Vegetable Variety Improvement for High Tunnel Production
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The Need: Consumer demand for year-round access to high quality, fresh produce is increasing, especially in urban communities. This project addressed the need for growers to improve the availability and quality of produce beyond New York State’s relatively short growing season through the use of high tunnels – plastic covered hoop houses that provide an alternative growing environment to field soil. While high tunnels have been a great way to grow tomatoes and leafy greens, there is need to diversify the varieties of vegetables grown in high tunnels – specifically peppers, cucumbers, pole beans and snap/snow peas, for which there is an established market.

The Approach: Plant breeding provides an evolutionary-based approach to adapt crops to a high tunnel environment. The adaptation occurs through cross pollination of plants that each contribute valuable traits followed by selection of the best individuals of each generation. In this project, we evaluated the performance of varieties bred in high tunnels maintained on campus in formal replicated trials, and on grower farms alongside their standard varieties. This approach was used to evaluate and improve peppers, peas, beans and cucumbers for growth in high tunnels in New York.

The Impacts: New bell pepper and pole bean varieties that were selected in and for production in high tunnels in the Northeast were bred and released. The five bell pepper breeding lines that were created, evaluated and released are now being shared with organic vegetable seed companies based in the Northeast, to be distributed commercially to benefit regional growers. Boosting the performance of new breeding lines to be grown in high tunnels enhances farm revenue and increases the availability of new varieties in the locally grown food supply.