

Central Oregon Potato Extension Program

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Abstract

To monitor pest populations and assess potential risk due to transmitted diseases both aphid and tuberworms were collected. The collection methods included twelve water pans for aphid collection and 10 delta traps for tuberworm collection. Aphid and potato tuberworm counts were conducted weekly in Jefferson County from June 18 to September 25, 2013. Weekly findings were sent as reports to growers, fieldmen and industry representatives. Aphid numbers were relatively low throughout the season, averaging four to twenty-four aphids per trap before they began to increase toward the end of the growing season. The potato tuberworm moth was identified in the area on August 27 and was found in very low numbers until traps were removed at harvest on September 17, 2013. Early blight prediction modeling and crop water use data provide helpful information for seed potato management. Weekly monitoring continues to be a significant source of information for integrated pest management in central Oregon potato fields.

Introduction

Aphids are important pests to identify and control in potato crops and can affect yield by removing nutrients from plants, stunting growth, or transmitting disease. Aphids are known vectors for several viruses, with the most important for our area being potato virus Y (PVY). The potato tuberworm is one of the most important pests that infest potato worldwide. Potato tuberworm moth appeared in the area in 2013 and has the potential to impact production due to larvae mining in tubers.

Early blight in potato caused by *Alternaria solani* has been recognized as a problem and the timely application of protectant fungicides is a very effective control method. Early blight prediction models predict the first seasonal rise in the number of spores of the early blight fungus based on the accumulation of 300 physiological days (P-days) from green row. Once 300 P-days have accumulated, the first fungicide for early blight control should be applied. This usually occurs when rows have closed.

Potato is a moisture sensitive crop with a shallow active root zone compared to cereals and forages. Availability of moisture in the root zone is crucial for high yields and is influenced by soil properties such as texture and percent organic matter. Moisture demand increases as the crop begins to develop after emergence and peaks seven to nine weeks later during the tuber bulking growth stage.

The object of this continued project is to monitor green peach aphids, other aphids grouped together, and potato tuberworm as well as generate early blight prediction model and weekly water use data information. The weekly newsletter continues to provide growers and industry real time data to assist with insect and disease management.

Methods and Materials

Pan traps are used to determine when aphid populations are increasing and when field monitoring becomes necessary. Twelve yellow water traps were used to collect winged aphids in commercial potato fields throughout central Oregon from June 18 to September 11. Trapped aphids were collected from water using a soft paint brush and transferred into vials filled with alcohol. Vials were transported to the OSU-COARC laboratory and identified as green peach aphid or other aphids. Date and location were used to identify aphid movement in area.

Ten pheromone delta traps were placed at the edge of commercial potato fields from June 18 to September 17. Delta traps consist of a triangle shaped trap, removable sticky liner bottom, and a lure impregnated with the pheromone of the female potato tuberworm moth. Sticky liners were removed weekly and inspected for presence of male moths. Confirmation of an initial moth find was verified by the OSU-HAREC Irrigated Entomology Program Laboratory, Hermiston, Oregon.

The early blight prediction model uses accumulated P-Days to indicate threshold for early blight risk and initiate preventative application of fungicides. The minimum, optimum, and maximum growth temperatures of the potato plant and the diurnal fluctuation of the air temperature were used to calculate P-Days. P-Days are calculated based on June 1 and June 10 emergence in central Oregon.

A weekly newsletter was sent to potato industry participants from June 25 to September 11 that included the early blight prediction model, weekly water use, weekly aphid identification and population numbers, and notification of potato tuberworm moth presence. Location of trap sites and population numbers were identified for grower use. Weekly reports were posted onto the OSU-COARC website and can be found at <http://oregonstate.edu/dept/coarc/aphid-trap-reports>, providing immediate access for our targeted audience.

Results and Discussion

Aphid populations in central Oregon were between 4 and 24 aphids per trap in 2013 (Fig. 1). Overall, aphid populations were low all season long with a small peak on July 23 and another increase at the end of the season on September 3. Green peach aphid numbers were very low ranging from 0 to 3.6 aphids per trap. Identification and reporting remains a helpful tool in controlling vectors.

In 2013, first identification of potato tuberworm moth occurred on August 27 and was confirmed by the OSU-HAREC Entomology Lab. Tuberworms were found each week (at least one but no greater than 3) until trap removal on September 17 prior to harvest. The increasing presence of potato tuberworm is of great importance and knowledge of control methods is crucial. Control methods include prompt harvest after vine kill and keeping soil moist as vines die to prevent cracking of the soil and exposure of tubers. Trapping continues to be a tool for seed producing areas in control of monitoring pests capable of transmitting diseases.

Early blight prediction models reached 302 P-Days on July 18 for June 1 emergence and 300 P-Days on July 27 for June 10 emergence. Using P-Days is crucial for efficient control of potato early blight disease. The yearly survey assists in the prediction of crop water use which is important to proper crop management throughout the growing season and during maturation to assist with harvest and prevent storage rot.

Providing weekly reports allows growers and producers to use preventative measures at times that can be most advantageous and economically rewarding. Thinking forward to the 2014 season, beet leaf hopper and potato psyllid are growing concerns for potato production and monitoring is suggested for these additional pests. Surveys conducted during the 2014 growing season will likely include yellow water pan traps for aphids, potato tuberworm delta traps, beet leafhopper and psyllid sticky traps.

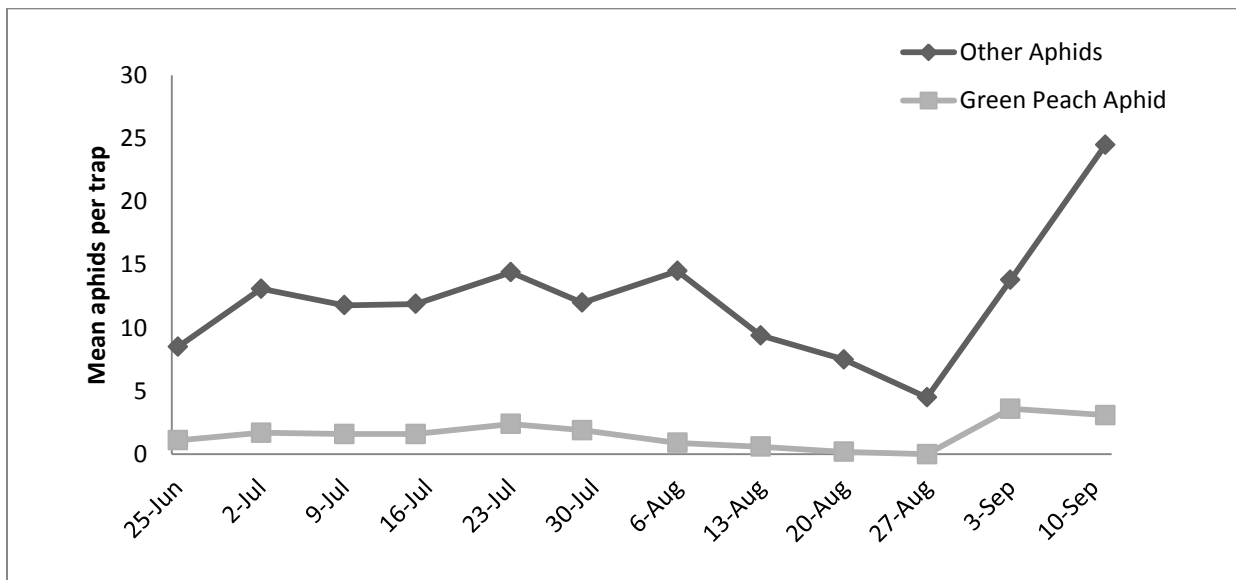


Fig. 1. Average population of aphids per trap in commercial fields in Jefferson County, Oregon 2013.