

General Crop Scouting Tips

Introduction



- Warren Pierson
- Background
- Iowa State University
 - BS Agronomy 2010
 - MS Crop Production and Physiology 2013
 - Field Extension Education lab

Why do we scout fields?

- In-season management decisions
 - Pest management (Weeds, insects, and disease)
 - Potential reduction in pesticides
 - Crop management issues
 - Replanting
 - Fertility
 - Chemical issues
- Noting issues for the future



Most important things to know?

- What healthy plants look like
 - Find healthy plants to compare to those that don't look normal
- What you don't know!
 - Be ok with saying "I don't know"
 - Ask questions

What do we do while scouting?

- Check plant populations and look at the plants for crop health.
- It's critical to know what a **healthy plant** is to know when something is wrong
- Crop staging
 - Check for proper development and for pesticide applications.
- Pest identification and diagnosis of problems.
 - Pest density
 - Pest damage
- Record keeping

Communication is critical

Introduce yourself to the person that you're scouting for

Find out the best way to communicate with them

Verbal, email, scouting application, phone call, written down and left somewhere.

Ask them to let you know when they apply pesticides

REI (re-entry interval)

Follow up with them from time-to-time

Get to know their personality



Safety + info to gather

- Safety:
 - Sunscreen
 - Water – take a lot
 - Heat
 - Re-Entry Intervals (REI)
 - Severe weather – pay attention, there are plenty of apps
 - Height of corn – you can get lost
- Information about the fields
 - Directions to the field and maps of the field
 - Hybrid/varieties (helpful for pest information)
 - Cropping system history
 - Equipment sizes
 - Tillage
 - Pesticide application
 - Fertility application

What to take to the field?

- Tools
 - Field guides and reference information (could be an app)
 - Advisor (agronomist) you trust and understand
 - Tape measure (100 ft is useful) + stake
 - Trowel/spade
 - Seed depth finder
 - Hand lens (phone camera lens)
 - Pocket knife
 - GPS – if not smartphone to drop points.
 - Sweep net
 - Soil probe + bucket – sample bags
 - Stakes or flags to come back to
 - Sample bags/sample vials
 - Phone charger
 - First aid kit
 - Cooler



Get a view of the big picture



- Find an area high on the landscape to get a big picture view of the field
 - Note issues and look for them in the field
 - Look for patterns
 - Scattered?
 - Corresponding to equipment passes?
- Avoid the outside 100 ft of field

Check the little picture (individual plants)

- Above ground
- Below ground
 - Trowel/spade
- Inside

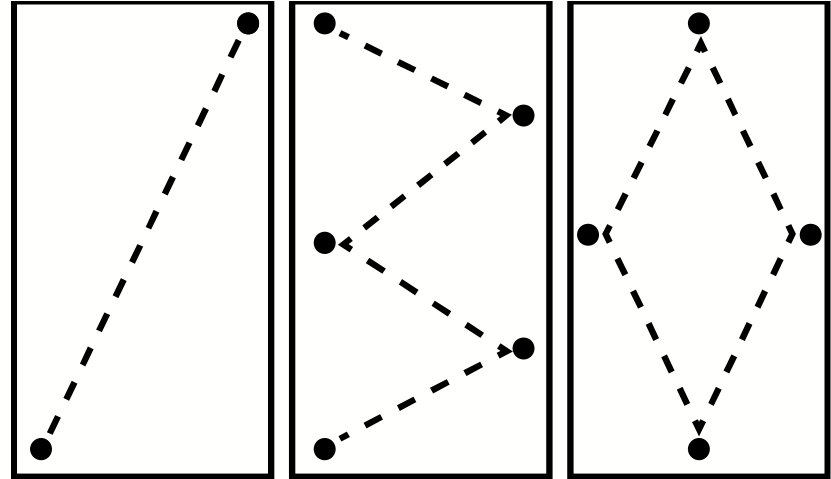


- Knife
- (hawkbill)



Scouting the field

- Follow a zig-zag or M pattern through the field
- Stop every 5 acres to make notes
- Randomly select areas for stand counts and observations
 - Toss something in the air and use where it lands
- Scout areas of field separately if:
 - Larger than 50- 80 acres
 - Different hybrid/variety, field history or crop management



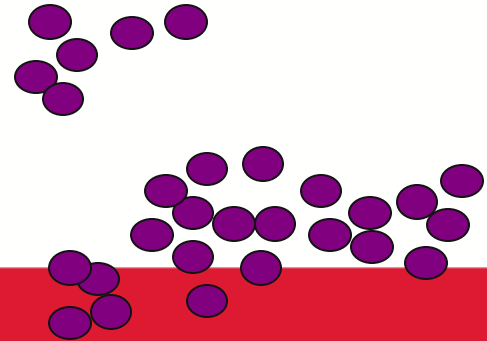
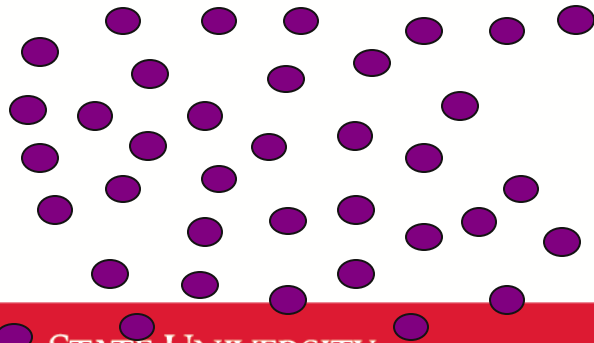
Possible Patterns: borrowed from Adam Sisson



Random



Aggregated



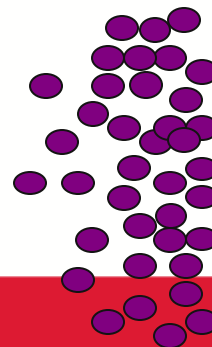
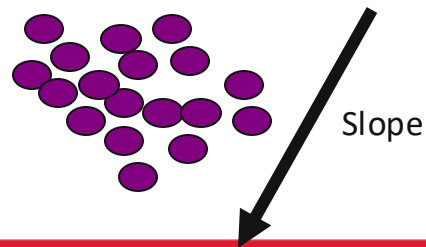
Possible Patterns: borrowed from Adam Sisson



Aggregated



Aggregated

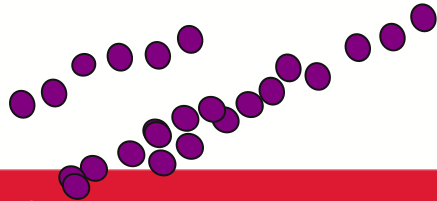


Possible Patterns: borrowed from Adam Sisson



Equipment can often cause patterns that are repeated across fields, or are obviously related to machinery.

For example, not cleaning out a sprayer properly or spray overlap every time the booms overlapped, etc.

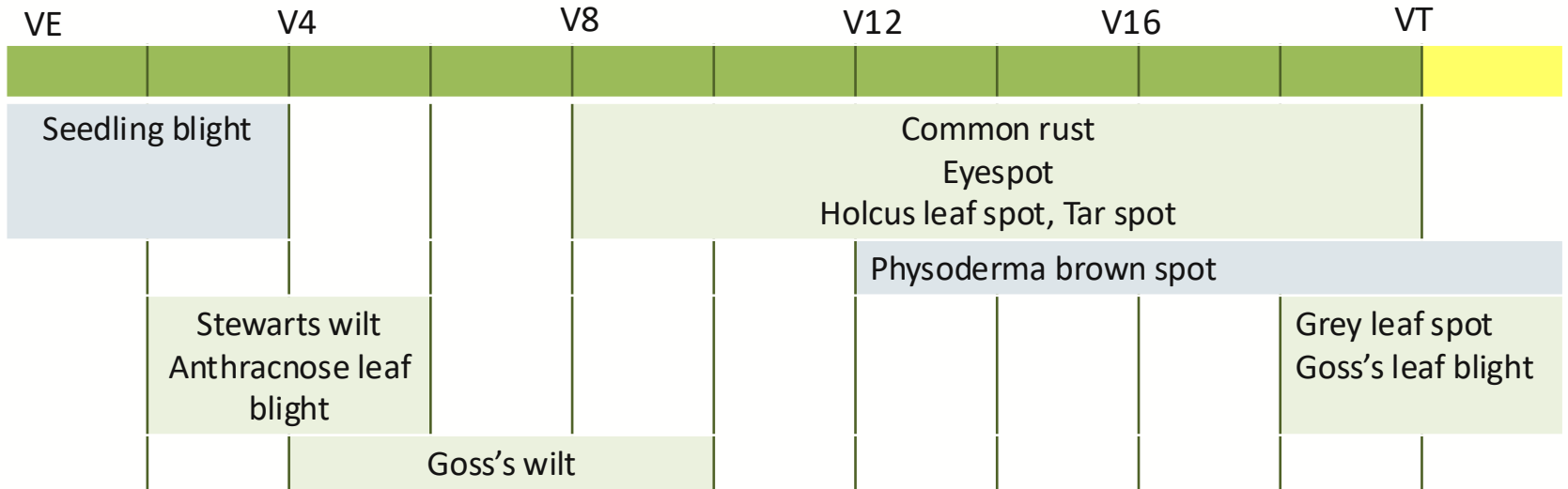


When to look for what?

- Field guides
 - Pest lifecycles
 - Likely discussed more in later presentations
- Previous history and hybrid/variety information
 - useful to target scouting
- ICM news website (<https://crops.extension.iastate.edu/>)
- Social media (Twitter)
- Trusted advisor
 - Agronomist you can trust and ask questions

Corn Diseases

Timeline of disease development in Iowa



Using a Crop Insect Pest Scouting Calendar

Insect Pest Crop Scout Calendar: Shaded areas represent primary scouting and/or pest control windows.

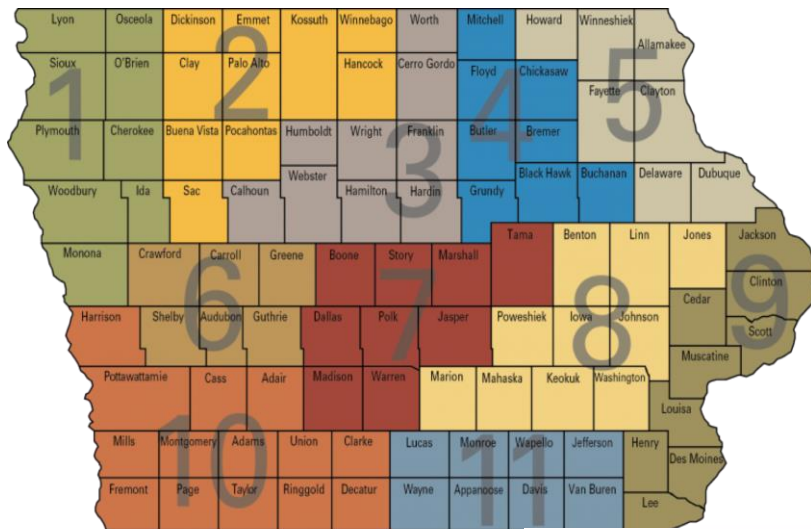
March	April	May	June	July	August	September
Burn grass headlands, terraces, etc. adjacent to corn fields for Common stalk borer control. Kills the overwintering eggs laid in the grass last fall.						
Common stalk borer, apply insecticide to grass borders to kill larvae at egg hatch 575-750 DD base 41°F from Jan. 1.						
Seedcorn maggot, crop emergence-seedlings, eggs laid in fields with spring manure or spring incorporation of green 'manure' vegetation.						
Wireworm, crop emergence-seedlings, row crop rotation from CRP, pasture, etc., eggs laid in grassy fields, larval stage 3-7 seasons.						
True white grub, crop emergence-seedlings, row crop rotation from CRP, pasture, etc., eggs laid in grassy fields, larval stage 2-3 seasons.						
Hop vine borer, consider insecticide application at VE corn if a field history of the pest has been identified.						
Alfalfa weevil larva feeding begins ~250 DD base 48°F from Jan. 1. ET~1-2 larvae per stem.						
Bean leaf beetle on VC-V2 soybean, ET > 40% defoliation.						
Black cutworm, scout VE-V5 corn starting 300 DD base 50°F from a significant moth flight (Pheromone traps placed late March).						
True armyworm larvae in corn, small grains forage grasses. Significant 2 nd generation activity possible, but not common.						
Slugs on young corn & soybeans in environments with high soil moisture and high residue cover.						
Potato leafhopper in alfalfa, after 1 st crop harvest through Aug. ET= a total of 1 PLH/inch plant height in 10 sweeps.						
Common stalk borer larva migration starts ~1,300 DD base 41°F. Apply insecticide to first few rows of corn up to V7.						
Throughout V & R stages, scout for defoliation from many insects: Japanese beetle, Bean Leaf Beetle, Grasshopper, Caterpillars (Loopers, Cloverworm, Thistle, etc.). ET~30% defoliation in V stages & 20% defoliation in R stages.						
Corn rootworm egg hatch starts ~500 DD base 52°F soil temperature from Jan. 1, with 50% hatch ~687-767 DD. Larval feeding June-July. Conduct node-injury rating mid- to late July.						
European corn borer 1 st generation, scout for shothole feeding once corn >17-21 inch extended leaf height.						
Soybean gall midge eggs laid in V3 soybeans lower stem, hatch, larvae feed late June into July.						
Bean leaf beetle 1 st generation, start scouting ~1,212 DD base 46°F from Jan. 1						
Spider mites in corn and soybeans in a drought season.						
Western bean cutworm, scout for egg masses ~1,400 DD base 46°F from May 1.						
Corn leaf aphid, scout whorls for aphids just prior to VT stage.						
Scout for silk clipping prior to pollination, Corn rootworm & Japanese beetles.						
European corn borer 2 nd generation, scout for egg masses VT-R2.						
Soybean aphid, "Speed Scouting" is fastest easiest scouting method.						
Corn rootworm beetle scouting with sticky traps or other means.						
Bird cherry-oat aphid in corn, starts on lower stalk and moves up.						
Bean leaf beetle 2 nd gen. leaf feeding and pod clipping.						
Nematode symptoms: Scout corn June-July, scout soybeans June-August.						

Degree Days for Crops & Common Insect Pests

Scouting Tips and Degree Day (DD) Temperatures for Crops and Common Insect Pests

Check other reference materials for determination of economic thresholds and recommended treatments.

Crop and Insect Pest	Daily min. air temp. °F	Daily max. air temp. °F	Comments
Corn	Base 50	Upper 86	Recommend ISU Extension publication PMR 1009, "Corn Growth and Development" from the Extension Store at https://store.extension.iastate.edu/product/6065
Seedcorn maggot	39	84	Starting Jan. 1 it is ~360 DD to peak adult emergence, ~400 to egg hatch of 1 st generation, ~400 to 800 DD for larval stages, ~810 DD to pupal stage, and ~1,000 DD to egg hatch of 2 nd generation.
Common stalk borer	41	86	575-750 DD from Jan. 1 to egg hatch in grassy borders, and 1,300-1,400 DD from Jan. 1 to initial migration from grassy border to first few corn rows. Corn is considered safe from injury at V7.
Black cutworm	Base 50	86	300 DD from a significant moth catch (pheromone trap) to begin scouting larval feeding in corn. Most common in weedy fields and fields with cover crops. Corn is considered safe from injury at V5.
Corn rootworm	Soil DD base 52		Egg hatch starts at 500 soil DD from Jan. 1 (average June 6 in Iowa), and about 50% egg hatch at 684 to 767 soil DD from Jan. 1.
European corn borer	50	85	1 st generation egg hatch ~200 DD after a significant moth catch. Scout for shot-holes ~300 DD and once plants are > 17-21 inches extended leaf height. 1 st gen. ECB is most commonly found in early planted fields. For 2 nd generation scout for egg masses ~1,400 DD. 2 nd gen. ECB is most commonly found in late planted fields.
Western bean cutworm	50	85	1,319 DD from May 1 to 25% egg hatch and 1,422 DD to 50% egg hatch.
Soybean	50	86-90	Recommend ISU Extension publication PM 1945, "Soybean Growth and Development" from the Extension Store at https://store.extension.iastate.edu/product/6451
Bean leaf beetle	46		Overwinters as beetles under plant debris, can feed on emerging soybeans, lay eggs in fields, and the seasons 1 st generation beetles start feeding mid-season on soybeans ~1,212 DD from Jan. 1, which is usually in July.
Alfalfa	41-42	110	Recommend publication "Alfalfa Management Guide" from American Society of Agronomy. Google a free pdf copy. Research suggests 600 DD from March 1 to reach 35% NDF, 750 DD to reach 40% NDF, and 970 DD to reach 45% NDF (plus or minus 3%) for 1 st crop alfalfa. However, the PEAQ method seems to offer a more consistent prediction of forage quality.
Alfalfa weevil	48		Begin scouting for larval feeding 250 DD from Jan. 1 in northern Iowa, and 200 DD from Jan. 1 in southern Iowa.
Cereals Barley, Oat, Wheat	32	70 prior to Haun Stage 2 and 95 after Haun Stage 2	Small grain growth & development, go to: http://www.extension.umn.edu/agriculture/small-grains/ Haun stage 2 is approximately the 2 leaf stage. While the lower growth limit for cereals is about 42°F, research found a better correlation between accumulated GDD and growth stage using base 32°F.



3
Angie Rieck-Hinz
 Wright County office
 210 1st Street SW
 Clarion, IA 50525
 Office (515) 532-3453
 Mobile (515) 231-2830
 arieck@iastate.edu
 @nciacrops



4
Terry Basol
 Borlaug Learning Center
 3327 290th Street
 Nashua, IA 50658
 Office (641) 435-4864
 Mobile (641) 426-6801
 tbasol@iastate.edu



5
Brian Lang
 Winneshiek County office
 325 Washington St, Suite B
 Decorah, IA 52101
 Office (563) 382-2949
 Mobile (563) 387-7058
 bjlang@iastate.edu



1
Joel DeJong
 Plymouth County office
 251 12th St SE
 LeMars, IA 51031
 Office (712) 546-7835
 Mobile (712) 540-1085
 jdejong@iastate.edu
 @joel_dejong



2
Paul Kassel
 Clay County office
 110 W. 4th St.
 Spencer, IA 51301
 Office (712) 262-2264
 Mobile (712) 260-3389
 kassel@iastate.edu
 @PaulKassel



6
Mike Witt
 Guthrie County office
 212 State Street
 Guthrie Center, IA 50115
 Office (641) 747-2276
 Mobile (641) 430-2600
 witt@iastate.edu



7
Meaghan Anderson
 Story County office
 220 H Avenue, Box 118
 Nevada, IA 50201
 Office (515) 382-6551
 Mobile (319) 331-0058
 mjanders@iastate.edu
 @mjanders1



8
Rebecca Vittetoe
 Washington County office
 2223 250th St
 Washington, IA 52353
 Office (319) 653-4811
 Mobile (712) 540-3319
 rka8@iastate.edu
 @rkvittetoe



9
Virgil Schmitt
 Muscatine County office
 1601 Plaza Place
 Muscatine, IA 52761
 Office (563) 263-5701
 Mobile (563) 260-3721
 vschmitt@iastate.edu
 @VirgilSchmitt



10
Aaron Saeugling
 Armstrong Farm
 53020 Hitchcock Ave.
 Lewis, IA 51544
 Office (712) 769-2650
 Mobile (641) 344-5704
 clonz5@iastate.edu



Josh Michel
 Louisa County office
 317 Van Buren
 Wapello, IA 52653
 Mobile (319) 523-2371
 jimichel@iastate.edu
 @jimichel_crops

Thank You!

Warren Pierson

wpierson@iastate.edu

515-509-8308

This institution is an equal opportunity provider. For the full non-discrimination statement or accommodation inquiries, go to www.extension.iastate.edu/diversity/ext.