Organic Pest and Weed Management for Service Providers in the West

This factsheet is meant to provide extension agents and technical service providers with an overview of organic standards and regulations, and increases knowledge of organic systems to effectively support organic and transitioning-to-organic farmers.

For more organic resources, check out www.ofrf.org/resources.

Why is Pest Management Important?

- Weeds, insects, and diseases contribute to crop yield loss
- They affect crop quality → less marketable product
- Labor intensive and expensive, requiring trial and error and pivots in management
- Affects consumers → product availability, prices

Common bacterial blight of beans

A Systems Approach - Many Little Hammers

- Using multiple approaches in a systems-thinking, integrated pest management (IPM) approach, rather than a "silver bullet"
- Starts with learning - what are the common pests in the region? What is their preferred habitat, their life cycle, and their natural enemies?
- Prevention is key → cultural and biological focus with predetermined action thresholds
- Consistent monitoring and recordkeeping to determine when a different approach may be needed

Parastic braconid wasp cocoons on a tomato hornworm

National Organic Program (NOP) Requirements

§ 205.206 Crop pest, weed, and disease management standard.

The producer must manage crop pests, weeds, and diseases using:

- Crop rotation
- Proper selection of plant species and varieties
- Habitat for natural enemies of pests
- Mulching, grazing, flame weeding, mowing
- Sanitation measures
- Use of approved biological controls

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Table 1. Examples of practices organic farmers can use to meet NOP § 205.206 Crop pest, weed, and disease management requirements.

Weeds	Insects	Diseases
Cover cropping	Monitoring	Rotate crop families or select resistant crop varieties
Tillage, cultivation, hand weeding	Timing planting to avoid pest life cycles; rotating to non-host crops	Pruning & thinning to improve air circulation
Mulching	Exclusion with row covers/netting	Drip irrigation vs. sprinklers to reduce foliar moisture
Mowing, grazing	Traps, repellents, pheromones to disrupt pest mating	Soil solarization
Flame weeding	Habitat for biodiversity and natural enemies	Remove infected plant debris from production areas
Crop variety selection	Parasitoids	Build soil health to support the soil microbiome and plant health/resiliency
Manipulate seeding rate, row spacing	Organic-approved pesticides	Organic-approved fungicides

Red clover cover crop

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Select Research Takeaways

- To disrupt creeping perennial weeds like Canada thistle (Cirsium arvense) and Field bindweed (Convolvulus arvensis), diversify a small grain rotation with alfalfa, spring barley, or winter triticale at high seeding rates, and use livestock grazing when possible (Burke et al., 2024).
- Manage weeds before crop planting using winter cover crops, followed by shallow cultivation (stale seedbed) and flame weeding, to deplete the weed seedbank (University of California IPM).

Field bindweed

Canada thistle

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- Manage weeds before crop planting using winter cover crops, followed by shallow cultivation (stale seedbed) and flame weeding, to deplete the weed seedbank (University of California IPM).

- For wheat stem sawfly control, use solid-stem wheat varieties, provide field edge habitat such as buckwheat or cowpea for parasitoid wasp habitat, and plant oats in the crop rotation (non-host crop) (Montana State University; NRCS).
- For leafhopper management, install row covers at planting and gradually remove at first bloom. Remove and destroy any infested crop residues, and utilize OMRI-approved materials such as neem oil or diatomaceous earth if necessary (University of California IPM).

Wheat sawfly

Wheat streak mosaic virus

- For wheat streak mosaic virus management, till or graze volunteer wheat and grass weeds ~14 days prior to winter wheat planting to disrupt the life cycle of the virus vector, the wheat curl mite. Rotate small grains with non-host broadleaves such as sunflower, lentil, or field pea (Montana State University).
- To manage bacterial leaf spot, use drip irrigation instead of sprinklers to reduce splashing the bacteria to other leaves, and use proper row spacing to allow crop leaves to dry after dew or rain (University of California IPM).

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Resources:

- **USDA AMS National Organic Program**
- **Resource Guide for Organic Insect and Disease Management**
- **Organic Weed Control - Tree Fruits and Vegetables**
- **Soil Health and Organic Farming**
- **OFRF Organic Research Hub**

References

Bacterial Leaf Spot. 2017. University of California IPM. https://ipm.ucanr.edu/agriculture/.

Burke et al. 2024. Weed management in organic dryland wheat production in the Pacific Northwest. https://doi.org/10.1002/agj2.21709.

Leafhoppers. 2024. University of California IPM. https://ipm.ucanr.edu/agriculture/.

Management of Wheat Streak Mosaic Virus. 2016. https://www.montana.edu/extension/.

Wheat Stem Sawfly. 2024. Montana State University & NRCS. https://www.montana.edu/extension/.

Weed Management for Organic Vegetable Production. 2024. University of California IPM. https://ipm.ucanr.edu/agriculture/.

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