How Can the Efficacy of Potential Biological Controls against Mikania micrantha Be Enhanced? The Role of Adjuvants in Disease Progress

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Mikania micrantha is an weed, that has become a significant issue around the world disturbing natural interactions between plants and their environments. It destructs native plants, and thus affects the economy and environment. It has also reached the top of a number of invasive speicies lists and thus it is vital to find a way to deter the growth of this weed. In this experiment, the fungus Glomerella cingulata, was tested for its potential as a biological control for Mikania micrantha. The hypothesis is that the need for a dew period by Glomerlla cingulata can be overcome with the addition of an adjuvant (adjuvants decrease surface tension and allow for free moisture), and thus enhance the effectiveness of the biological agent against Mikania micrantha.The fungal treatment resulting in the greatest Area Under Disease Progress was the fungus in water with a bag (24 hrs) to provide a humid environment. There was no significant difference in the final rating between this treatment and the fungal treatments that contained Tween and bagging and mucilloid without bagging.This is a big finding as bagged treatments would not be practical for field use. The fungus applied in psyllium mucilloid with no bag would be practical for field use, although this treatment, similar to other fungal treatments, did not significantly reduce final biomass (data not shown).This occurs due to the speed with which M. micrantha grows, but this limitation can be overcome with repeated applications. This is actually a benefit, as it would allow for repeat sales of a commercial bioherbicide if it were to reach that stage of development. Bioherbicides are gaining much traction around the world, and this method would not only benefit the environment but the economy also.

Awards Won:

Third Award of $1,000