## CONTROL OF BEET LEAFHOPPERS ON POTATOES WITH INSECTICIDES

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Beet leafhopper (BLH) was recognized as a pest in potatoes in 2002 when widespread losses first occurred in the Columbia Basin of Washington and Oregon. The beet leafhopper lives and overwinters on plants in non irrigated non farm land. When these sources of food dry out and start to senesce, the BLH moves to a new host, and often settles on irrigated crops, including potatoes. The insect carries a phytoplasma that enters the plant during feeding and causes a disease called purple top. The phytoplasma is called beet leafhopper transmitted virescensce agent (BLTVA).

### Methods

Efficacy of the insecticides was determined by taking counts of the insects within each plot. BLH counts were collected using a sweep net through July 22.

In order to determine the relationship between insect populations and disease incidence, leafhoppers were introduced into cages and purple-top disease was assessed on the potatoes after all insecticide applications had been completed. The insect cages were approximately 6 feet long and 2.5 feet high, large enough to cover 5 potato plants within each plot. Cages were constructed of fiberglass rods covered by insect netting. Ends of the netting were buried in the soil to prevent insects from escaping.

BLH were collected from the wild and introduced into cages within each of the treated plots. Previous research by Dr. Joe Munyaneza found that most wild populations of BLH are carriers of BLTVA, Beet Leafhopper-Transmitted Virescence Agent (pers. comm.) A visual inspection of the potato canopy was used to determine the incidence of purple top disease. Rating was done on the plants inside the cages, and on the plants outside the cages but within the plots. Symptoms of purple top include a pale purple color in the apical leaves, shortened internodes, and distorted growth, including curled leaves. Only plants with at least two of the symptoms were rated as positive for purple top.

#### 2009 Results

In this trial Belay was applied at a high and low rate as a foliar spray and in furrow and was compared to Venom and Admire Pro in furrow and Asana, Actara, Beleaf and Leverage as foliar sprays, CruiserMaxx as a seed treatment. The foliar sprays were applied three times.

If one looks at the number BLH collectively sampled through July 14, all insecticidal treatments had significantly fewer BLH, Table 1. Belay at planting, Venom at planting and Beleaf treatments had significantly fewer BLH but eight days later this was not true. In the case of Belay and Venom, we believe these products were providing some control of BLH but by mid

July the titer of toxicant in the plant tissues was declining to the point that it no longer provided control of the pest.

The total number of BLH collected through July 22 are presented in Table 2. The untreated check had the most leafhoppers collected and all insecticide treatments had lower numbers of BLH; however only the foliar sprays of Belay at both rates, Asana, Cruiser Maxx, Admire, Actara and Leverage were significantly lower than the untreated check.

This is the second year we have shown efficacy with CruiserMaxx against BLH. This is the first time we have seen evidence of efficacy using Belay as a foliar spray and as an in furrow product. This is the first data demonstrating efficacy against BLH using Venom. This is the first time we have seen efficacy against BLH using Admire. However, it appeared that while each of these products provided control of BLH, there is a finite period of production provided by each active ingredient and each use pattern. Additional work is needed in order to more clearly elucidate the exact use pattern for each product.

Table 1. Number of Beet Learnopper's conected.				
Treatment		July 14	July 22	
UNTREATED		6.5	0 5	
CHECK		0.3	8.3	
BELAY	3FL OZ/A	1.5	2.8	
BELAY	2FL OZ/A	2.5	4.3	
BELAY	12FL OZ/A	3.3	5.5	
ASANA		0.0	0.3	
(STANDARD)	$4\Gamma L OL/A$			
CRUSER	0.22 <sup>FL</sup>	1.5	2.3	
MAX	0.22 OZ/Cwt			
ADMIRE	6FL OZ/A	3.0	4.0	
VENOM	1.5LB/A	2.8	5.5	
ACTARA	1.50Z/A	0.5	2.0	
BELEAF	2.80Z/A	3.8	5.3	
LEVERAGE	3FL OZ/A	0.3	0.3	

# Table 1. Number of Beet Leafhoppers collected.

#### Table 2. Incidence of purple top disease, as percent of plants infected.

Treatment	Aug 22	
UNTREATED	1.0	
CHECK		1.9
BELAY	3FL OZ/A	1.4
BELAY	2FL OZ/A	1.4
BELAY	12FL OZ/A	1.5
ASANA		0.3
(STANDARD)	4FL OZ/A	
CRUSER	A 22EL OZ/Cast	0.3
MAX	0.22FL OZ/CWI	
ADMIRE	6FL OZ/A	0.5
VENOM	1.5LB/A	0.6
ACTARA	1.50Z/A	0.8
BELEAF	2.80Z/A	1.3
LEVERAGE	3FL OZ/A	0.1