

Viability of the Bioherbicide *Myrothecium verrucaria* in Tank-mix Suspensions: Effect of Herbicide Formulation, Rate and Suspension Time.



Mark A. Weaver, Margaret E. Lyn, Robert E. Hoagland and C. Douglas Boyette USDA ARS SWSRU Stoneville, MS USA

Introduction and Objectives

Myrothecium verrucaria is a fast-acting, broad-spectrum pathogen that can kill several invasive plant species that are poorly controlled by currently available herbicides. Pathogen-mediated biocontrol has had only limited success. A more effective means of managing perennial, invasive weeds likely involves an integrated system of biological, mechanical, cultural and chemical control.

Kudzu currently covers ca. 3,000,000 ha of the U.S. and is expanding at a rate of 50,000 ha annually. It destroys natural habitat, devalues timber acreage and interferes with utilities. By serving as a critical overwintering host for Asian soybean rust, kudzu has taken on newfound importance.

Our research program is directed toward development of *M. verrucaria* as a bioherbicide for kudzu control in the context of integrated weed management and removal of a host that harbors inoculum of Asian soybean rust.

This study evaluated the tolerance of *M. verrucaria* spores, over time, to several herbicides to identify compatible herbicides, formulations, and concentrations.

Materials and Methods

The herbicides listed in Table 1 were evaluated for compatibility with *M. verrucaria*. Solutions were prepared based on manufacturer's maximum labeled application rates and 191 L / ha spray volumes.

Spores of *M. verrucaria* were incubated with the agrichemicals at 22° and constant shaking. Aliquots were taken periodically and spore viability was determined through serial dilutions and plating on PDA.

Results

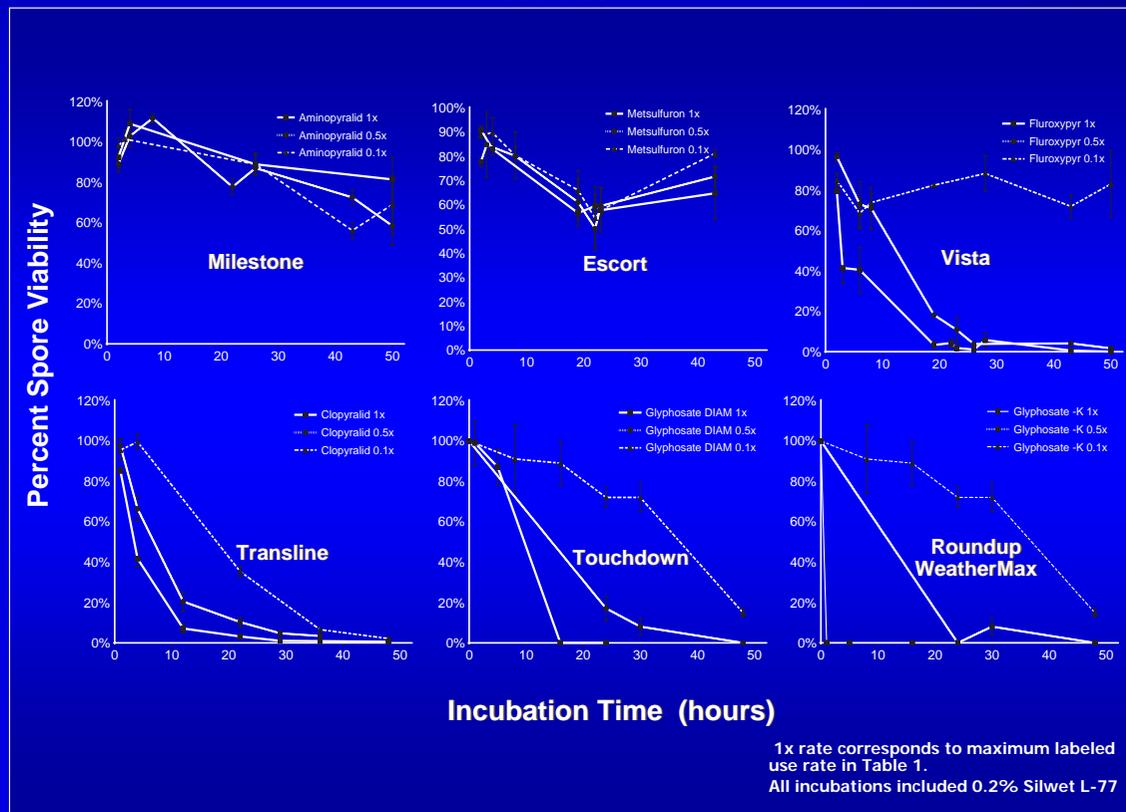


Table 1

Chemical Product*	Type	Active ingredient	Maximum Labeled use rate	Manufacturer
Silwet L-77	Non-ionic surfactant	polyalkylenoxide modified heptamethyltrisiloxane	.5%	GE Silicones
Milestone	Herbicide	aminopyralid	511 mL / ha	Dow Agrisciene
Escort	Herbicide	metsulfuron	280g / ha	DuPont
Vista	Herbicide	Fluroxypyr	3.12 L / ha	Dow Agrisciene
Transline	Herbicide	clopyralid	1.6 L / ha	Dow Agrisciene
Roundup WeatherMAX	Herbicide	potassium salt of glyphosate	7.02 L / ha	Monsanto
Touchdown	Herbicide	diammonium salt of glyphosate	9.35 L / ha	Syngenta

* Commercial name of formulated product. Mention of trade or commercial names is solely for the purpose of providing specific information and does not imply recommendation or endorsement by the U. S. Department of Agriculture.

Conclusions

M. verrucaria is tolerant of incubation in tank-mixes of Milestone at the maximum labeled concentrations for up to 50 hours

Compatibility with Vista and Transline is rate and time dependent

Compatibility with glyphosate formulations is dependent on incubation time, herbicide concentration and glyphosate formulation

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