

SECTION VI
Foliage and Seed Feeding Pests

FIRST EFFICACY DATA AGAINST BEET LEAFHOPPER IN POTATO

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A serious epidemic of a “potato yellows” disease occurred in many potato fields throughout the Columbia Basin in 2002. The beet leafhopper-transmitted virescence agent (BLTVA), a bacteria-like organism called a phytoplasma, has been shown to be a primary, if not the only, cause of this disease. The only known vector for this disease is the beet leafhopper (BLH), but leafhoppers in one other genus have tested positive for BLTVA. Even though we know little about this disease and its vector(s), potato growers are still faced with the prospect of protecting their crops from this disease.

We conducted efficacy trials in 2003, 2004 and 2005 to generate efficacy data against beet leafhopper. In all cases we failed to generate useful data. These failures were largely due to the lack of understanding of basic pest biology. As a result of the biggest string of failures to generate data against an insect pest, virtually no one was willing to fund additional efficacy trials against beet leafhopper. Roger Willemsem, Cerexagri, had some original ideas on how to build on our increasing knowledge of beet leafhopper biology. Cerexagri funded a small trial using some different techniques, including drip irrigated potatoes, to generate data against leafhopper.

The most striking result from this trial was the clear result that Assail and Penncap M, as did Actara and Asana, provided significant level of control of BLH. To our knowledge no other trial has data to support this conclusively. All four Assail treatments as well as the Penncap M, Actara and Asana treatments significantly reduced the level of BLH in the trial. Penncap M provided perfect control of BLH with no BLH detected in the trial. There was no difference in level of BLH between any of the insecticidal treatments.

At 21, 28 and 35 days after the last application (July 11) incidence of beet leafhopper transmitted virescens agent (BLTVA) was collected. At 21 days (August 1) the incidence of BLTVA was low across the trial; however the highest level was in the untreated check. Seven days later, the incidence had risen, particularly in the untreated check. The incidence of BLTVA in the check was statistically higher than in all of the insecticidal treatments except for Assail applied at a 7 day interval which was not different from the check, but also was not different from the other insecticidal treatments. On August 15, the incidence of BLTVA expression in the untreated check was statistically significantly higher than in all of the insecticidal treatments. There was no difference in level of BLTVA expression between the insecticidal treatments.

Efficacy data for four active ingredients against beet leafhopper in potatoes.

Trt No.	Treatment Name	Rate	Rate Unit	Product Rate	Product Rate Unit	Appl Code	Cumulative Leafhoppers	Incidence BLTVA
1	UNTREATED CHECK						9.50 a	2.75 a
2	ASSAIL	0.047	LB A/A	2.5	OZ/A	ABCDEFGH	2.25 b	1.00 a
3	ASSAIL	0.047	LB A/A	2.5	OZ/A	ACEG	2.00 b	0.75 a
4	ASSAIL	0.047	LB A/A	2.5	OZ/A	AD	0.75 b	0.75 a
5	ASSAIL	0.075	LB A/A	4	OZ/A	ACEG	1.25 b	1.50 a
6	PENNCAP-M	1	LB A/A	4	PT/A	ACEG	0.00 b	0.25 a
7	ACTARA	0.047	LB A/A	3	OZ/A	ACEG	2.00 b	0.00 a
8	ASANA	0.0206	LB A/A	4	FL OZ/A	ACEG	0.75 b	0.00 a
LSD (P=.05)							2.721	1.721
Standard Deviation							1.850	1.170
CV							80.0	133.72
Grand Mean							2.31	0.88
Bartlett's X2							11.709	8.38
P(Bartlett's X2)							0.069	0.136
Friedman's X2							18.104	7.479
P(Friedman's X2)							0.012	0.381