



Potatoes



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

End

Next

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

Survey/Field Scouting

Pest monitoring through traps



Decision making

End

Previous

Next

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.

End

Previous

Next

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

End

Previous

Next

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



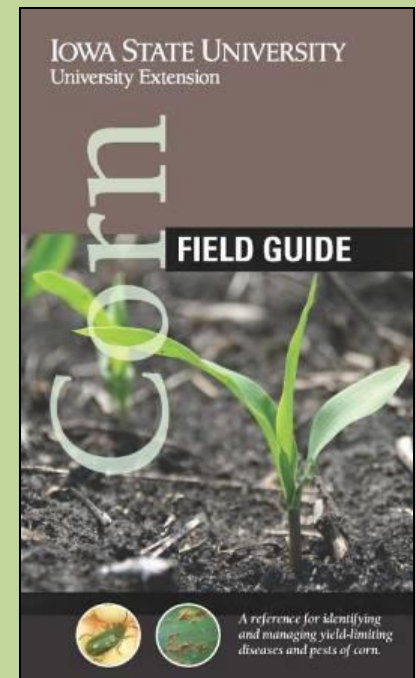
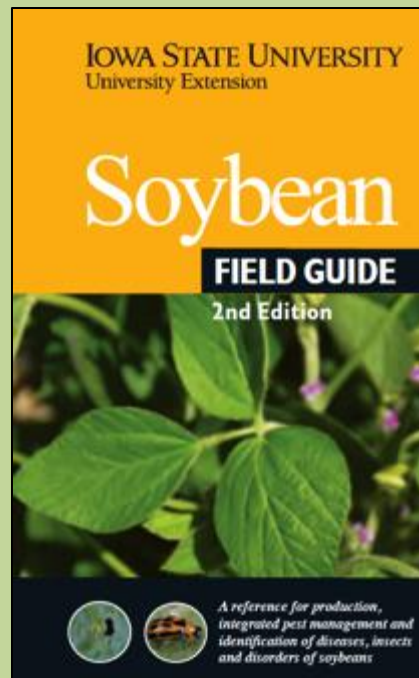
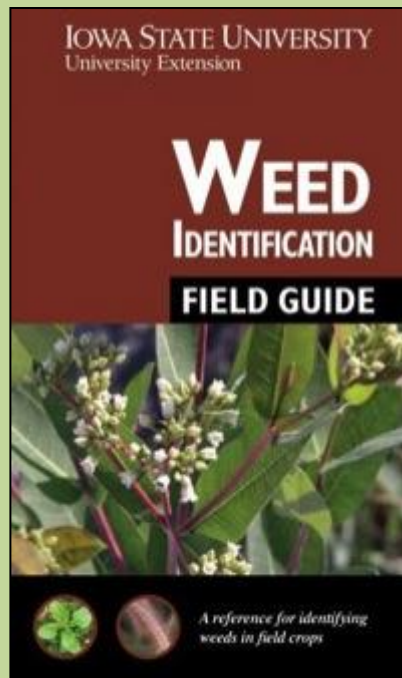
Know common problems



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

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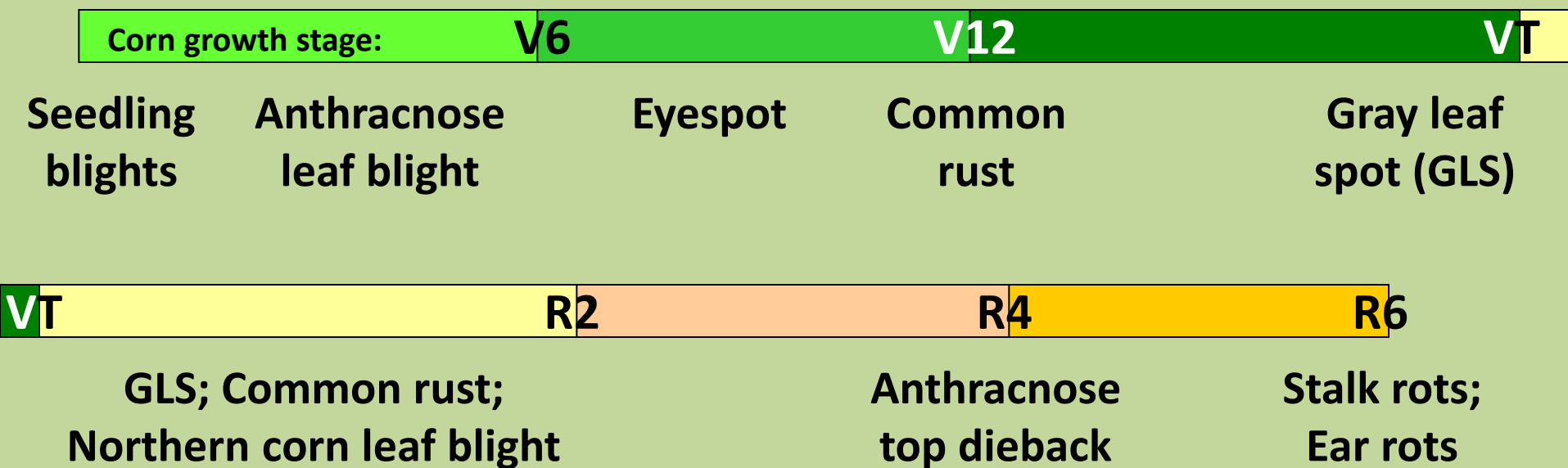
Home	Weather (GDD, ET)	
About Us	GDD & ET Data	Corn
Contacts	ET Resources & Maps	Dry Beans
Ag Links	NERAIN Reports	Forages
Subscribe	Precipitation Maps & Data	Organic
	Soil Temperature Maps & Data	Sorghum

16, 2014

Flooding and Corn Survival affect survival of flooded

Know common problems for each time of year

Timeline for common corn diseases



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

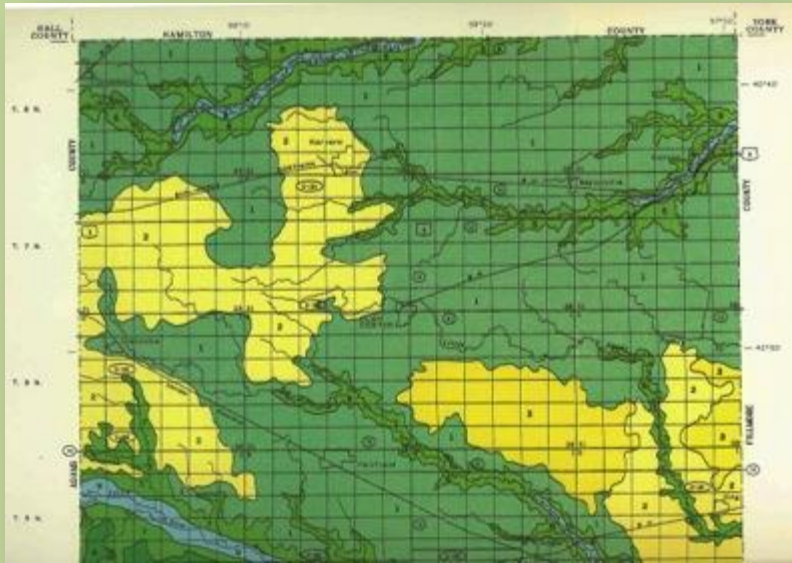
- Aerial photographs
- Map from plat book or Google™ Maps



Collect information

Map fields

- Soil map (printed soil survey or download)



A screenshot of the Web Soil Survey (WSS) website interface. The page shows a search bar, navigation links, and a "START WSS" button. The main content area displays "Welcome to Web Soil Survey (WSS)" and provides information about the service, including a "Three Basic Steps" section. The page also includes a "I Want To..." section with links to "Start Web Soil Survey (WSS)", "Know the requirements for running Web Soil Survey", "Know whether my web browser works with Web Soil Survey", "Know the Web Soil Survey hours of operation", and "Find what areas of the U.S. have soil data".

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

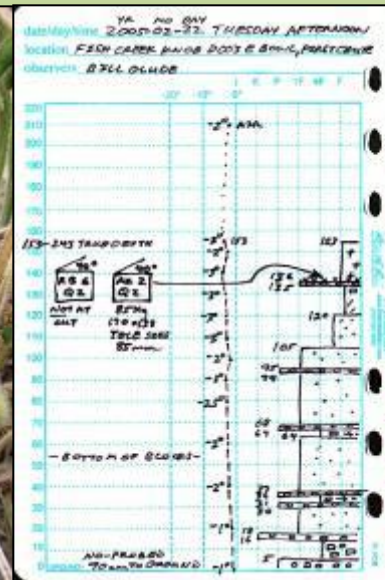
Collect information

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



date: 2005-02-22 THURSDAY AFTERNOON
location: FISH CREEK RANCH 2005 E 80th, PRAIRIE
observer: BILL OLIVE

distance 7.00 mi (11.25 mi) aspect NE slope 90°
type: ESTABLISHED TEST + AK & LOG TEST SET
rows: 1750 BLOCK ARRAY; ALL ROWS & STANDS
AK EXCEPT W/ SET WERE #2-3, 15+451
ALL OVERLAPPED AK & BLOCKS (1500) 1500 1500
WENT TO W.E. SEES TENDR TO PENETRATE
BEYOND WEAK LAYER, IN IT DID NOT GO
ATE 20% IT THEN TOOK MANY SAMPLES

ROUND	DAY	SOFT
NEW	150	DAY 95
ROUND 1	150	DAY 95
ROUND 2	160	DAY 95
ROUND 3	160	DAY 95
ROUND 4	160	DAY 95
ROUND 5	160	DAY 95
ROUND 6	160	DAY 95
ROUND 7	160	DAY 95
ROUND 8	160	DAY 95
ROUND 9	160	DAY 95
ROUND 10	160	DAY 95
ROUND 11	160	DAY 95
ROUND 12	160	DAY 95
ROUND 13	160	DAY 95
ROUND 14	160	DAY 95
ROUND 15	160	DAY 95
ROUND 16	160	DAY 95
ROUND 17	160	DAY 95
ROUND 18	160	DAY 95
ROUND 19	160	DAY 95
ROUND 20	160	DAY 95
ROUND 21	160	DAY 95
ROUND 22	160	DAY 95
ROUND 23	160	DAY 95
ROUND 24	160	DAY 95
ROUND 25	160	DAY 95
ROUND 26	160	DAY 95
ROUND 27	160	DAY 95
ROUND 28	160	DAY 95
ROUND 29	160	DAY 95
ROUND 30	160	DAY 95
ROUND 31	160	DAY 95
ROUND 32	160	DAY 95
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ROUND 37	160	DAY 95
ROUND 38	160	DAY 95
ROUND 39	160	DAY 95
ROUND 40	160	DAY 95
ROUND 41	160	DAY 95
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ROUND 49	160	DAY 95
ROUND 50	160	DAY 95

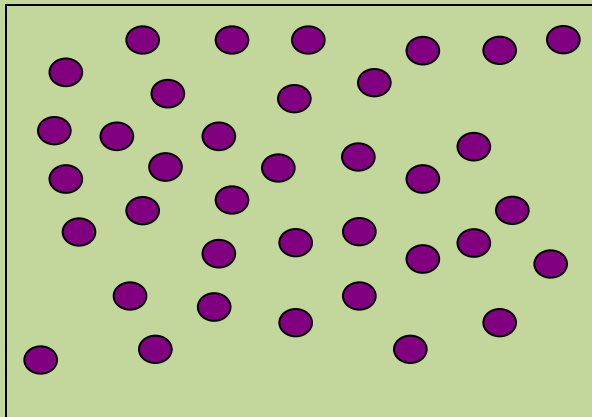
1. Look at the **BIG** picture (field)

- 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**?

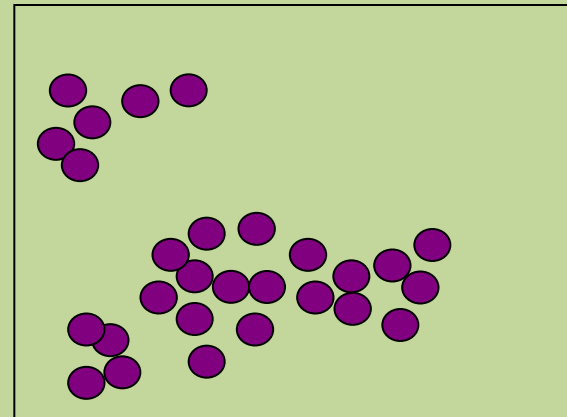
LOOK FOR PATTERNS

Look for patterns

Random



Aggregated

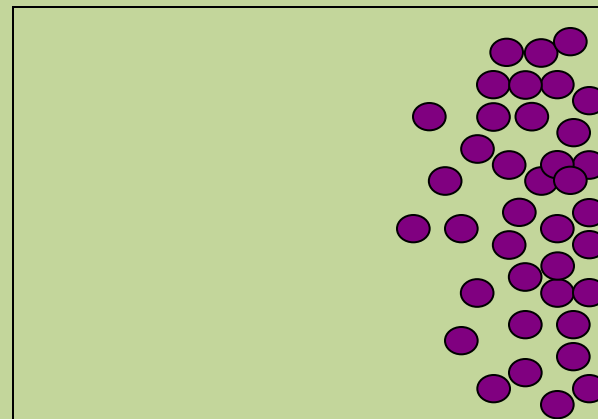
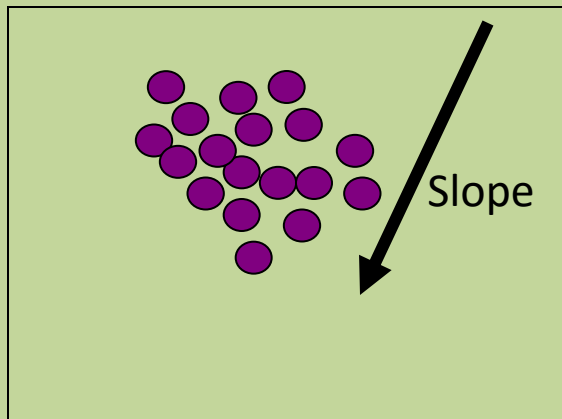


Look for patterns

Aggregated

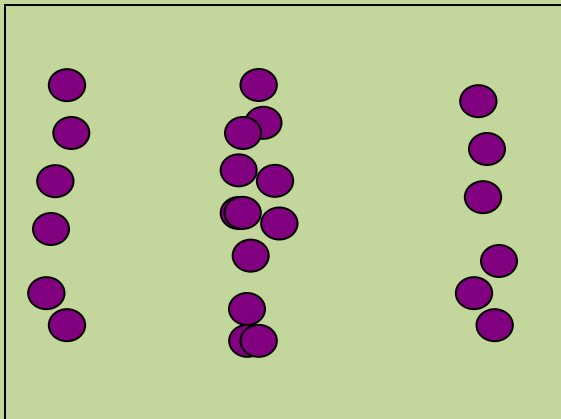


Aggregated



Look for patterns

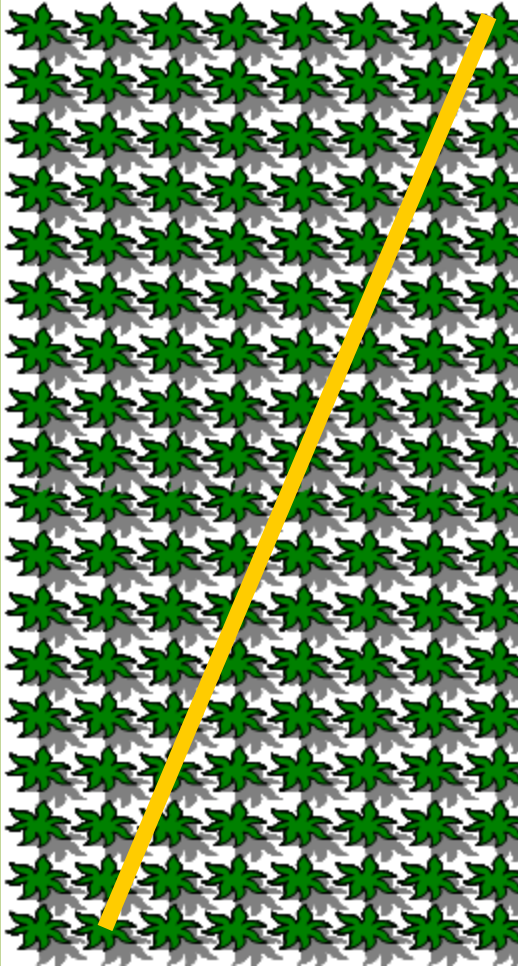
Repeated



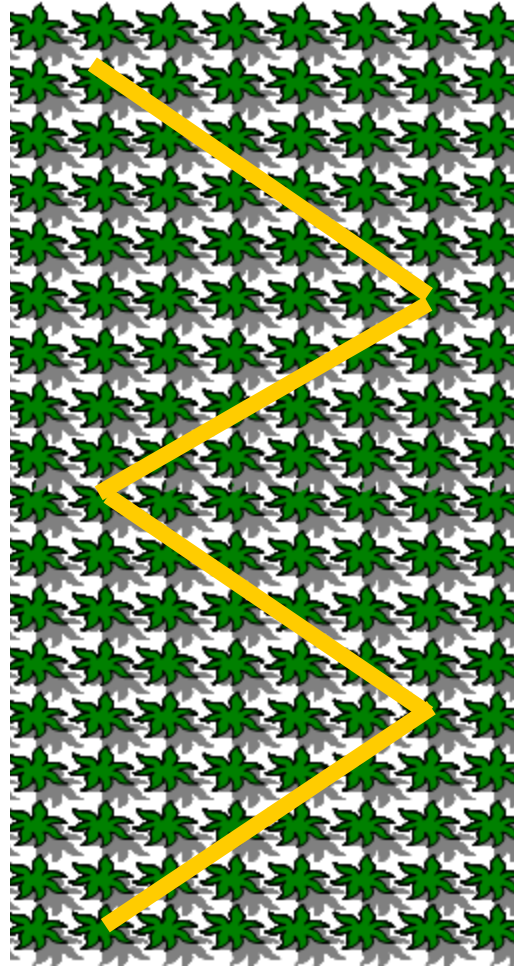
Equipment can often cause patterns that are repeated across fields.

For example, spray overlap every time the booms overlapped, compacted areas every "x" rows from combine tires the prior fall, etc..

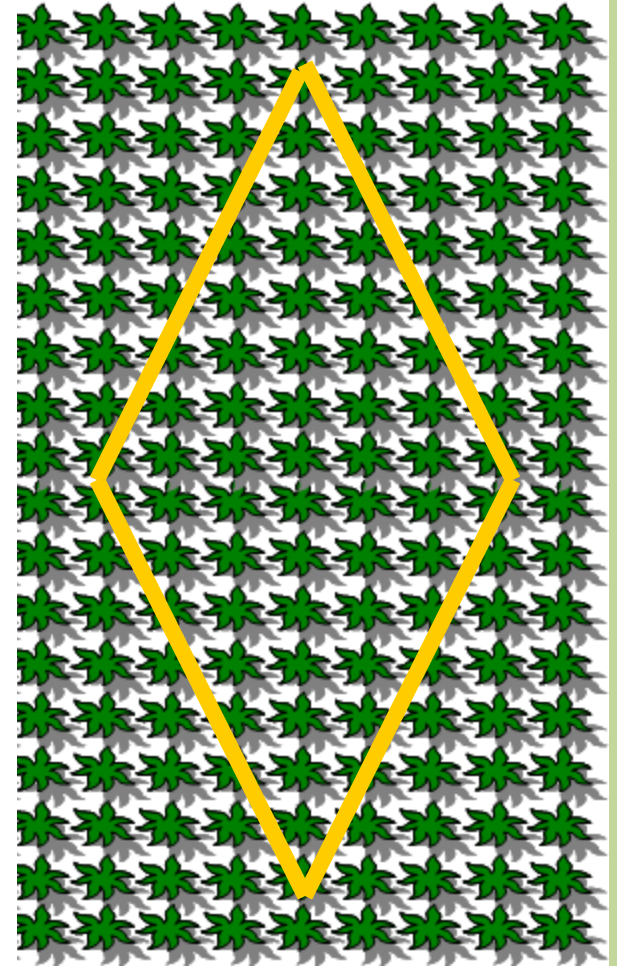
Scouting patterns



Transect



Zig-zag



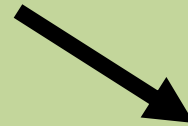
Diamond

2. Look at the little picture (plant)

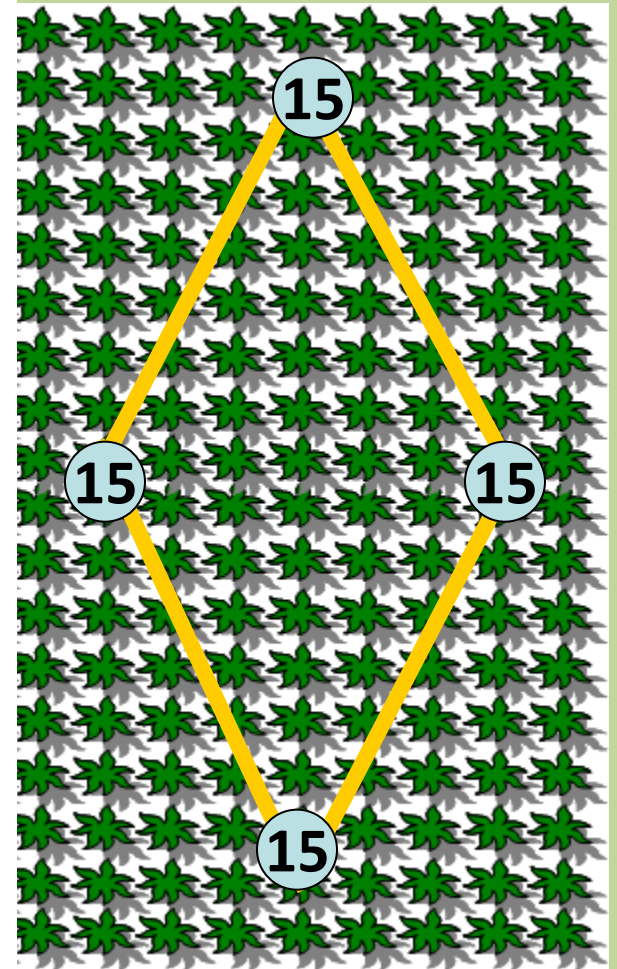
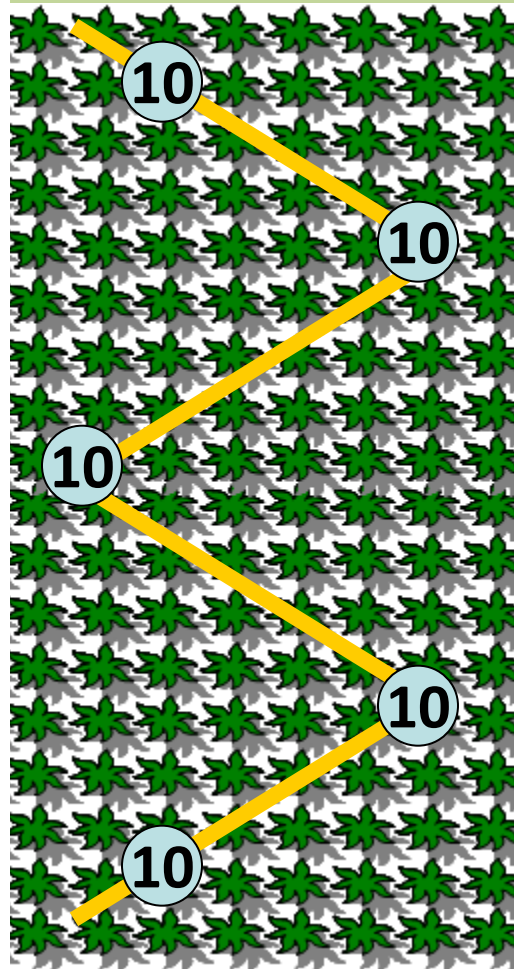
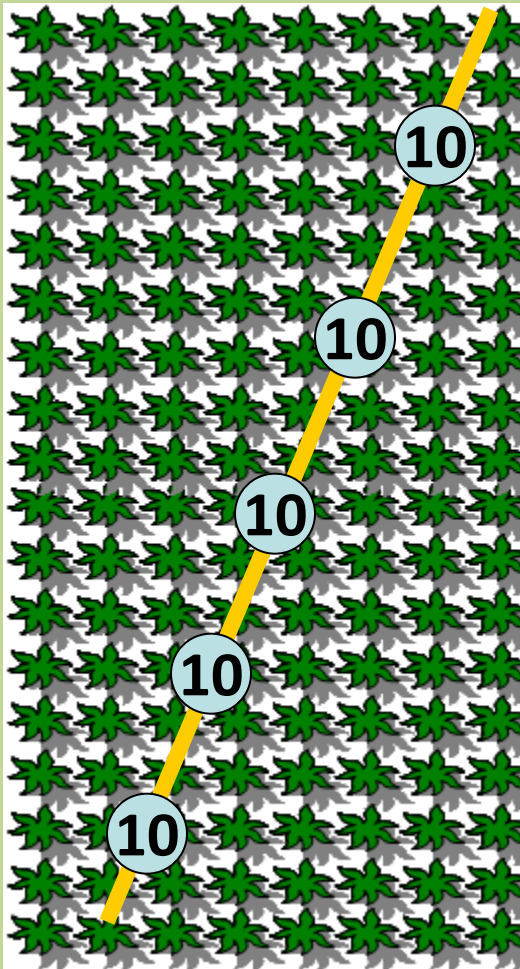
Check individual plants for symptoms and signs

- 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 %

A photograph of a corn leaf showing 1% severity of gray leaf spot. The leaf is mostly green with a few small, scattered brown spots.



2 %

A photograph of a corn leaf showing 2% severity of gray leaf spot. The leaf has a few more brown spots than the 1% sample.



5 %

A photograph of a corn leaf showing 5% severity of gray leaf spot. The leaf has a moderate number of brown spots.



10 %

A photograph of a corn leaf showing 10% severity of gray leaf spot. The leaf has a significant number of brown spots, indicating a higher level of infection.

Stalk disease severity value



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



Row Crops Sample Submission to the Plant and Pest Diagnostic Clinic

Kevin A. Korus, Extension Educator, Plant Pathology
Tamra A. Jackson-Ziems, Extension Plant Pathologist
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.

Please Diagnose
Sample and send
Results to

For Lab Use Only

**Plant & Pest Diagnostic Clinic
Specimen Identification Form**

UNIVERSITY OF **Nebraska** | **Lincoln** EXTENSION
448 Plant Science Hall
Lincoln, NE 68583-0722

Lab No. _____

Diagnostic Method

Visual Culture Serological

Cash Check No. _____

Amt: _____ Date: _____

Called (Date & Initials): _____

SUBMITTER

Name: _____

Business Name: _____

Address: _____

City/State/Zip: _____

Phone: _____ Cell: _____

E-mail: _____

CLIENT

Name: _____

Business Name: _____

Address: _____

City/State/Zip: _____

Phone: _____ Cell: _____

E-mail: _____

Mail reply to: Sub. Client

E-mail reply to: Sub. Client

Send bill to: Sub. Client

Services Requested:

Plant ID Plant Disease

Insect Chemical Injury

Weed ID Nematode Assay

Nutrient Deficiency

Other/Unknown

Sample Fee:

Perform only basic diagnosis (\$15.00)

Please notify if advance analysis is needed (over \$15.00)

Perform advance testing needed (up to \$100.00)

Make checks payable to "University of Nebraska"

Crop or Plant: _____ Variety/Cultivar: _____ Symptoms developed in: _____
 Date collected: _____ County of Origin: _____ Days _____ Weeks _____ Months
 Occurred in previous years _____

Trees/shrubs/ornamentals: Aprox age _____ Height: _____ Number of years at site: _____

Location	Incidence	Symptoms	Parts Affected	Distribution	Field History
<input type="checkbox"/> Field _____ Acres	<input type="checkbox"/> Abnormal growth	<input type="checkbox"/> Dead areas	<input type="checkbox"/> Branches _____ %	<input type="checkbox"/> Certain variety	<input type="checkbox"/> Soil pH: _____
<input type="checkbox"/> Pasture _____ Sq. ft	<input type="checkbox"/> Dieback	<input type="checkbox"/> Leaf drop	<input type="checkbox"/> Entire plant	<input type="checkbox"/> Edge of planting	<input type="checkbox"/> Soil Drainage:
<input type="checkbox"/> Nursery/Orchard _____ % of area	<input type="checkbox"/> Leaf spot	<input type="checkbox"/> Leaf spot	<input type="checkbox"/> Flowers	<input type="checkbox"/> General	<input type="checkbox"/> Good
<input type="checkbox"/> Golf Course _____	<input type="checkbox"/> Rot	<input type="checkbox"/> Rot	<input type="checkbox"/> Fruits/seeds _____ %	<input type="checkbox"/> High areas	<input type="checkbox"/> Poor
<input type="checkbox"/> Lawn/Turfgrass _____	<input type="checkbox"/> Stunted	<input type="checkbox"/> Stunted	<input type="checkbox"/> Leaves _____ %	<input type="checkbox"/> Low areas	
<input type="checkbox"/> Landscape --Or--	<input type="checkbox"/> Wilted	<input type="checkbox"/> Wilted	<input type="checkbox"/> Roots	<input type="checkbox"/> Scattered	
<input type="checkbox"/> Garden _____ # of plants	<input type="checkbox"/> Yellowed	<input type="checkbox"/> Yellowed	<input type="checkbox"/> Stems	<input type="checkbox"/> Shaded areas	<input type="checkbox"/> Previous Crop
<input type="checkbox"/> Home-Structural _____ % of plants	<input type="checkbox"/> Other:	<input type="checkbox"/> Other:	<input type="checkbox"/> Trunk	<input type="checkbox"/> Spots	Yr 1: _____
<input type="checkbox"/> Other: _____			<input type="checkbox"/> Other:	<input type="checkbox"/> Sunny areas	Yr 2: _____
				<input type="checkbox"/> Wet areas	Yr 3: _____
				<input type="checkbox"/> Other:	

Planting date: _____

Chemical history: Please provide chemical name, application dates, and rates:

Fertilizer: _____

Seed treatment: _____

Herbicide: _____

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!