Michigan State University

Field Crops
AoE Team

Soybean Rust Scouting Guidelines **

Scouting for Soybean Rust

** Prepared by D. Brown-Rytlewski, Michigan State University. Modified from "2005 Soybean Rust Fungicide Guidelines" developed by D. Hershman (University of Kentucky), A. Dorrance (Ohio State University) and M. Draper (South Dakota State University).

WHY SCOUT: For the survival of your soybean crop. The action threshold for soybean rust (caused by the fungus *Phakopsora pachyrhizi*) is to treat before 5% of the leaves on the lower canopy of the plant show incidence (have one or more pustules). Early detection is critical for managing soybean rust. Although there will be sentinel plots and information coming in from other states on the occurrence of rust, scouting your own fields is an important step in the fight against soybean rust.

DISEASE SYMPTOMS: Soybean rust typically occurs first in the lower one third of the canopy. Pustules are small, brown, raised structures containing spores, typically found on the underside of the leaf, and are important for P. *pachyrhizi i*dentification. Using a 20X hand lens is essential, because the pustules are quite small (pinhead-sized). Another symptom is the formation of reddish brown lesions. These are also located on the undersides of the leaves, but no spores are produced. Rust can be confused with other diseases, so use a picture pocket guide for help. A pocket guide with color images of symptoms has been distributed by the Michigan Soybean Promotion Committee and is available from your local extension office, agchem supplier, elevator or the MSPC office It can be downloaded online at: http://www.aphis.usda.gov/lpa/issues/sbr/SBR_IDcard_11-04.pdf.

WHEN TO SCOUT: You should scout once a week beginning with soybean flowering (R1) or earlier if risk levels are elevated. Stop scouting once soybeans reach R6. Information about determining the R-stage of soybeans is on the reverse side of this fact sheet. High-risk areas such as low areas or along tree lines where moisture may be higher should be scouted more often. Irrigated fields also may be at higher risk because of prolonged canopy wetness.

DETERMINING RISK: Risk is determined by disease forecasts, along with national, regional and local reports of rust activity. Risk information will be updated regularly in the field crop CAT Alerts, at: http://www.ipm.msu.edu/fieldCAT.html Other sites for updated risk information include: http://www.usda.gov/soybeanrust , http://www.stopsoybeanrust.com and www.sbrusa.net .

HOW TO SCOUT: Scout five locations in the field following a pattern shaped like a "V", "W" or "Z". At each location, carefully examine the undersides of leaves on 20 plants, paying specific attention to the leaves in the lower canopy. Examine leaflets for spotting or pustules. Pustules are easier to see if you face the sun and hold the leaflet up to allow the sunlight to backlight the leaf. Bring the hand lens up to your eye, and move the leaf toward the lens until the leaf surface is in focus (figure 1).

IF YOU FIND SUSPICIOUS SYMPTOMS:

1. Note exactly where in the field you found symptoms.
2. Collect 20 leaflets with suspect symptoms.
3. Place dry leaflets between dry paper towels and place into a zip-lock bag. This bag should then be placed inside of another zip lock bag.
4. Label the bag with your name, date, host plant, phone number, location within the field and location of the field. Take the samples to your county Extension office. From there, samples will be sent by overnight express to MSU Diagnostic Services. You can also send the sample directly to Diagnostic Services (101 CIPS Building, Michigan State University, East Lansing, MI 48824; phone: 517- 355-4536.

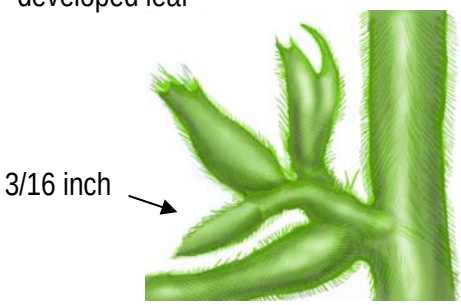
Fig. 1 using a hand lens.

Identifying soybean growth stages –

Begin scouting for soybean rust by the reproductive (R) stages. The growth stages can overlap; consider that a growth stage begins when 50% or more of the plants are in or beyond that stage. A node is a part of the stem where a leaf is attached.

Pod development- R3 and R4

R3- Beginning pod-(5-15 days) pods are 3/16 inch at one of the four uppermost nodes with a fully developed leaf



R4-Full pod –(4-26 days) pods are 3/4 inch at one of the four uppermost nodes on a main stem with a fully developed leaf. This stage is the most critical for soybean yield.

Bloom stages- R1 and R2

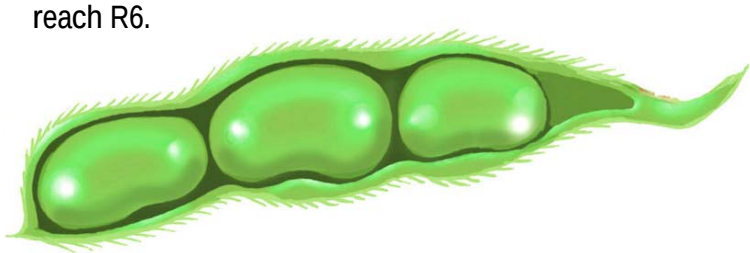
R1-Beginning bloom – (1-7days) plants have at least one open flower at any node

R2-Full bloom-(5-15 days) an open flower at one of the two uppermost nodes of the main stem

Seed development- R5-R6

R5-Beginning seed- (11-20 days) seed is 1/8 inch long in the pod at one of the four uppermost nodes on the main stem.

R6-Full seed –(9-30 days) pod containing a green seed that fills the pod capacity at one of the four uppermost nodes on the main stem –stop scouting when soybeans reach R6.



Maturity R7-R8

R7-Beginning maturity (7-18 days) One normal pod on the main stem has reached it's mature pod color.

R-8 Full maturity 95% of pods have turned their mature color (tan or brown).

Drawings adapted from photos at: Soybean Extension and Research Program, Department of Agronomy, Iowa State University.(www.soybeanmanagement.info). References for growth stage information: “How a Soybean Plant Develops” Special Report 53- Iowa State University and “Reproductive Soybean Development Stage and Soybean Aphid Thresholds” -University of Wisconsin Extension.