Wild Farm Alliance's Guide

SCOUTING TO BUILD RESILIENT FARMS

Whole Farm Scouting and Sustainable Pest Management

Why Scout?

Scouting your fields, orchards, vineyards and surrounding areas is one of the most effective ways to detect problems early and make informed decisions.

By observing what's happening within the farm ecosystem, scouting can mean the difference between crop failure and a profitable harvest. It can help farmers save money by reducing pesticide use and improving decisions both above and below ground.

Useful in every production system, scouting strengthens the link between observation and action on the farm.

ECONOMIC
Early detection of pests and stressors helps prevent costly damage and reduces unnecessary inputs.

OPERATIONAL
Regular observation improves the timing and efficiency of on-farm decisions– from irrigation to fertility management.

ECOLOGICAL
Scouting reveals the role of beneficial insects, birds, and soil organisms that support natural pest control and nutrient cycling.

Scouting is not just checking for immediate problems–it's building a long-term understanding of how the farm responds to observation and management.

Whole Farm Observations

PLANT HEALTH

Look closely at the color, vigor, and overall growth of your plants. Early signs of stress–such as yellowing leaves, stunted growth, or irregular flowering–can point to nutrient deficiencies, water issues or pest pressure. Tracking growth stages also helps guide timely management decisions like irrigation, pruning or harvest.

PESTS

Regularly scan for insects, mites, weeds, diseases, rodents and birds that may threaten crop performance. Identify pest species, their life stages, and where they appear in the field to better target control measures. Learn to recognize pest damage–for example, aphids cause leaves to curl and leave a sticky residue. Early detection can prevent small issues from becoming costly, widespread outbreaks.

SOIL AND WATER

Healthy soil and water dynamics build the foundation of a thriving farm. Observe indicators such as erosion, compaction, residue cover, and water infiltration after rain or irrigation. These clues reveal how well the soil is supporting plant growth, retaining moisture and cycling nutrients.

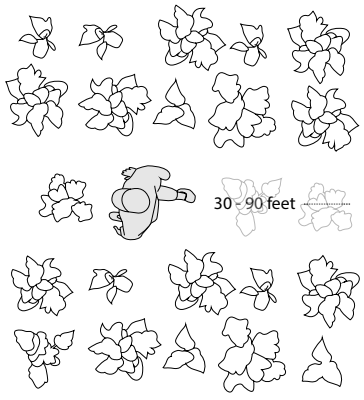
BENEFICIALS

Scouting isn't only about identifying plant stress, pests and soil issues–it's also about noticing what's working well. Keep an eye out for beneficial insects and birds, pollinators and decomposers that help regulate pests, pollinate crops and build healthy soils.

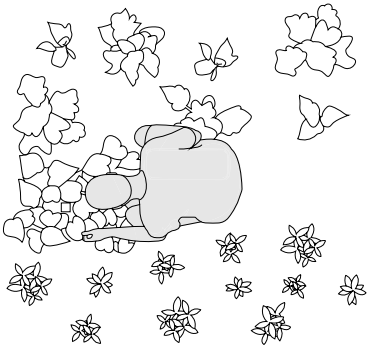
Knowing when beneficial organisms can keep pests in check–and managing in ways that support them–builds more resilient farm ecosystems.

Taking a close look at the crop for pests / or their damage can be necessary.
Photo credit: Jessica Vaughan

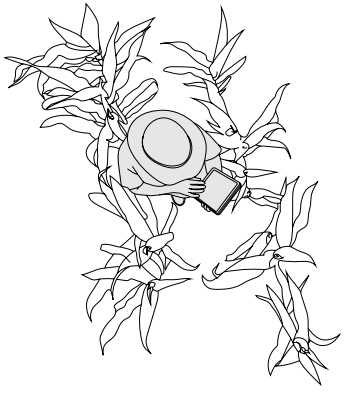
Doug O'Brien checking for raddichio pests.
Photo credit: Jessica Vaughan



Scouting begins 30 to 90 feet from the field edge.



Inspect more closely.



Record findings as you scout.

When & Where to Scout

SCOUT REGULARLY

Scout on a consistent schedule and vary your routes to collect accurate, representative observations. Select fields or blocks that reflect the diversity of your operation, and during each visit, record field conditions along with the presence of pests and beneficials.

SET SCOUTING FREQUENCY

During the cropping season, scout regularly–every 2 to 3 days or once a week–depending on the crop's age and potential for stress and pests. Use visual checks or equipment (see example list) to record what you find. Early detection is essential if you plan to release beneficial insects.

START BEYOND FIELD EDGES

For an accurate picture of the crop, begin scouting within the crop about 30 to 90 feet from the field edge, since pests often move in from surrounding areas. Scan about a hundred plants without bending down –look across the rows if possible, or down the rows if needed.

INSPECT MORE CLOSELY

If you spot anything unusual or are tracking a known issue, closely inspect 10 to 20 plants and record what you find. Visit different parts of the field each time you scout to get a full picture of what's happening.

ADJUST FARM SIZE / CHECK NONCROP AREAS

Adjust the scouting area to fit your farm size–use 10- to 20-acre blocks for large fields and cover whole blocks in smaller ones. It also helps to check nearby noncrop areas like cover crops, hedgerows, and riparian zones to see how beneficial insects and pests shift with the seasons.

Build Your Knowledge Base

BEGIN WITH BASICS
Start where you are and build from there. At first you may be making decisions based on current information and instinct.

UNDERSTANDING GROWS
Over time, your understanding of a pest's location, density, and population growth can be balanced with historical data on pest and beneficial activity, helping you decide when control actions are needed.

THRESHOLDS FOR ACTION
The economic injury levels and action thresholds mark the pest level where waiting longer would cause more crop loss than the cost of control. These levels are established using both current observations and historical data.

BIOCONTROL FIRST APPROACH
For sustainable and organic production, there is a higher tolerance for minor pest activity, because these systems rely on established biological controls to prevent major outbreaks, only resorting to pesticides when preventive measures are ineffective.

PATTERN RECOGNITION SKILLS
With time and experience, growers and field scouts can learn to recognize activity patterns of pests, beneficials and crop stress, and prepare for them in advance.

Doug O'Brien looking closely at celery crop for pest damage. Photo credit: Jessica Vaughan

DOCUMENT EVERYTHING
Observations must be recorded to develop historic records. Using the Whole Farm Scouting Tool is one way to do that. It is downloadable as a free Google Sheet that can be used on a phone or tablet (see list below).

FLEXIBLE SCOUTING OPTIONS
On large farms, hired scouts often handle field monitoring, while smaller farms can combine scouting with everyday tasks like irrigating, weeding, pruning or harvesting. A small farmer could dictate what they are seeing into a database on their phone when multitasking.

BUILD YOUR KNOWLEDGE BASE

Knowing what you're looking for is the heart of good scouting. Using images, field manuals and the tools listed here and below, can make pest identification eaiser.

The following images are of major insect and mite pests and the crops they attack, and comes from WFA's *Managing Pests with Predator and Parasitoid Habitat*. These are primary pests found in sustainably managed crops, not secondary ones caused by pesticide applications. The specific ant or other pest shown may look somewhat different than the ones of your farm, depending on your location and the crops grown. Learning to recognize pest life stages–from eggs and immatures to adults, makes identification faster and more accurate.

PEST INSECTS AND MITE THAT OCCUR IN MAJOR CROPS

- almond, citrus, grape, pistachio

- brassica, celery, lettuce, stone fruit, tomato

- almond, brassica, celery, grape, lettuce, pistachio, stone fruit, strawberry, walnut

- brassica

- celery, lettuce, stone fruit, tomato, walnut

- almond, pistachio

- grape, tomato

- strawberry

- citrus, grape

- almond, avocado, grape, pistachio, walnut

- citrus

- citrus, stone fruit

- almond, brassica, pistachio

- avocado, brassica, celery, citrus, lettuce, strawberry

- tomato

PEST WILDLIFE SCOUTING

Wildlife can also pose challenges. Rodents, deer, and certain bird species are the most common issues, but depending on the crop and conditions, skunks, raccoons, and wild pigs can also cause damage.

UC's Wildlife Pest Identification Tool helps growers identify potential problem animals.

UC's Birds on Tree Fruits and Vines shows seven bird species known to cause crop damage.

EXAMPLES OF CROP STRESS INDICATORS

Scouting for crop stress helps catch problems early to prevent yield loss and reduce costs. Stress signs can reveal nutrient, pest, disease or environmental issues that weaken plants and lower production.

SYMPTOM	POSSIBLE CAUSE	WHAT TO CHECK
Yellowing Leaves	Nutrient Imbalance	Soil Test, Irrigation Uniformity
Leaf Curl	Mites or Sap Feeders	Underside of Leaves
Wilting	Root Disease, Rodents or Irrigation	Inspect Roots, Soil Moisture
Uneven Growth	Soil Compaction or Irrigation Issues	Soil Tilth, Soil Moisture

Yellowing Leaves –
Lime-induced iron deficiency symptoms (Photo credit: R. Maleike)

Leaf Curl –
Leafhoppers on maple leaf (Photo credit: A.L. Antonelli)

Wilting –
Top to bottom: root rot, healthy, Fusarium wilt, healthy (Photo credit: R.S. Byther)

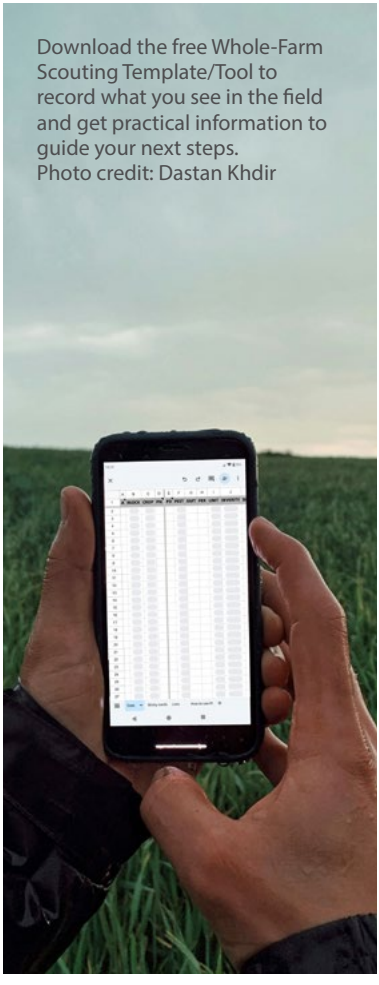
BENEFICIAL INSECTS, MITES AND SPIDERS

More than a dozen of the most common beneficial insects, spiders and mites in California landscapes are shown in UC's "*Meet the Beneficials: Natural Enemies of Garden Pests.*" These beneficials are listed below along with the major pests they eat.

BENEFICIAL INSECTS	PESTS IMPACTED
Lady beetles	aphids, caterpillars, mites, psyllids, stink bugs, whiteflies
Lacewings	aphids, caterpillars, leafhoppers, mealybugs, mites, psyllids, thrips, whiteflies
Predaceous ground beetles	aphid, caterpillars, flea beetles, mites, thrips
Assassin bugs	caterpillars, mealybugs, psyllids, scale, stink bugs, thrips
Minute pirate bugs	aphids, caterpillars, flies, lygus bugs, mites, thrips
Damsel bugs	aphids, caterpillars, flies, lygus bugs, stink bugs
Soldier beetles	aphids
Spiders	aphids, caterpillars, flea beetles, flies, leafhoppers, lygus bugs, mealybugs, mites, psyllids, scale, stink bugs, thrips
Syrphid flies	aphids, caterpillars, mites, psyllids
Sixspotted thrips	mites
Predatory mites	mites, thrips
Predatory & parasitoid wasps	aphids, caterpillars, flies, lygus bugs, psyllids, scale, stink bugs
Praying mantids	stink bugs

BIRD ALLIES

While UC's wildlife publication (mentioned above) lists seven bird species causing major crop damage, there are over 600 bird species in CA that aren't considered pests. Additionally, the overwhelming majority of songbirds feed their young with many insects during the nesting season. Cornell's *All About Birds* is a helpful, web-based bird tool for identifying birds, and their free *Merlin Bird ID* app can be used in the field for not only sight IDs, but also for birds' songs and calls.



Download the free Whole-Farm Scouting Template/Tool to record what you see in the field and get practical information to guide your next steps.
Photo credit: Dastan Khdir

Equipment & Supplies

- Flagging tape (for marking problem areas)
- Hand lens
- Knife or pruning shears
- Paper or digital datasheet (see Whole Farm Scouting Tool)
- Pheromone traps
- Phone for photos and dictation
- Refractometer (for fruit crops)
- Sampling vials or bags
- Small shovel
- Sticky cards
- Sweep net

Resources

SCOUTING FOR RESILIENT FARMS RESOURCES

(www.wildfarmalliance.org/scouting)

- Whole-Farm Scouting Tool/Template
- Webinar: A Day in the Life of Scouts and a PCA
- EcoFarm PreConference '25 Recording-Organic Thresholds and Scouting
- Managing Pests with Predator and Parasitoid Habitat
- Directory of Sustainable Pest Management Experts

ADDITIONAL RESOURCES

Cornell Ornithology's All About Birds
Cornell Ornithology's Merlin Bird ID App
UC IPM Birds on Tree Fruits and Vines
UC IPM Wildlife Pest Identification Tool
UC Statewide IPM Program

Photo Credits (page 5)
Asian citrus psyllid. Photograph by Jeffrey W. Lotz, Florida Department of Agriculture and Consumer Services. Bugwood.org.
Beet leafhopper. Photograph by G. Oldfield, USDA. Bugwood.org.
Brown marmorated stink bug. Photograph by Susan Ellis. Bugwood.org.
Cabbage aphid. Photograph by Alton N. Sparks, Jr., University of Georgia. Bugwood.org.
CA red scale. Photograph by Charles Olsen, Charles Olsen Insect Collection, USDA APHIS PPQ. Bugwood.org.
Citrus mealybug. Photograph by Whitney Cranshaw, Colorado State University. Bugwood.org.
Corn earworm. Photograph by Scott Bauer, USDA Agricultural Research Service. Bugwood.org.
Flea beetle (Phyllotreta cruciferae). Photograph by Whitney Cranshaw, Colorado State University. Bugwood.org.
Imported fire ant. Photograph by USDA APHIS PPQ. Bugwood.org.
Leafminer (Liriomyza trifolii). Photograph by Plutarco Echegoyen. Bugwood.org.
Lygus hesperus. Photograph by Whitney Cranshaw, Colorado State University. Bugwood.org.
Sweetpotato whitefly (Bemisia tabaci). Photograph by Pflanzenschutzamt Saarbrücken, Husken-Thimm. Bugwood.org.
Two-spotted spider mite. Photograph by David Cappaert. Bugwood.org.
Western flower thrips. Photograph by David Cappaert. Bugwood.org.
Western leaffooted bug. Photograph by Joseph Berger. Bugwood.org.

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