

# MANAGING ONION PESTS & DISEASES

Onions are a widely grown and consumed vegetable in the U.S., but some growers are abandoning onion farming because of losses due to pests and pathogens.

Onions are susceptible to bacterial, fungal, and other pathogens that can cause severe losses in fields and storage facilities. Insect pests are also serious threats. For example, onion thrips feed on plant leaves, damaging onion bulbs and spreading pathogens that impair yield, quality, and seed production. These insects cause billions of dollars in losses each year. Pesticide use to control pests adds to farmers' costs and can have harmful impacts on the environment if used incorrectly. Effective alternatives are needed, especially as pests like onion thrips develop resistance to chemical pesticides.

Researchers at land-grant universities across the U.S. have teamed up to help onion farmers overcome these challenges. They have illuminated effective ways to manage pests and diseases and identified onion varieties with greater resistance or tolerance. These advances have transformed how onions are grown around the world, making production more sustainable for farmers and ensuring a stable supply of onions for consumers.



## PREVENTING VIRUSES

Better understanding of how *Iris yellow spot virus* spreads led to new recommendations for planting and irrigating onion fields.

Growers in the Idaho-Oregon Treasure Valley who planted onion seed fields (planted in summer, harvested the following summer) farther away from onion bulb fields (planted in spring, harvested the following fall) had less damage, higher yields, and lower production costs because the virus was not able to spread between fields or across seasons.

Careful irrigation practices, especially drip irrigation, during hot and dry periods can reduce the effects of IYSV and minimize losses.

## INTEGRATING PEST MANAGEMENT

New York researchers developed an integrated pest management program for thrips that combines selective insecticides, appropriate tank mixes and additives, spray thresholds, resistance management, and reduced nitrogen fertilizer use. Growers who used the program made 75% to 80% fewer insecticide applications per field and saved an average of \$265 to \$300 per acre. In the Columbia Basin of Washington and Oregon, adopting IPM practices to control thrips could increase onion crop value by more than \$13 million per year.

## BREEDING BETTER VARIETIES

New Mexico researchers identified a variety that can be used to breed onions with resistance to thrips and IYSV and refined methods that will help breed onions with resistance to Fusarium basal rot.

## MANAGING BACTERIAL & FUNGAL DISEASES

New knowledge about factors associated with bacterial and fungal diseases helped researchers recommend more effective management practices.

For example, modified irrigation practices can reduce incidences of internal dry scale, which can occur during heat stress and makes onions more susceptible to infections.

Other studies indicated wide plant spacing, which delays crop maturity, can make onion crops more vulnerable to infection.

In response to research findings, Pennsylvania growers are now using silver plastic mulches or physically manipulating plastic mulch during bulbing to reduce heat stress and prevent bacterial infections that cause bulb rot.

## IMPROVING FERTILIZER USE

Studies showed that late or excessive nitrogen fertilization can lead to thicker necks that dry more slowly in storage, making the onions more susceptible to bacterial or fungal bulb rots.

In response to research findings, Utah onion growers applied less nitrogen to fields, saving nearly \$200 per acre.

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