively new NYS seed company) is a Campari type tomato that has superior flavor. It has an indeterminate vine, and is very productive.

See http://www.fruitionseeds.com/Organic-Summer-Sweetheart-Tomato-p/t43.htm)

Plum Perfect (High Mowing Organic Seed) is the most recent of the resistant hybrids to be commercialized with seed first available in 2019. The diseases it has resistance to differ somewhat from the other hybrids: Verticillium, Fusarium, late blight, root knot nematodes, bacterial speck, Tomato Spotted Wilt Virus, as well as some early blight tolerance. This hybrid is extremely productive, with a heavy crop of large firm jointless fruit, with very good flavor and color, that can be used fresh chopped or cooked.

See: https://www.highmowingseeds.com/organic-non-gmo-plum-perfect-f1-paste-tomato-a.html

Plum Perfect photo from High Mowing website

Coming Attractions: Even as these hybrids were being commercialized, the Cornell program continued improving lines by adding additional resistances. Attention turned to transferring resistances to bacterial spot and to bacterial speck into our best lines that already possessed late blight, early blight, and Septoria leaf spot resistance. Development of the new lines was either completed in 2018 or will be completed by end of 2019. As we worked on bacterial disease resistance, we unexpectedly discovered an additional resistance for early blight that is particularly effective at suppressing symptoms on leaves. Transfer of this additional early blight resistance into the best Cornell lines will be completed in 2019. As all of the new lines are completed, they are released to seed companies for creation of hybrids with combined bacterial/fungal disease resistance, and/or with substantially better early blight control. Time to release of new hybrids depends on the seed companies involved.

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