



Potato Progress

Research and Extension for Washington's Potato Industry

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Late Blight Forecast for the Columbia Basin in 2008

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Late blight (LB) has not been reported so far this growing season in the Columbia Basin. The Columbia Basin Late Blight Forecasting Model is predicting that LB will occur this year in the Basin. This is based on a weather prediction from a private weather forecasting group that is providing long-range weather forecasts for our late blight model. As of this date, the projected probability of late blight is near 75%, which is what it was last year. For perspective, this is less than the probabilities encountered during the growing seasons of 2000 through 2006. The actual probability of late blight occurring in June or July will depend on actual rainfall in May and will be calculated the end of May. Temperatures are expected to be colder than normal during May and into early June. Rainfall is expected to be normal in May but decrease to below normal in June. We do look for a cool and showery period to develop during the last week of May and also the last week of June. If the first rainy period develops, a protectant fungicide for late blight should be applied just before the period which is expected to start May 23. Check with the late blight information lines of Washington and Oregon and regional weather forecasts for a better idea if this rainy period will actually occur as we approach mid May. An update will be given later on the forecasted wet period the end of June.

In the mean time:

1. Volunteer potatoes in fields that had late blight in them one of the last two years have a high potential of being sources of late blight inoculum. All volunteers need to be managed, especially those in fields that had late blight in them one of the last two years.
2. Cull piles and refuse tubers need to be properly disposed.
3. Seed tubers should be planted within 24 hr of cutting and treated with a mancozeb or Curzate fungicide such as Maxim MZ, Tops MZ or Evolve. Recent research at WSU indicates that infected seed tubers have a large impact on late blight epidemics.
4. Do not plant within 80 ft of the pivot center. This is particularly important because infections frequently begin and spread from this area, which greatly favors late blight.
5. Design pivots to avoid irrigation overlaps.
6. Monitor fields for late blight, particularly potatoes growing near the center pivot, low wet areas, near leaking irrigation lines or near pivot wheel tracks with accumulated water. Contact us if you see or suspect any late blight infection.

Late blight is best managed on a regional base. Our forecasting and management system relies on growers and field representative to monitor fields and let us know what is happening. That increases the sample size and provides a cost-free program for growers. To be effective, we need to know when and where (general location) late blight first appears in the Basin.

Number for information lines are 1 800 984 7400 for WA and 1 800 705 3377 for OR. The web site <http://classes.plantpath.wsu.edu/dajohn> also has recent information on late blight and other potato diseases.

Potato Tuberworm Screening of Oregon Early Generation Selections

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Potato tuberworm (PTW), *Phthorimaea operculella* (Zeller), is one of the most important potato pests worldwide. Typically found in tropical and subtropical regions, PTW was first detected in Oregon in 2002. By 2005, PTW spread extensively across Oregon and southeastern Washington. In 2006 and 2007, PTW populations were lower than the previous year, but the insect is still present in damaging numbers and well-established in the region. Much research has been published on PTW around the world and a conclusion that can be drawn from this research is that an integrated pest management (IPM) approach is necessary for long term control of PTW. Work is necessary to determine whether plant resistance in potatoes could be an effective tool in an IPM program to control PTW.



Potato tuberworm larva

OSU Efforts

A total of 30 clones, including nineteen clones selected at Powell Butte and known to be tuberworm (PTW) susceptible and resistant were planted at Hermiston in the field on April 25 2007. At harvest

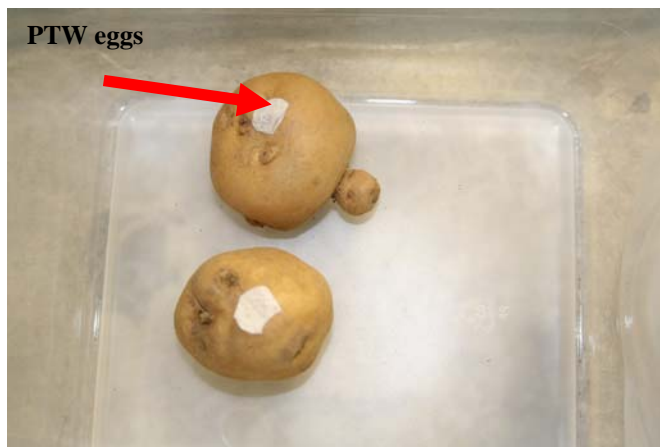


Potato tubers placed on the surface of the soil to be exposed to natural populations of PTW

(September 10), potato tubers were graded to select similar size (6-8 oz) tubers. Tubers were stored at room temperature for 10 days to allow for infested tubers to become evident. Un-infested tubers were selected and stored in cold storage at 4 °C until evaluations began. Field trials (Table 1) consisted of two tubers per clone per rep being placed on the soil surface for exposure to natural populations of potato tuberworm. In the laboratory (Table 2), two tubers of each clone were placed in plastic containers and artificially infested with 50 tuberworm eggs each. A randomized complete block design with ten replications was used for both trials. Tuberworm damage was recorded three weeks after

inoculation by evaluating larval survival, number of mines, and incidence of damage and average of severity. Resistance of potato clones was measured based on larval survival and damage. Analysis of variance was done using the PROC GLM procedure. Means were separated by Fisher's protected LSD test.

None of the lines screened, with the exception of Spunta G2, a genetically modified clone, showed complete resistance, but quantitative resistance was observed in some lines. The number of larvae recovered and the number of mines generated under field conditions was lower than under laboratory



conditions. The incidence of damage was slightly lower under field conditions, but the severity of damage (length of mines) was higher under field conditions.

The host plant resistance observed was quantitative and needs to be combined with other pest management strategies to effectively control potato tuberworm damage.

Table 1. Results of field screening (top ten) of Oregon early generation selections for potato tuberworm resistant, Hermiston OR 2007

Clone	Tuber Weight Average (g)	Avg. # Eyes	Avg. # PTW Larvae	Avg. # PTW Mines	Avg. Incidence Rating (%)	Avg. Severity ¹
Spunta G2	217	9	0	0	0	0.0
Prince Hairy	181	5	1	1	70	1.7
OR05071-1	183	5	1	2	70	2.0
OR05075-1	159	8	1	2	75	2.1
OR05076-2	181	6	1	2	70	2.2
OR05081-1	248	5	1	2	75	2.3
A93157-6LS	204	11	1	3	80	2.3
T88-4	154	5	2	2	80	2.3
Q174-2	102	5	1	2	75	2.4
OR05070-1	172	6	1	3	75	2.4

¹Severity is the length of mine
 severity 1= mine length 1-2 mm
 severity 2= mine length 3-10 mm
 severity 3= mine length >1-2 cm
 severity 4= mine length >2-3 cm
 severity 5= mine length > 3 cm

Table 2. Results of laboratory screening (top ten) of Oregon early generation selections for potato tuberworm resistant, Hermiston, OR 2007.

Clone	Tuber Weight Average (g)	Avg.# Eyes	Avg. # PTW Larvae	Avg. # PTW Mines	Avg. Incidence Rating (%)	Avg. Severity ¹
Spunta G2	233	11	2	2	13	0.4
OR05081-1	180	5	1	2	75	0.8
OR05080-2	161	4	3	4	100	1.0
Prince Hairy	140	7	3	4	88	1.0
T88-4	111	4	4	6	100	1.0
OR05080-1	143	5	3	5	100	1.1
OR05082-1	144	5	3	5	100	1.1
Q174-2	108	7	8	7	100	1.1
OR05012-1	180	11	7	8	100	1.3
OR05081-2	114	6	4	6	100	1.3

¹Severity is the length of mine
severity 1= mine length 1-2 mm
severity 2= mine length 3-10 mm
severity 3= mine length >1-2 cm
severity 4= mine length >2-3 cm
severity 5= mine length > 3 cm

Leafhopper Identification and Trapping Workshop, May 15th, Moses Lake, WSPC Office

On May 15th, the potato commission will host an insect identification workshop focusing on leafhopper trapping for purple top management. We will have a brief presentation on leafhoppers and beet leafhopper in particular. The bulk of the session will be informal instruction on leafhopper trapping and identification using actual traps from the field to help people learn what is needed to conduct their own leafhopper monitoring. We will also be distributing trapping supplies to Washington potato growers who attend.

Date and Time: May 15th, 2:00 - 4:00 pm

Place: Potato commission office - 108 Interlake Road, Moses Lake

For questions or comments, contact Andy Jensen at 509-765-8845 or ajensen@potatoes.com.