



WASHINGTON STATE
UNIVERSITY
EXTENSION



IMPROVING INSECT MANAGEMENT IN DRY BULB ONIONS IN THE COLUMBIA BASIN

BY THE NUMBERS

- Each season more than 120 industry members from the Pacific Northwest attend the WSU Onion Field Day, one venue where project results are disseminated.
- The presentations made at the Pacific Northwest Vegetable Growers Association annual meeting are heard by more than 250 attendees representing onion farms in Washington, Oregon, and Idaho.
- More than 80% of the onion growers in Washington have altered their IPM strategies for managing thrips in onions as a result of research conducted by WSU Extension.
- This project identified that utilizing the proper insecticide at the correct timing can improve onion yield by greater than 25%.

2016

ISSUE

Dry bulb onions are grown on 24,000 acres in Washington and the crop is valued at about \$199 million annually. Dry bulb onions are a high-value vegetable crop in which insect pest damage can have a significant negative impact on crop yield and quality. Prior to 2006, producers had very few options for effective control of onion thrips (*Thrips tabaci*), a persistent insect pest that requires as many as 10 insecticide applications per growing season for adequate control. Feeding by onion thrips can decrease crop yield by as much as 35% when ineffective treatments are used. Thrips also can vector Iris yellow spot virus, a devastating plant disease that can further decrease yield and profitability for producers.

RESPONSE

The overall goal of this project is to improve Integrated Pest Management in dry bulb onions in the Columbia Basin. Research projects have been conducted with grant funding secured from the Washington State Commission on Pesticide Registration, the Pacific Northwest Vegetable Growers Association, and private sources. The research projects have focused on evaluating new insecticides, documenting chemical resistance, and evaluating use patterns and application techniques of currently registered insecticides.

After the research projects are completed, the information must be shared with producers so they can implement these strategies on their farms. More than 50 formal presentations and 6 field days have been conducted over the last 9 years to disseminate results of this project. Additionally, 2 extension publications, 1 referred journal article, and 3 popular press articles have been published. Three Section 18 Emergency Pesticide Labels were granted for thrips control on dry bulb onions during the early years of this project to help growers better manage this devastating insect pest.



QUOTES

"The Sunheaven Farms growers put a high value on the thrips research and advice that Tim Waters of WSU Extension provides. Thrips are a major pest on our farms, and controlling them has become a challenge. Without successful thrips control the value of our produce would drop drastically. ... Tim's research and screening of new pesticides and application techniques has been a lifesaver for us. Before Tim was here, we depended on research from other areas, which sometimes was not pertinent to the Columbia Basin. Tim's work is done with local cultural practices in mind and his program is integral to the success of controlling insect pests on our farm and many others in the Columbia Basin." - Wes Locke, Agronomist, Sunheaven Farms

"Much of the research WSU's team and the local people, Tim Waters and Carrie Wohleb, have conducted helped us to improve the quality of our crop. The ongoing work on thrips control and timing of these newer pesticides are very important. Tim and Carrie have developed respect with the independent-minded onions growers and I know they will continue to be helpful in the future." - Larry Bauman, L and L Ag Production

IMPACTS

Growers have become aware of the results of this project through the numerous presentations and publications, making the WSU Extension Commercial Vegetable program in the Columbia Basin the main source they use for information on insect management in onions. Prior to the initiation of this research project, growers commonly used pyrethroid insecticides to target control of onion thrips. This project has shown that pyrethroid insecticides are ineffective and, in fact, thrips are resistant to this commonly used class of insecticides. As a result, producers have ceased use of this insecticide and have shifted to using more effective insecticides that have been identified by the research conducted on this pest by WSU Extension.

The newer insecticides often are slower acting and narrower in spectrum of control than previously used insecticides; therefore, applying them with the same timing and application methods would not be effective. The WSU Extension Commercial Vegetable program has determined the best timing and application methods for new insecticides. This helps growers know when and how to use these insecticides for optimum results. The new insecticides are applied at lower rates and are safer for the environment and non-target organisms than the older insecticides. Additionally, the improved application methods (applying via drip or center pivot irrigation) are less expensive and more effective than foliar applications.

Narrower spectrum insecticides have been widely adopted by onion producers in Washington. In fact, greater than 60% of the insecticide applications in onion fields are with narrow spectrum insecticides. Furthermore, producers have shifted from using broad spectrum insecticides early in the season to using the broad spectrum compounds late in the season, or not at all in order to preserve beneficial insects in onion fields.

Studies conducted in 2010 showed that when the most effective insecticides were utilized in thrips management programs in onions, yields increased by 25%. A 25% increase in onion yield translates to at least \$2,400 more in net profit per acre for growers who use these treatments, using the 2015 onion market value. With 24,000 acres of onions in WA, if 20% of users implement these changes, the WA onion crop value would increase by \$11.5 million annually.