

Title: Internship Proposal – Using Biological Control to Slow Disease Spread to Specialty Crops

Production of specialty crops is an economic and culturally important aspect of agriculture in Pueblo County, Colorado. The “Pueblo” Chili was developed from peppers long grown in the area and carries the name sake of the County. Not only is this product significant locally but has the ability to bring people of all cultures together. Chili peppers can be found in the cuisine of many different ethnicities. One major threat to the chili pepper is Alfalfa Mosaic Virus (AMV). This disease causes yellowing mosaic and mottling of chili pepper plants and in widespread years can cause major losses in production and yield. AMV is vector spread through aphids who overwinter and feed on alfalfa patches. When alfalfa is cut for haying, the aphids move to another suitable host, often being a specialty crop including chili peppers.

The research project outlined here will look at using biological controls to decrease the overall spread of AMV by decreasing the aphid population overwintering and feeding on alfalfa. The funding for this project will be provided through The Western IPM Center grant program; looking specifically at using biological controls in an area that does not use Integrated Pest Management (IPM) practices currently. Two 1-month trials will be conducted in the spring and late summer looking at aphid populations in both an established alfalfa field and a newly planted alfalfa field. Two sets of each trial will occur in different areas of the county to aid in replication and account for spatial differences. Aphids must be counted every other day to collect enough data on population increase and/ or decrease before and after introduction of lady beetle larvae and adults. The data gathered will be normalized and analyzed to show various trends in aphid population over the course of the month’s trials.

The proposed project here will take place in Pueblo, CO on two different participating farms on the east end of the county. The work will be almost exclusively in-field; no part of the project will be conducted on campus. Housing and accommodations will not be provided through the Pueblo County Extension Office and must be procured by the intern themselves. This internship will consist of two 5-week periods in Pueblo counting aphids and analyzing data gathered. Interns will not be required to live in Pueblo for the duration of the project but may find it less burdensome not having to travel daily. The first project trial will occur before the first cutting of the alfalfa (mid- May to the beginning of June) and the second trial will take place in the end of July or the beginning of August. Along with the on-farm study, tasks for this research project and internship will include researching and learning about similar studies and obtaining supporting information. The intern involved in this project will also be expected to help with other Extension activities as needed in the Pueblo County Office, including, but not limited to helping with agricultural programs and classes and field days.

Mentors for this internship project will be Kristi Bartolo, CSU Extension Agent; Agronomy. Kristi will be the project director, overseeing the research trials and data collection and analysis. MJ Fisher will also be a mentor for this project and internship. MJ is the Pueblo County Extension Director and Interim Co-Central Region Director for CSU Extension. Dr. Punya Nachappa will serve as the faculty mentor. She has been conducting research on AMV-aphid interaction in peppers and will train the intern in AMV diagnostics and aphid identification. The goals and objectives of this internship are to gain a better understating of IPM and if it is feasible to use as a means to slow spread of disease in chili peppers. Interns will work closely with Extension employees and with local farmers and community members to share the information obtained from conducting this study along with understanding how farming of specialty crops occurs here.

Thank you for your consideration.