

POTATO UPDATE

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Hermiston Agricultural Research and Extension Center

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Insect Trap Report

Area Pest Alert, Umatilla & Morrow Co.

Traps are collected on Thursdays.

TRAP	PTW	BLH	OLH	GPA	PA	OA
1	0	0	0	0	0	8
2	0	0	1	0	0	4
3	0	0	2	0	0	12
4	0	0	1	0	0	4
5	0	1	2	0	1	16
6	0	0	0	0	0	5
7	0	0	0	0	0	7
8	0	0	2	0	0	8
9	0	0	1	0	0	7
10	0	3	0	0	0	3
11	0	1	0	0	0	11
12	0	0	13	0	0	4
13	0	0	3	0	1	3
14	0	1	0	0	0	0
15	0	2	2	0	0	0
16	0	0	0	0	0	1
17	0	2	3	1	0	8
18	0	0	1	0	0	2
19	0	1	0	0	0	1
20	0	0	0	0	0	1
21	0	0	0	0	0	1
22	0	0	0	0	0	5
23	0	0	0	0	0	1
24	0	0	0	0	3	1
25	0	0	0	0	4	13
26	0	0	1	0	0	2
27	0	0	0	0	2	0
28	1	1	1	0	0	0
29	0	0	2	0	0	8
30	0	0	2	0	0	3
31	0	2	1	-	-	-
32	0	0	1	0	0	1
33	0	6	1	0	3	9
34	0	2	0	0	0	2

PTW: Potato Tuberworms GPA: Green Peach Aphids
BLH: Beet Leafhoppers PA: Potato Aphids
OLH: Other Leafhoppers OA: Other Aphids

From yellow sticky cards located outside potato circles.

TRAP	PP	OP
1	0	9
2	0	47
3	0	450
4	0	223
5	0	176
6	0	9
7	0	22
8	0	396
9	0	22
10	0	7
11	0	121
12	0	20
13	0	9
14	0	13
15	0	24
16	0	41
17	0	9
18	0	53
19	0	16
20	0	4
21	0	6
22	0	4
23	0	7
24	0	13
25	0	41
26	0	21
27	0	33
28	0	16
29	0	13
30	0	51
31	0	2
32	0	10
33	0	11
34	0	15

PP: Potato Psyllids
OP: Other Psyllids

HAREC at work fighting psyllids!

Idaho and Washington have found few potato psyllids early this week. Today, we have found our first one in the Columbia Basin in a commercial field; none in our trapping route, and also two nymphs in experimental plots; this is **two weeks** earlier than previous years. **Intensive trapping should start now!!!**

More information about psyllids can be found here

<http://ir.library.oregonstate.edu/xmlui/bitstream/handle/1957/30058/pnw633.pdf>

<http://www.oregonspuds.com/publications/PotatoPsyllid.pdf>

<http://www.nwpotatoresearch.com/IPMStuff/PDFs/PotatoPsyllid.pdf>



If you have any questions about psyllids, call 541-5678321...*Silvia Rondon, Extension Entomologist*

New research: effects of thiamine treatments to control Zebra Chip (ZC)

Thiamine, a water-soluble B-complex vitamin (a.k.a. vitamin B₁) has been shown in many crops (e.g. oats, rice) to boost the plant's immunity, thereby increasing resistance against pathogens by inhibiting disease progression and reducing pest populations. Our objectives for this study are to test the effect of thiamine application on potato resistance to ZC, a disease vectored by the potato psyllid. We will conduct greenhouse studies to determine whether thiamine provided resistance against psyllids/ZC. This is a study sponsored by the Agricultural Research Foundation. We will report on the effect of thiamine application on plant resistance to PVY and ZC, and on insect behavior. Stay tune*Amber Vinchesi (Postdoc Rondon's lab), Aymeric Goyer (Plant Biochemist), Silvia Rondon, Extension Entomologist.*

Potato Disease Diagnostics: What is PCR?

Through interactions with the HAREC Plant Pathology Lab, either in person or over the phone, you may have heard the term "PCR" or "PCR test". But, have you ever wondered what it means, or how it works? Before we delve into the particulars of PCR, let's discuss what happens when a potato sample is brought into the lab.

When a sample is presented to the lab, the first step is to gather as much information as possible: information about irrigation, chemicals applied, planting date, field history, variety of potato, and symptoms in the field. At times, this information may not *seem* important, but it helps determine where to start in the diagnostic process. Are the suspected pathogens viral, bacterial, or fungal? Is the problem environmental or a chemical?

Some pathogens can be identified using "traditional" methods. For instance, if we suspect a disease is caused by *Pythium*, a fungal-like organism, we can try to grow the organism on a jello-like material called media and confirm identification. Similarly, many bacterial pathogens can be grown on media and subjected to several biochemical tests for identification. However, some pathogens cannot be cultured and required more advanced methods for identification. Viruses cannot be cultured, nor can several bacterial pathogens (zebra chip) or fungal pathogens (downy mildew). For some diseases, such as downy mildew, fungal structures are present on plant tissue and can be identified using microscopy.

Since viruses and a few other pathogens cannot be cultured, and control options are dependent upon pathogen identification, other methods must be employed. PCR (Polymerase Chain Reaction) is used to detect the nucleic acid (DNA or RNA) of the pathogen using something called a *primer*.

A primer is a small piece of DNA that will search out, attach to, and copy a stretch of nucleic acid that is specific for a particular pathogen. The copying of the nucleic acid allows us to visualize it and determine if that particular pathogen is present or absent. For example, the primers for *Tobacco rattle virus* (TRV) ONLY detect TRV. Potato mop top virus (PMTV) primers ONLY

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Pg. 3 of 2

detect PMTV. In addition to specificity of the primers, only a few pathogen particles are needed for the copying to work, therefore PCR can detect very low levels of a pathogen.

The Plant Pathology Lab not only uses primers and protocols established by other labs, but **we are continually developing new techniques and protocols to decrease the time required for a diagnosis and meet the needs of growers in the Columbia Basin**. When you submit a sample to the Plant Pathology Lab, you can be assured that the most advanced methods are being used to assist with pathogen identification.....*Robert Cating and Phil Hamm, Plant Pathologist.*

Wheat Field Day June 9
Potato Field Day June 25

