A Multi-State Project on Enhancing Pepper Production, Profitability and Seed in the Southwest U.S.

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The Southwest (Texas, New Mexico, Arizona, and California) is the bastion of hot pepper production in the U.S. Despite the demand for these commodities, domestic production has been decreasing while imports have been increasing. This gap is due to several factors including rising costs in labor and input as well as lack of adapted cultivars and improved production practices to minimize environmental stress impacts. These limitations are negatively impacting the livelihoods of farming communities in the southwestern U.S. Improving overall production efficiency by implementing new agronomic technologies and practices can reduce production costs and help reverse the downward trends in U.S. production.

A multi-state project involving Texas AgriLife and New Mexico State University, sponsored by the USDA-Agriculture Marketing Service, Specialty Crop Multi-State Program through Texas Department of Agriculture, was initiated in 2019 with the ultimate goal to optimize production, product quality, marketing efficiency, and profitability of hot pepper production in the U.S. Specific objectives of the project are: 1) identifying high-yielding, stress-tolerant cultivars among recently-developed varieties that are adapted to specific locations; 2) developing and implementing efficient cultivar- and site-specific production strategies to minimize environmental stress/disease impacts, enhance product quality, and minimize production costs; 3) implementing practices to detect, monitor and control plant pathogens on peppers; and 4) developing a matrix of cost-of-production budgets to reveal the most profitable cultivar-location-production practice combinations and to assess the socio-economic impacts of improved pepper production.

In the growing seasons of 2020 and 2021, several advanced varieties from the Texas AgriLife Breeding Program were evaluated in New Mexico in growers' fields. Disease types and disease pressure were variable across both seasons. Diseases encountered consisted of chile wilt caused by Phytophthora capsici, Verticillium dahliae, and Rhizoctonia solani. Other diseases found were caused by viruses (Curly Top Virus and Alfalfa Mosaic Virus), bacteria (bacterial leaf spot), and powdery mildew. None of the advanced lines were found resistant across the spectrum of diseases encountered. The levels of disease (incidence and severity) in the advanced lines were comparable to those in commercial varieties.