



ecoAgra Gram-Positive Bacteria Report

Conducted by: University of Nebraska, Lincoln Campus

In May 2011, Professor Anne Vidaver, of the Plant Pathology Department of the University of Nebraska, conducted a number of in vitro trials (lab tests) using ecoAgra on several crop diseases to see how it performed. The specific diseases evaluated are caused by gram-positive bacteria called *Clavibacter michiganensis* spp.

Goss's Wilt is a major disease in corn in USA and Canada, caused by bacteria called *Clavibacter michiganensis*, subspecies *Nebraskensis*. It enters the corn leaves through a wound caused by wind, rain, or hail.

Plant Protect eA300 Assay 1 Results 4/28/11

Test Organism	#	Dilution of Agent & Percent										Controls		
		1:2	1:4	1:8	1:16	1:32	1:64	1:128	1:256	1:512	1:1024	Bacteria only	eA300 only	Broth only
		50	25	12.5	6.25	3.13	1.85	.78	.39	.195	.097			
<i>Cl. michiganensis</i> subsp. <i>nebraskensis</i> (Goss' Wilt) 2579 NCPPB	A	===	===	===	===	===	===	===	===	===	===	+++	===	===
	B	===	===	===	===	===	===	===	===	===	===	+++	===	===
	C	===	===	===	===	===	===	===	===	===	===	+++	===	===
20037	A	===	===	===	===	===	===	===	===	===	===	+++	===	===
	B	===	===	===	===	===	===	===	===	===	===	+++	===	===
	C	===	===	===	===	===	===	===	===	===	===	+++	===	===
200800460	A	===	===	===	===	===	===	===	===	===	===	+++	===	===
	B	===	===	===	===	===	===	===	===	===	===	+++	===	===
	C	===	===	===	===	===	===	===	===	===	===	+++	===	===

Clavibacter michiganensis has a number other sub species which attack other crops:

Subspecies *michiganensis*: (causes canker of tomato)

In vitro test result: a dilution ratio of 1:512 water/ecoAgra eA300 proved sufficient to control canker in the lab tests. The bacteria enters the plant through a wound and gets into the xylem - the one-way system from the roots through which water and nutrient flow to the rest of the plant and it blocks it.

Test Organism	#	1:2	1:4	1:8	1:16	1:32	1:64	1:128	1:256	1:512	1:1024	1:2048	1:4096	Controls		
		50%	25%	12.5%	6.25%	3.13%	1.85%	.78%	.39%	.195%	.097%	.048%	.024%	Bacteria only	eA300 only	TSB
<i>Cl. michiganensis</i> subsp. <i>michiganensis</i> (Bacterial Canker of Tomato)																
JD83-1	A	===	===	===	===	===	===	===	===	===	+++	+++	+++	+++	===	===
	B	===	===	===	===	===	===	===	===	+++	+++	+++	+++	+++	===	===
CF-2	A	===	===	===	===	===	===	===	===	+++	+++	+++	+++	+++	===	===
	B	===	===	===	===	===	===	===	===	+++	+++	+++	+++	+++	===	===

Subspecies *sepedonicus*: causes ring rot in potatoes.

Subspecies *insidiosus*: causes wilting and stunting in alfalfa.

Subspecies *tesselarius* : causes freckles and leaf spot in wheat.

According to the work undertaken by the Copenhagen branch of the 3e Company that ecoAgra cannot be classified as a plant protection product or a fertilizer. This is a very important statement which together with the USDA classification of being 84% plant derived, does allow ecoAgra to be used on all crops as long as the dilution and application instructions are adhered to.

For more information on these tests, please contact ecoSolv at info@ecosolv.com

