

Kaitlyn Lingus

Senior Division Plant Sciences

Power of A Biological Control Agent: Biological Compensation Suppression of Convolvulus arvensis Implementing Host- Specific Aceria malherbae- Phase IV

The objective of this experiment was to conclude on the Host- Specific nature of the Bindweed Gall Mite when infested on Field Bindweed, while mapping the location of the mites to extrapolate migration location for future years. This project was also preformed to test the effect of the Bindweed Gall Mite on cultivated land that contained consumable vegetation. I utilized two rangeland land plots that were separated by a mile in distance while maintaining the same topography features. I also experimented on two land plots located on cultivated sites. I infested these sites with the Bindweed Gall Mite taking data on stem count, length, seed count, and plant concentration count. I also documented and mapped the migration of the mites while creating a rating system to gauge the stage of infestation. I then compared data from three consecutive years, making sure there weren't any mutations within the mites. I compared all data against non- infested Bindweed (Control). For my rangeland plots I had an almost complete suppression of Bindweed plants by September 2007, calculating in late germination of seedlings. The mites traveled an average of 300 meters over a three year migration period, and there was no evidence of mutations. For my Cultivated Land Plots I had success in infestation. The mites remained host-specific to Convolvulus arvensis and did not migrate on to surrounding consumable vegetation. The infestation sites had a rating of high suppression while surrounding bindweed showed evidence of mite presence. In conclusion, Aceria malherbae remained host-specific while maintaining large suppression rates. Since the mites continued their presence in the location of infestation after two winters, it proves to be an effective method of control of Field Bindweed. After evaluation three years of field data I conclude that Aceria Malherbae is an effective option for a biological control agent for Convolvulus arvensis in the state of Colorado.