

Starting Your Sustainable
Small Farm in Idaho

The Ecology of a Small Farm: Creating a Healthy Balance



Presented by Ariel Agenbroad, UI Extension in SW Idaho/Treasure Valley

University of Idaho
Extension



RURALroots
healthy farms healthy food healthy communities

- ▶ **Ecology** is the branch of biology that deals with the relations of organisms to one another and to their physical surroundings.
- ▶ **A system** is a set of connected things or parts forming a complex whole.
- ▶ **An cosystem** is a community of living organisms in conjunction with the nonliving components of their environment interacting as a system.





**Are you intentional when
increasing biodiversity on
your farm?**





Ecological Principles for Managing Pests

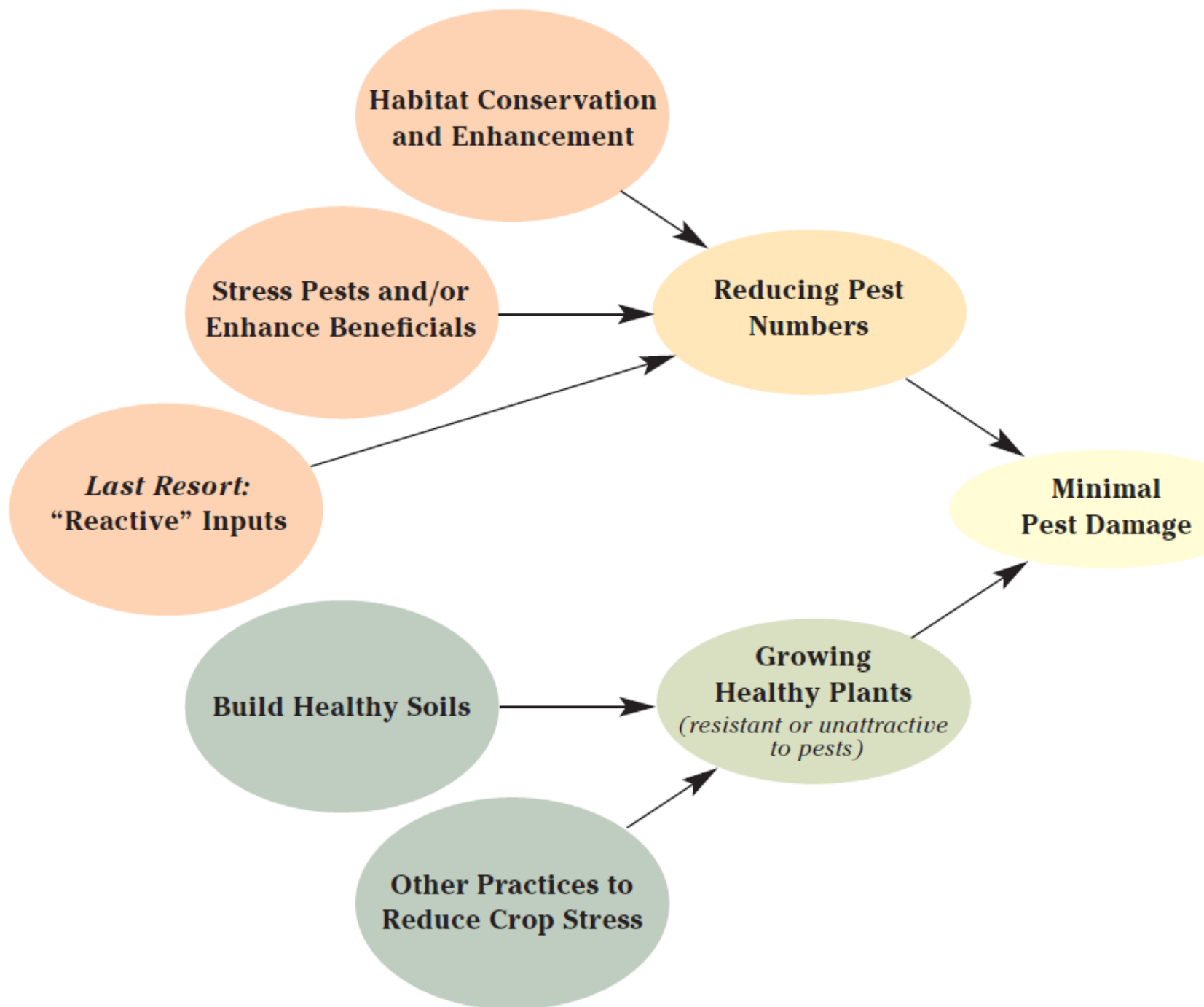
- ▶ Healthy plants have natural defense systems
- ▶ What makes a plant susceptible to pests/disease?
- ▶ Understand your pest's strengths and weaknesses



Ecological Strategies

- ▶ Mimic natural systems
 - ▶ Increase soil, plant and animal diversity, use multiple strategies in your toolbox
- ▶ Reduce disturbances
 - ▶ Tillage, harvesting, fertilization, pesticide application can all stimulate pests





This bulletin from the Sustainable Agriculture Network (SAN) outlines how to use ecological principles to control pests on your farm. Read on to learn about successful strategies and consult the more comprehensive resources listed on page 20.

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SAN is the national outreach arm of the Sustainable Agriculture Research and Education (SARE) program, administered by USDA-CSREES.

Also available at:
www.sare.org/farmpest/



4/03

A Whole-Farm Approach to Managing Pests



Growing rye between vineyard rows suppresses weeds — both by smothering and by producing allelopathic substances that inhibit weed germination — and attracts beneficial insects such as lady beetles to this vineyard in Monterey County, Calif. Photo by Chuck Ingels.

BEFORE STEVE GROFF TOSSED OUT HIS CONVENTIONAL PEST controls in favor of a more comprehensive, ecologically based strategy, his 175-acre Pennsylvania vegetable farm attracted a parade of pests.

Now he plants a winter cover crop of hairy vetch and rye and lets it grow 5 feet tall. Each spring, he knocks it down with a rolling chopper, then transplants his tomatoes into a thick mulch. Growing annual cover crops became a cheaper and more effective way to control the pests that plague vegetable growers.

"I have yet to use any insecticide for Colorado potato beetle. They don't like the cover crop mulch," he says. In addition to adding nitrogen and organic matter to the soil, the cover crop mulch also seems to stall early blight by keeping disease organisms from splashing up onto the plants.

"It's working for us," says Groff — and it's just one of the fistful of tools he uses to stymie pests.

Neither Groff's farm nor any other will ever be entirely pest proof. But by completely rethinking his



**How do you know when
something is out of
balance?**







**How do you know when
your system is working?**







Best Practices

- ▶ Produce healthy crops
 - ▶ Build soil health through composts and cover crops
 - ▶ Adequate, not excessive fertilization
 - ▶ Practice crop rotation
 - ▶ Control weeds
- ▶ Stress pests
- ▶ Enhance beneficial organisms
 - ▶ Create habitat, avoid broad spectrum insecticides



Targeted treatments are a last resort

- ▶ Properly identify the pest
 - ▶ Scouting, trapping
- ▶ Assess the population, threat
 - ▶ Economic threshold
- ▶ Select the appropriate, least toxic tactic or intervention
 - ▶ Cultural, physical, mechanical
 - ▶ Biological, bio-rational options
 - ▶ Chemical



**What will be your
strategies for ecological
insect and weed pest
management?**













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Biodiversity on the Farm



Presented by Greg Freistadt, Deep Roots Farm, Moscow, Idaho

University of Idaho
Extension



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Why should we have diversity on your farm?

- ▶ We need too...
 - ▶ Our market base
 - ▶ Insurance against crop failures
 - ▶ More complex, diverse system is more robust
 - ▶ Believe in a system that is multilayer and home to many species.



3 Pillars of Sustainability



Adapted from SARE publication



Biodiversity at the Market

- ▶ About 28 varieties
- ▶ Keeps interest up
- ▶ Colors attract people
- ▶ Varieties for specific uses



Multi-Cropping

- ▶ Planting density
- ▶ Multiple species
- ▶ Roots in the ground
- ▶ Cool & warm season crop successions
- ▶ Provides diverse habitat above and below soil grade
- ▶ Constantly evolving food source for soil organisms



Planting Perennials

- ▣ Gives us different products
- ▣ Allows soil to go undisturbed for years
- ▣ Micro and Macro Organisms fully colonize



Habitat along edges of gardens



Shrubs & Buffers

- ▶ Leave established vegetation
- ▶ Plant new flowering trees and bushes along edges (provide windbreaks & habitat)
- ▶ Allow/Plant multi-layer species to provide habitat for different species







Constant Habitat for Pollinators

- ▶ Long blooming flowers extend season
- ▶ Multiple species of flowering plants for a whole season of blooms
- ▶ Different color blooms attract different types of insects, pollinators, and beneficial insects & animals
- ▶ Sunflowers can be hosts for many native bees, as well as trap crops for Asian stink bugs



Establishing Honey Bees



- ▶ Always something flowering on farm
- ▶ They can increase yields through better pollination



Cover Crops

- ▶ Numerous species
- ▶ Both winter and summer use
- ▶ Same roots in the ground theory
- ▶ Understanding of clovers in fall



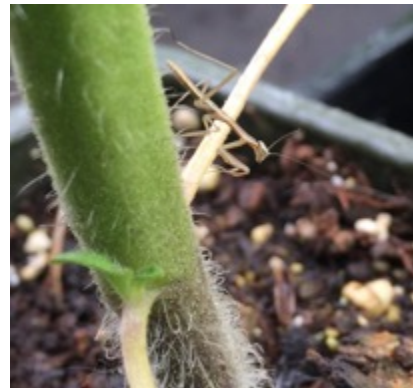
Winter Wheat, Rye, Vetch



Phacelia



Collecting Beneficials and Relocating to Areas of Need



Mulching overwinter and when not growing



Observe the Interactions

