

SLVRC Plant Pathology Newsletter

July 2020



Microbe viability testing in select biologicals

A project funded by CPAC this year involves testing microbe viability in select biological products. I thank growers and cooperators who submitted samples for this study. The samples were collected during May -July 2020 and the microbe viability is being tested by plating the samples on growth media. Preliminary results will be shared in the upcoming newsletter.

Disease Management Updates

- Quinoa acreage in the SLV has increased from 300 acres in 2015 to 1900 acres in 2019. One of the major disease issues in quinoa production is downy mildew.
- I have observed quinoa downy mildew in some fields (Fig. 1) this month. Diseased leaves exhibit irregularly shaped chlorosis or pink discoloration. Dense gray sporulation is also seen. The disease can lead to premature leaf fall and severe yield losses.
- It is to be noted that this is a seed-borne disease. Currently, there are very limited pesticides registered for in-season management of this disease.
- At SLVRC, a field trial is ongoing to screen quinoa germplasm for downy mildew resistance. Please contact me if you are interested in looking at these field plots.

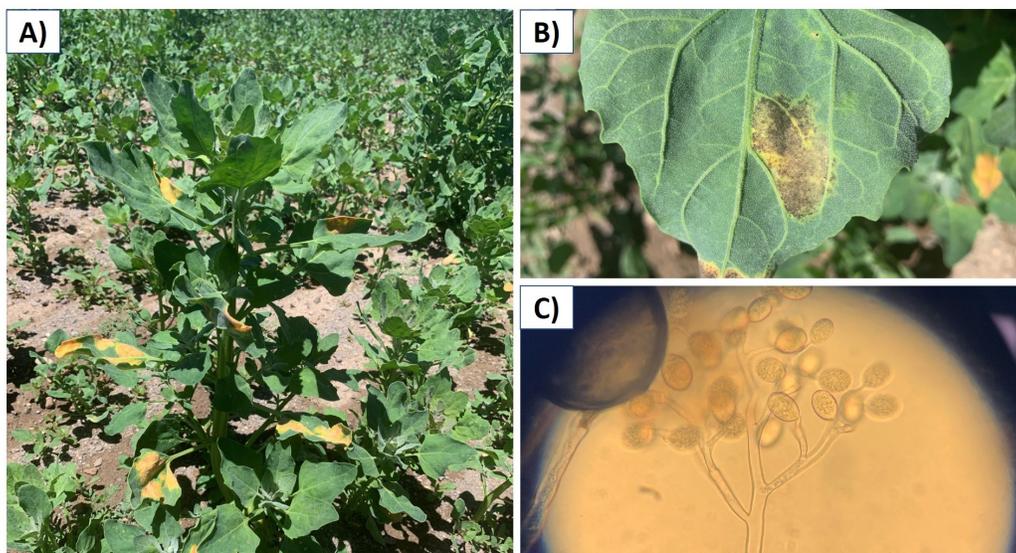


Figure 1: Signs and symptoms of quinoa downy mildew caused by *Peronospora variabilis* A) Quinoa plant showing downy mildew symptoms (yellow and pink foliar discoloration) B) Dense gray sporulation of *P. variabilis* on a quinoa leaf C) Sporangioophore and sporangia of *P. variabilis*



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Monitoring aphid abundance, diversity and PVY spread in the San Luis Valley

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The Nachappa lab at CSU is conducting a field study to determine the effects of surrounding crop diversity on aphids and PVY spread. Funded by CPAC and in collaboration with Agro Engineering, we are using pan traps set up in 10 potato fields and a suction trap set-up at SLVRC to identify aphid numbers, diversity and PVY spread.

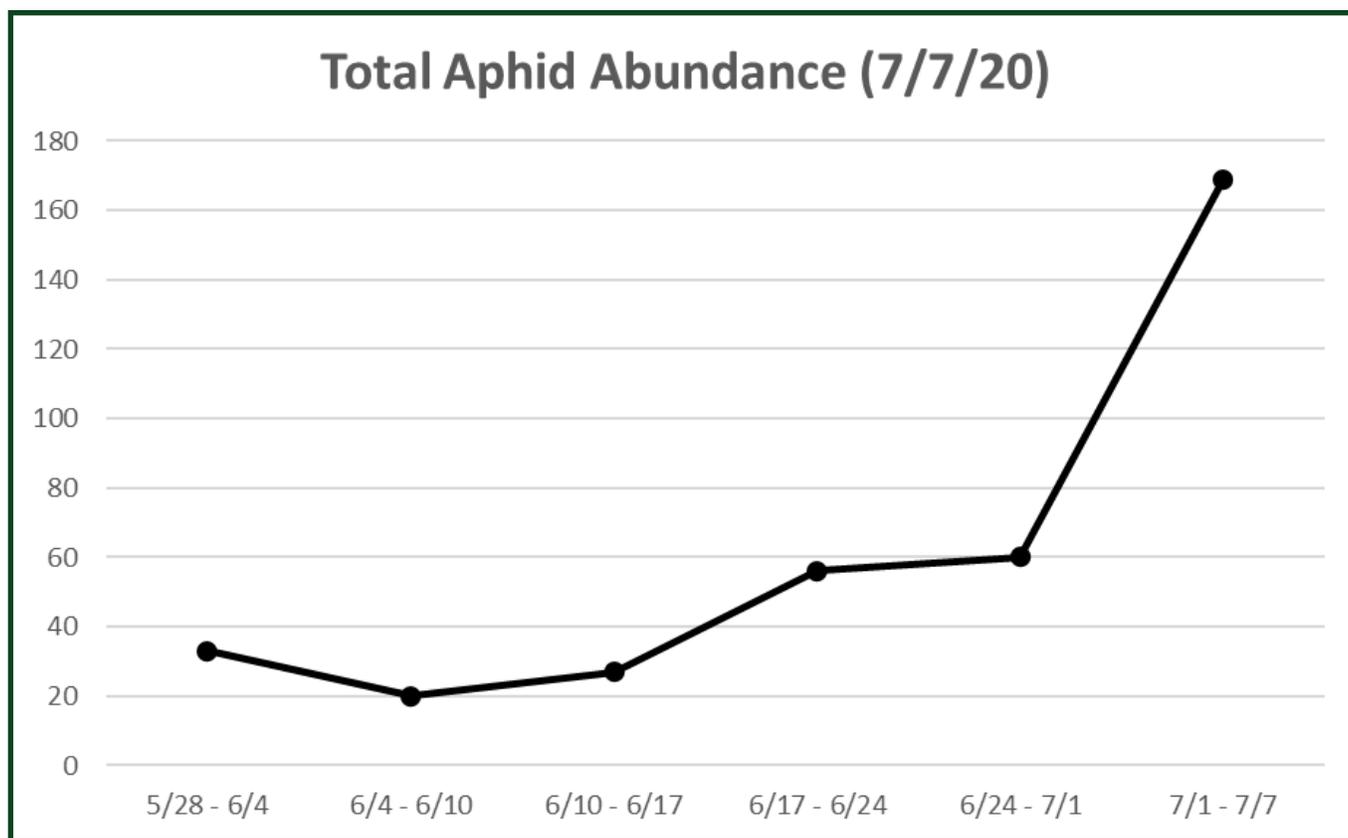


Figure 2: Total number of aphids caught from ten farms in the San Luis Valley as of July 7th, 2020. Three traps were placed at each of the 10 farms and are being checked weekly.

Aphid populations have increased in recent weeks from 143 total aphids over a 3 week span (June 10th – July 1st) to 169 total aphids in just one week (July 1st – 7th; Fig. 2). So far this season, 22 species of aphids have been identified. In particular, pea aphid (*Acyrtosiphon pisum*) populations have risen, with a total of 102 pea aphids identified in week 6 (July 1st – 7th). Pea aphids are known vectors of PVY. Aphids were found at all trap locations, with locations MV-4, 8-5, and RS-1 having the highest populations in week 6. In addition to the pea aphid, another frequently encountered aphid has been *Aphis middletonii* (corn root aphid, erigeron root aphid). It is not known whether or not *A. middletonii* is a vector of PVY.

The next sampling dates will be Tuesday July 14th and Tuesday July 28th. Please don't hesitate to give Jacob a call if you have any questions about sampling, or would like to know more regarding the aphid and PVY data.

Seven potato fields were sampled for the presence of PVY (Table 1). Twenty plants were sampled randomly in a uniform pattern in each field. Three out of seven fields tested positive for PVY. In fields near 8-15 (Fig. 3) and C-13, one plant from each field tested positive. The number of positive plants in the field near MV-4 could not be quantified. It should be noted that these results may not be representative of PVY presence in the entire field. Farm hygiene protocols have been adhered to when moving between fields.

PVY Testing Results - June 30th, 2020		
Location	Results	Number of PVY positive plants (out of 20)
C-1 (Rd B & 43.5)	Not tested	-
C-9 (Rd B & 52)	Negative	0
C-13 (Hwy 112 & 106)	Positive	(1/20)
RS-1 (9N and 285)	Negative	0
8--5 (8N & 285)	Not tested	-
8--7 (8.5N & 3.5E)	Not tested	-
8--15 (8N & 106)	Positive	(1/20)
MV-4 (4N & 1.5W)	Positive	N/A
MV-12 (3N & 6E)	Negative	0
MV-16 (4N & 106)	Negative	0

Table 1: Results from June 30th sampling for PVY

Interestingly, a plant in a field near MV-16 showing calico symptoms tested positive for Alfalfa Mosaic Virus (RT-PCR performed by Tessa Albrecht in the Nachappa Lab; Fig. 4). The primary vector of AMV is the pea aphid, and as mentioned above, there has been an increase in pea aphid populations in the valley during week 6 (7/1/20-7/7/20).



Figure 3: PVY-infected plant near 8-15. June 30th, 2020



Figure 4: AMV-infected potato plant near MV-16. June 30th, 2020

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Additional Resources: <http://potatoes.colostate.edu>