BASICS OF SCOUTING

Presentation by Dr. Robert Schlub for WSARE and University of Guam's Plant Disease Diagnostic Workshop Attendees

Basics of Scouting

This presentation is the assimilation of information from the internet and other sources that I thought were germane for this WSARE sponsored Plant Disease Diagnostic Training. Any omission of credit due, is mine alone.

» Dr. Robert Schlub
» Extension Plant Pathologist
» University of Guam

Potatoes

Pest monitoring and scouting is different for each crop, location, and pest.

Pest management actions are based on data collected through pest monitoring, which involves survey/field scouting, pest monitoring though traps and decision making

Survey/Field Scouting

Pest monitoring through traps

Pest management action

Decision making

Pest monitoring and scouting is different for each crop, location, and pest.

2.Pest population/damage assessment

✦ **For sucking pests, population should be counted on three leaves (top, middle and lower) per plant**

✦ **Aphid population should be recorded on 34 plants**

✦ **Cutworms and white grub per cent damage assessment can be made by counting total number of** plants and affected **leaves**

Yellow pan/Sticky traps

Set up yellow pan/ sticky traps for monitoring aphids @ 10 yellow pans/ sticky traps per ha. Locally available empty yellow coloured tins coated with grease on outer surface may also be used

Pest monitoring and scouting is different for each crop, location, and pest.

Set up a light trap during pre-monsoon season to monitor the activity of adult scarab beetles. Light traps can also be installed to monitor the activity of cut worm moths at least one month before the sowing of potato crop

Fig. Light trap
Source: www. oisat.org

Scouting Fields

Overview

1. Do your homework

2. Basics of scouting

3. Help! I still don't know

Know what "healthy" looks like

- What does a normal plant look like?
    - Above ground
    - Below ground
    - On the inside

- A sick plant is less productive and often gives indicators (e.g., color or growth) called "symptoms."

- If you know what a healthy plant looks like, you can recognize when there is a problem.
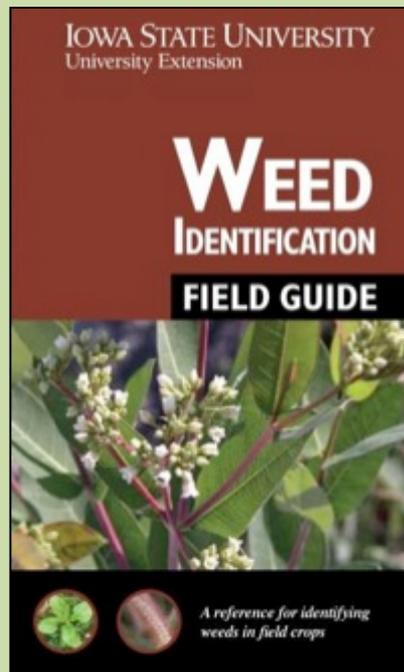
Know common problems

Know common problems

Know common problems

Assemble references

- Books
- Publications
- Etc.
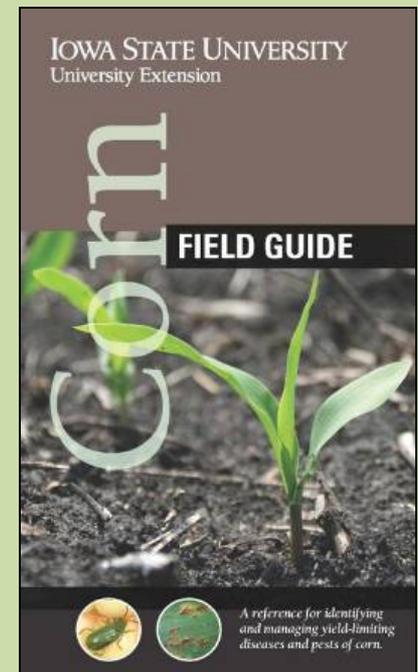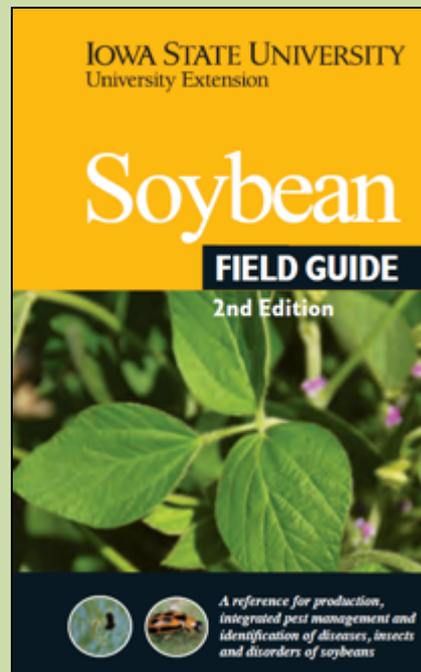
Know common problems

Assemble references: UNL's CropWatch website
cropwatch.unl.edu

Know common problems THIS year

- Keep up on the news
  - Local agribusiness
  - Internet
  - Print media
  - Word of mouth

UNIVERSITY OF NEBRASKA–LINCOLN

CropWatch

UNL ▶   IANR ▶   UNL Extension ▶   CropWatch ▼

Home	Weather (GDD, ET)	
About Us	GDD & ET Data	Corn
Contacts	ET Resources & Maps	Dry Beans
Ag Links	NERAIN Reports	Forages
Subscribe	Precipitation Maps & Data	Organic
	Soil Temperature Maps & Data	Sorghum

Know common problems for each time of year

Timeline for common corn diseases

Corn growth stage: V6   V12   VT

Seedling blights   **Anthracnose leaf blight**   **Eyespot**   **Common rust**   **Gray leaf spot (GLS)**

VT   R2   R4   R6

GLS; Common rust; Northern corn leaf blight   **Anthracnose top dieback**   **Stalk rots; Ear rots**
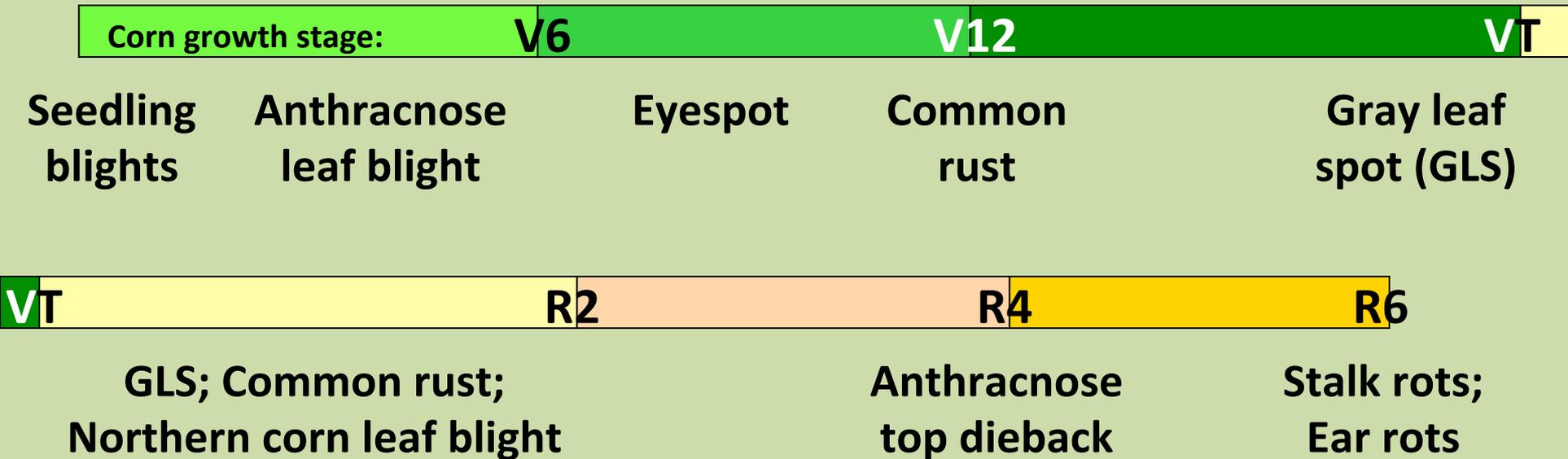
Basics of scouting

- Accurately estimate crop plant health, stand, growth stage and populations of any pests present

- Pest identification and/or diagnosis of the cause of crop injury

First steps of scouting

- **Gather equipment**
- **Contact grower**
  - ✓ Let them know when you are coming
  - ✓ Ask if there are any special instructions
  - ✓ Spend time with them
- **Collect information about the field/ season – learn the field history**

Equipment needs

- Field maps
- Field guides
- Paper and pen to take notes
- Safety glasses
- Hand lens
- Pocket knife/scissors
- Sampling bags/ envelopes
- Old newspapers/ paper towels
- Sharpies
- Ice chest
- First aid kit
- Water
- Digital camera

Collect information

Map fields

- Aerial photographs
- Map from plat book or Google™ Maps

Collect information

Map fields

- Soil map (printed soil survey or download)
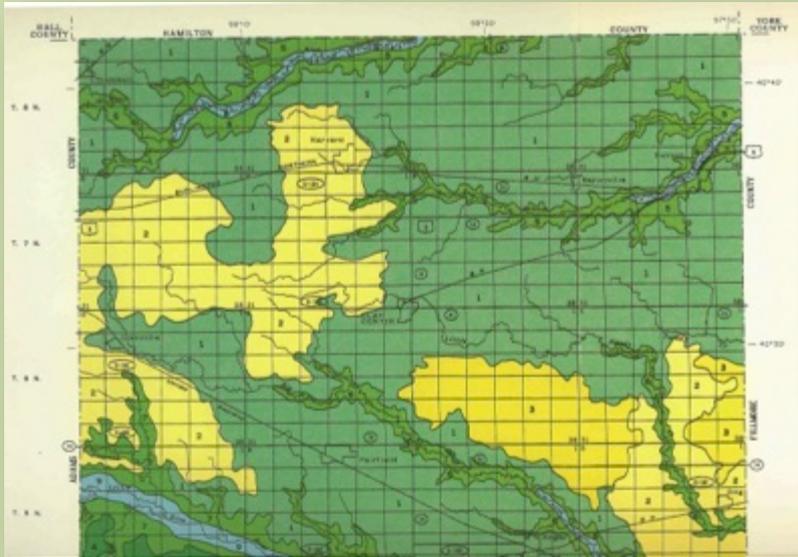
Collect information

Consider recent weather

- Environmental stresses may damage soybean and corn directly or make them more susceptible to some diseases.

Collect information

Collect background information for the field

- **Previous crops**, adjacent crop and non-crop areas
- **Chemicals used** on or near the crop including herbicides, fertilizers, fungicides and insecticides; indicate when applied, how applied, rate of application, weather conditions during and following application
- **Planting date**, depth, and seedbed conditions
- **Hybrid/variety information**, including disease resistance
- Current **soil test** information (e.g., soil fertility, pH)
- **Soil** moisture and compaction

Collect information

Questions for the end of the season

- How are plants standing?
- What does the ear/pods look like?
- What is stalk strength and health of root system?
- Yield, why good or bad?
- How was weed control?

Basics of scouting

1. Look at the **BIG** picture (field level)

2. Look at the little picture (plant level)

3. Record information

1. Look at the BIG picture (field)

i. Is the problem **scattered randomly** through the field or occurring in a **pattern**?

ii. Is the problem more **prevalent along a fence, field edge**, **entrance** of a field or **along a waterway**?

iii. Is the problem in the affected area more severe in **certain soil types**, **low areas** or on **exposed slopes**?

iv. Does the **pattern correspond to tillage, planting, spraying, harvesting** or **other field activities**?

LOOK FOR PATTERNS

Look for patterns

Random

Aggregated

T. Allen, Miss. St.
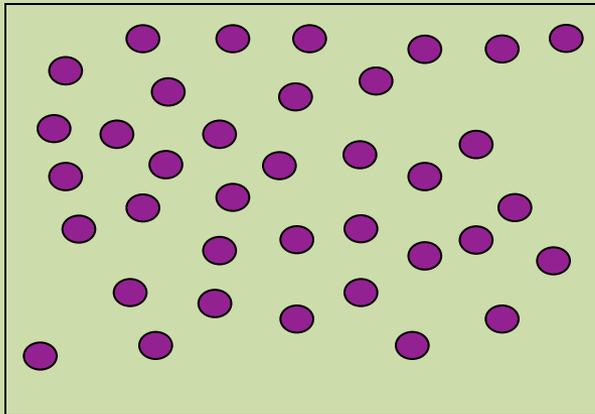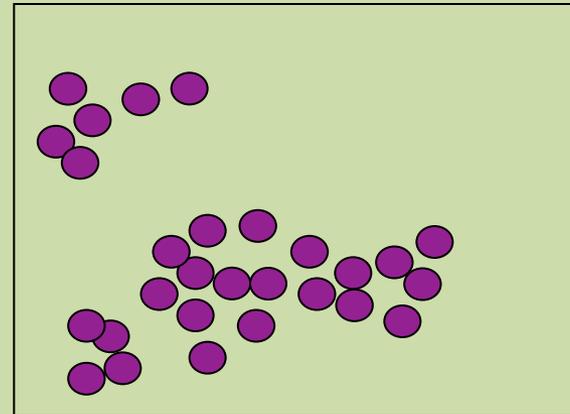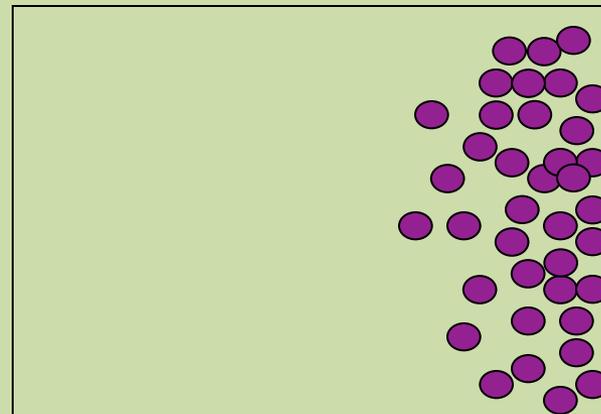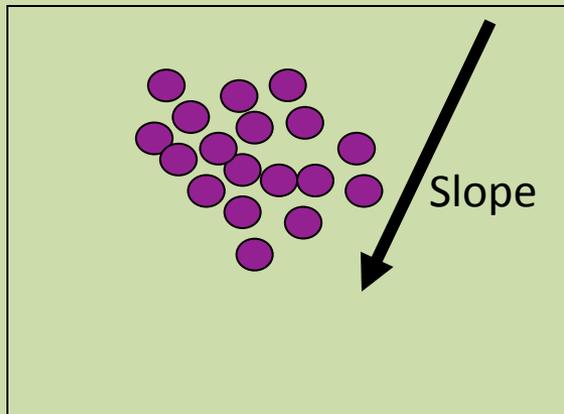
Look for patterns

Look for patterns

Repeated

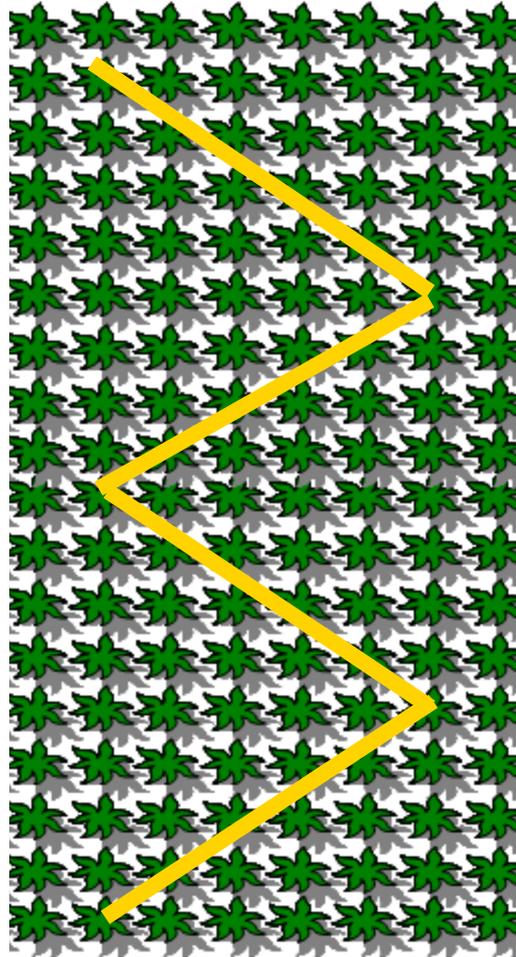Equipment can often cause patterns that are repeated across fields.

For example, spray overlap every time the booms overlapped, compacted areas every "x" rows from combine tires the prior fall, etc..
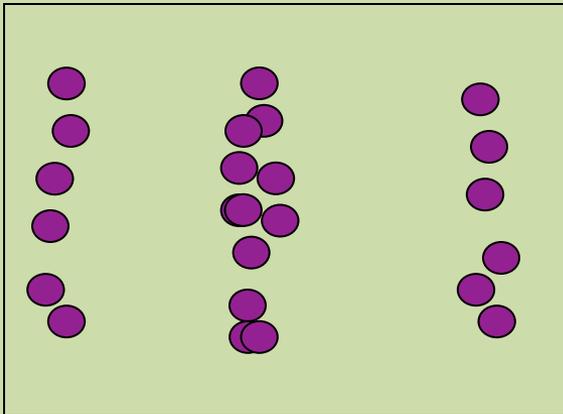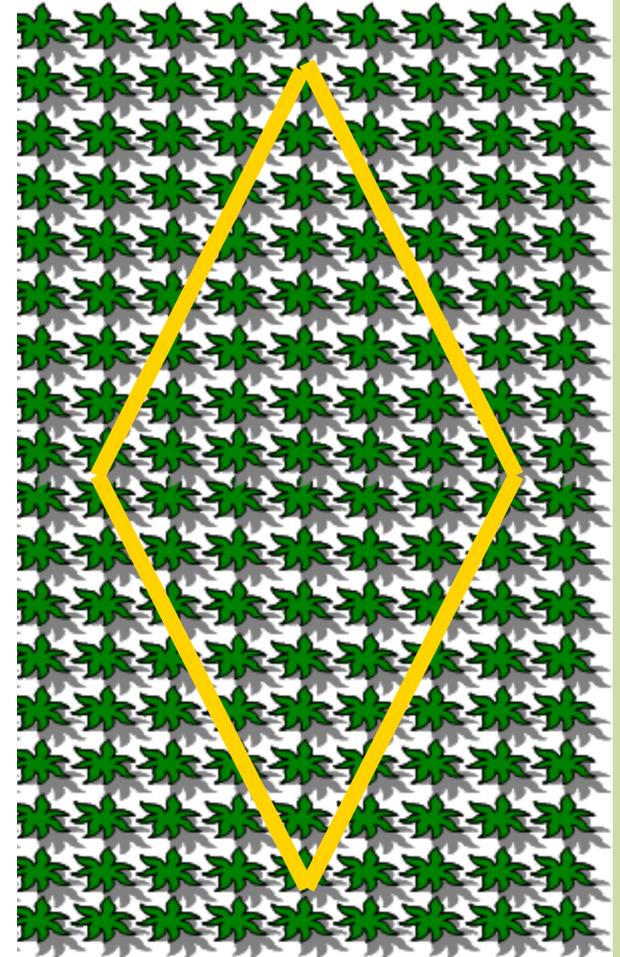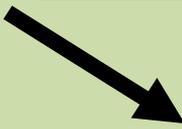
Scouting patterns
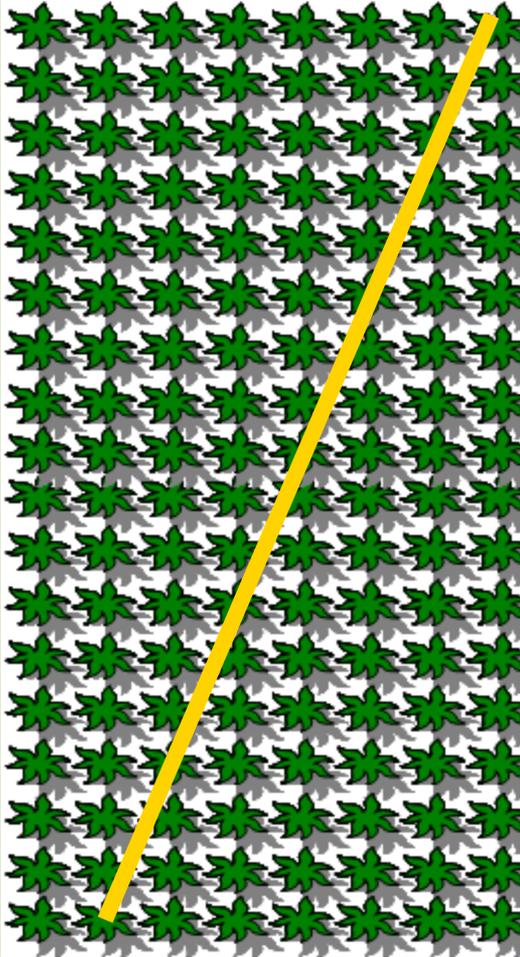
Transect
Zig-zag
**Diamond**

2. Look at the little picture (plant)

Check individual plants for symptoms and signs

i.   **Compare** damaged plants with healthy plants.

ii. **Check the entire plant and environment around it**, including leaves, stems, roots, internal tissues, soil, pests not directly on plant, competition, etc.

iii. A **small hand lens, a pocket knife, a trowel, a shovel** and the **field guides** are valuable tools.

Check individual plants

Look at more than one plant
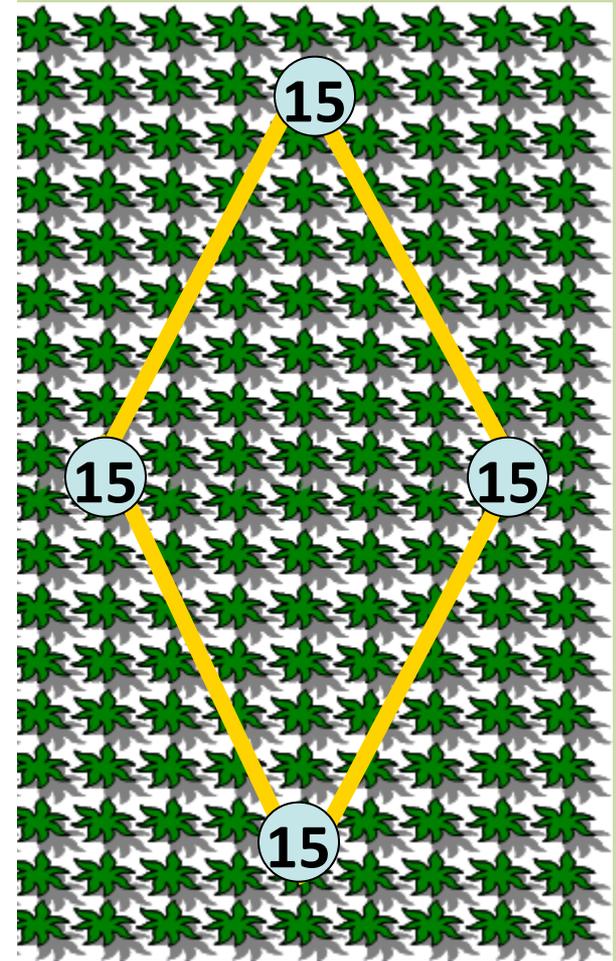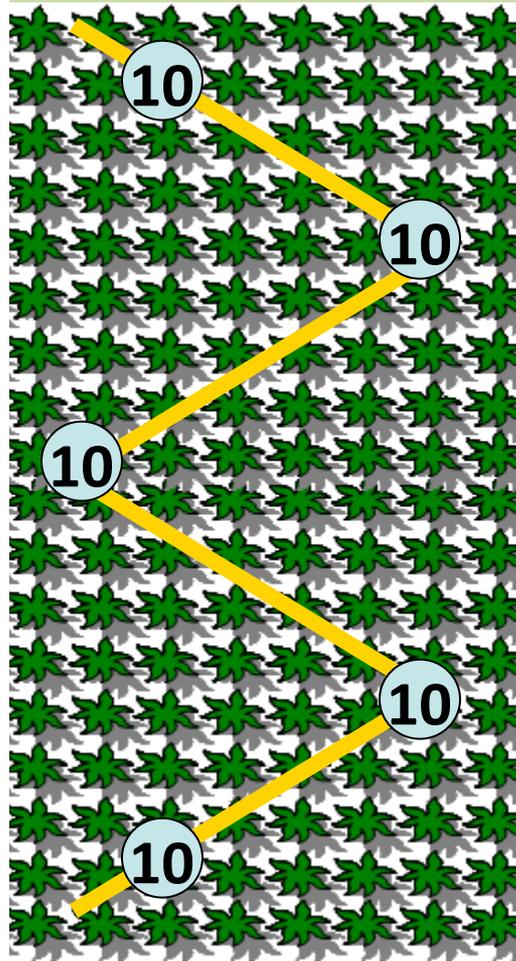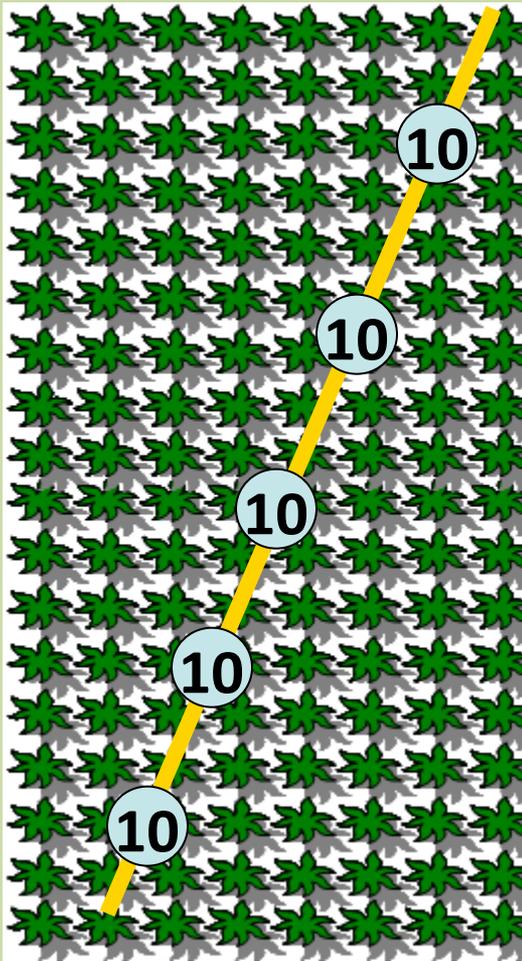
Aim to assess a minimum of 50-100 plants

Scouting patterns

- **Sampling patterns should be modified to account for variation in a field.**

- **Random problem (e.g., some insects)**
  - Fewer stops
  - More plants assessed at each stop

- **Aggregated (e.g., soilborne disease)**
  - More stops (some in and out of problem areas)
  - Fewer plants assessed at each stop

If possible, identify problem

- After scouting field, identifying patterns, identifying plants that do not appear normal, etc. – use all the available information to identify the problem(s).

3. Record information

i. **Check the prevalence and severity of the problem.**
   - How often does the problem show up?
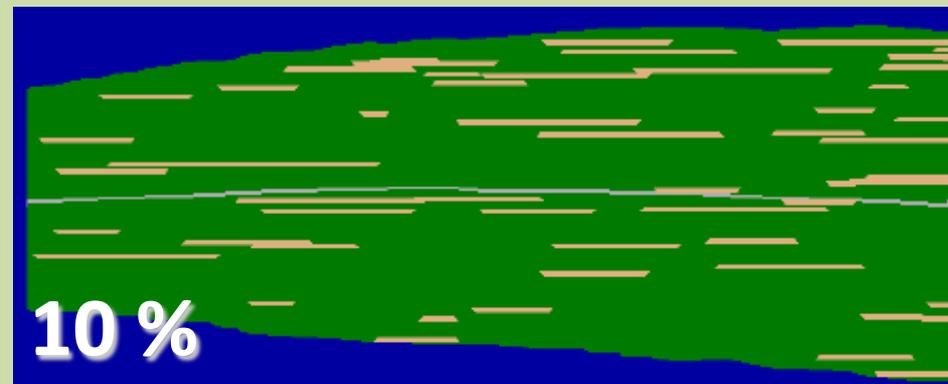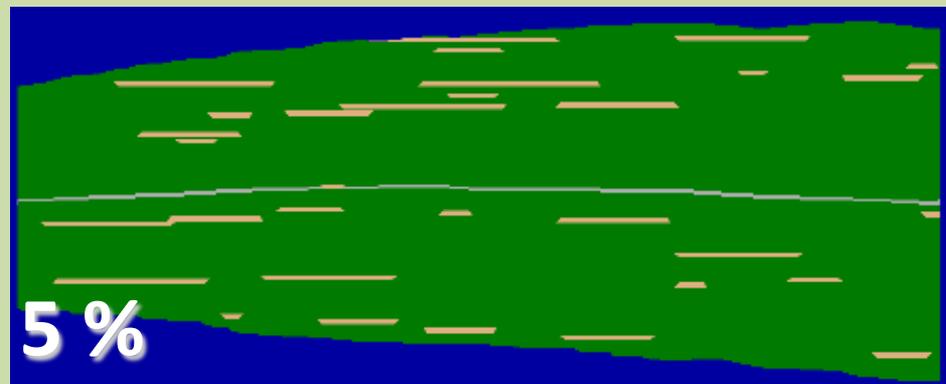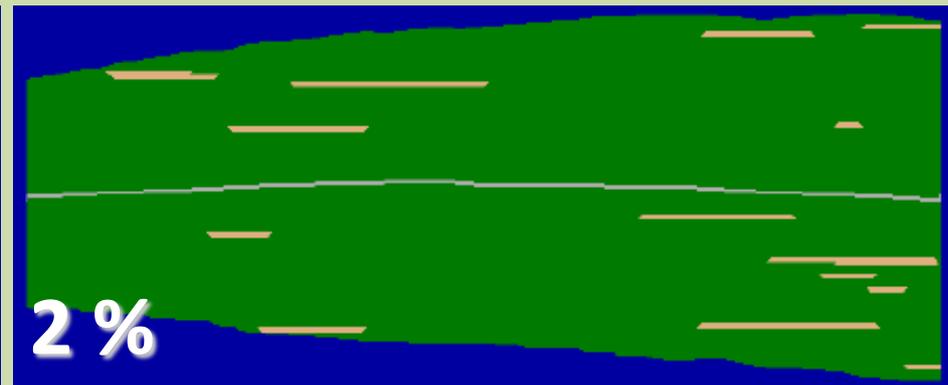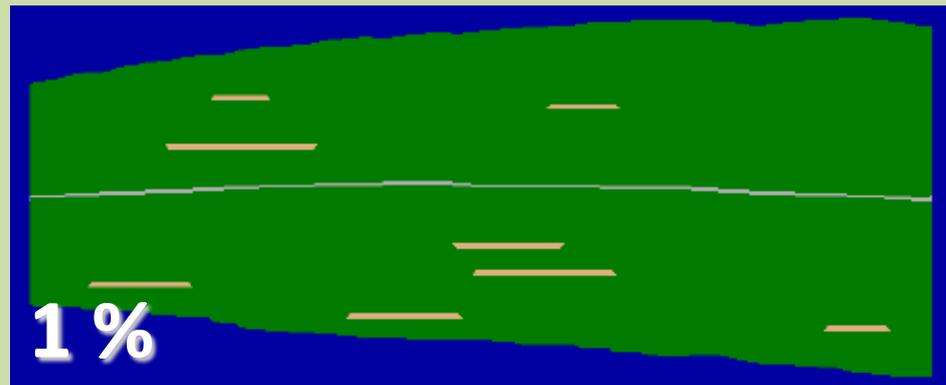   - How damaging is the problem?

Assessment methods

- **Incidence** = % plants diseased

- **Severity** = % tissue diseased

Foliar disease severity (%)

Gray leaf spot

1 %

2 %

5 %

10 %

Stalk disease severity value

University of Illinois (0-5) stalk rot rating scale. Ratings 0 through 5 are labeled. A 5 is a 4 that is lodged due to stalk rot.

R. Hines, UIL

Recording information

- Field notebook
- Clipboard with spreadsheet

		Damage severity (%)									
Field	**Stop**	1	2	3	4	5	6	7	8	9	10
1	1										
1	2										
1	3										
1	4										
1	5										
1	6										
1	7										
1	8										

Stumped?

If you are unsure of the problem or want a second opinion, you can send samples to Plant Diagnostic Clinics.

Information on submitting samples

NebGuide

University of Nebraska–Lincoln Extension, Institute of Agriculture and Natural Resources

Know how. Know now.

G2226

Row Crops
Sample Submission to the Plant and Pest Diagnostic Clinic

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James A. Kalisch, Extension Associate, Entomology
Lowell D. Sandell, Extension Educator, Weed Science

Diagnoses are made easier and turnaround time is improved when sample quality is maintained. This NebGuide discusses the proper guidelines for submitting row crops to the Plant and Pest Diagnostic Clinic. A list of sample fees and the sample submission form can be found at: *http://cropwatch.unl.edu/plantdiagnosticclinics*.

There are several important things to consider when collecting, packaging, and sending plant or insect samples for diagnosis to a plant diagnostic laboratory. The following is an outline of some helpful tips for collecting row crops, soil, weeds, or insects for sample submission. Following these guidelines will help ensure more reliable diagnoses.

Samples for Disease Identification

Collecting Samples

• Collect an adequate amount of plant material.

Figure 1. Seedlings should be placed in a sealable plastic bag. If plants

UNL Plant Diagnostic Clinic

If unsure of the cause of the problem, symptomatic specimens can be sent to the UNL Plant Diagnostic Clinic.

Plant and Pest Diagnostic Clinic, Lincoln

Kevin Korus, Coordinator
448 Plant Science Hall
Lincoln, NE 68583-0722
(402) 472-2559

Submitting plants

• Provide plenty of fresh material. When possible, send the entire plant, including roots.

Submitting plants

- Include enough plant material to show a range of symptoms.

Submitting plants

- Provide appropriate background information for the field.

Submitting plants

- Wrap specimens in dry paper towels or clean newspaper (*do not add moisture*), then securely wrap sample.

Submitting plants

- Other tips
  - Do not send in dead tissue (the sample below is a problem).
  - Include photos when possible.

What next

- Diagnosing a problem and properly recording this information can help with the next steps.
  - ✓ Management decisions, either for this year or subsequent years, can be implemented.
  - ✓ Proper identification can help pick the correct management strategy.
  - ✓ Realizing what can happen if the problem is not addressed.

Summary

- Do your homework.

- Scout the field.

- Can't diagnose the problem? – Ask for help!