Managing Stakeholder-Prioritized Pests and Diseases for Sustainable and Economical Production of Onion
Iris yellow spot virus
An onion seed field affected by Iris yellow spot virus in the Columbia Basin of Oregon. The grower experienced total crop loss due to the virus outbreak (photo courtesy: Dr. Fred Crowe)
Effect of IYSV on onion (left half of the field had a 30 to 50% reduction in bulb yield) compared to the right half that received a thrips control regimen.
Progression of lesions caused by Iris yellow spot virus on onion scapes (from left to right): diamond-shaped lesions are characteristic symptom of IYSV infection
Thrips

Damage caused by thrips feeding on an onion leaf
Onion leaf colonized by onion thrips
White rot

*(Sclerotium cepivorum)*

Top: Healthy onions (left) compared to white rot-infected onions (right);
Bottom: Close-up of white rot sclerotia
Fusarium basal rot
(*Fusarium oxysporum f.sp. cepae*)

Onion bulbs affected by Fusarium basal rot
Pink root
(*Phoma terrestris*)

Onion affected by pink root (right) compared to healthy onions (left)
Managing Onion Pests and Diseases: The Way Forward

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- **Thrips**
  - Foliage types
  - Enhanced management tactics while using less N and fungicides
  - Altering vector behavior to reduce virus transmission

- **White rot**
  - Germination stimulants from onion industry byproducts
  - Reducing long-lived inoculum

- **Onion**
  - Reducing the impact of pests and diseases
  - IPM of thrips-IYSV complex
  - Developing resistant cultivars
  - Sustainable control of fungal diseases

- **Economics**
  - Cost-benefit analyses

- **Molecular markers for inherited resistance**
  - Pink root and Fusarium basal rot

- **Stakeholders**
  - Traditional and electronic outreach (eXtension.org, alliumnet.com)