Summary
of the
Technical Science Working Group
on
Soybean Rust (SBR) – Teleconference #7
Held on March 17, 2004

A. Purpose of Working Group
B. Experiences and Management of SBR in Brazil

Web resource on soybean rust:
IPM Centers SBR website (past Working Group meeting summaries, membership, action plan, SBR fungicide efficacy trials, and useful links) -- http://www.ipmcenters.org/NewsAlerts/soybeanrust/

A. Purpose of Working Group – presented by Kent Smith, USDA/OPMP, Washington, DC

The basic purpose of this working group is to enhance communication between state and federal scientists concerning soybean rust. Specifically, we hope to better prepare state departments of agriculture and extension specialists to deal with soybean rust given that they will make the recommendations to growers concerning this disease when it arrives in the continental U.S.

B. Experiences and Management of SBR in Brazil – presented by:
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The Disease – Soybean Rust caused by *Phakopsora pachyrhizi*
Overall Management – The wide variety of conditions and growing practices existing in Brazil call for a wide variety of management practices. One program does not fit all situations. However, fungicides are very good management tools for soybean rust.
Host range – Kudzu is the best known and perhaps the most significant reservoir of pathogen inoculum. Pigeon peas, sickle pod and sweet peas have also been reported as important reservoirs of inoculum. Commonly, *P. pachyrhizi* appears one month before soybeans on these hosts. As primary foci for epidemics, these plants are useful local indicators of the presence of *P. pachyrhizi*, but they also may have an impact on the intensity of disease as a reservoir of inoculum.
Conditions Conducive to Disease – Wet leaf periods of a least 8 hours and moderate temperatures of 60 to 80°F are conducive to disease. Whenever these conditions exist and the pathogen of soybean rust is present, growing plants should be protected with fungicides. Extended dew periods should not be overlooked as providing conditions for disease. Likewise, overhead irrigation provides an environment conducive to disease that may cause early outbreaks.
Symptoms – Soybean rust symptoms are usually seen first on the lower leaves of the plants especially in low areas or along roads and streams. The reproductive stage of soybean is when the disease usually takes off.

Fungicides

First Fungicide Sprays – The timing of early sprays has usually been based on sentinel crops and general evidence of disease in the immediate vicinity. The disease normally intensifies during the reproductive phase resulting in the first sprays at the R1 and R2 stages. The soybean growth stage may be a good basis for the first application. During the 2004-2005 season, many producers plan to make preventative applications beginning at the R1 stage, with a second spray 20 days later. Because early identification of soybean rust is difficult, producers are moving to applications based on soybean growth stage instead of visible symptoms.

Application Methods – Methods of application are all over the board. Some soybean producers are applying aerially with ultra low volume in oil – especially large growers. While ground application was more efficacious, aerial application was considerably faster, an important consideration for large acreages. Spray volume aerially was usually less than 10 liters/hectare – commonly 3.5 liters oil, 1.5 liters water and the rest product. Ground application is usually made in 70-75 liters of water/hectare with success, but as expected, requiring a longer application period. Cone nozzles are recommended by ground and air, but flat pan nozzles also work.

Adjuvants – Adjuvants have been used with some fungicide products. They have been found to help sprays penetrate the canopy to the lower leaves.

Fungicide Classes Preferred – The triazole and strobilurin fungicides are preferred due to their systemic qualities. The fungicide used is dependent on the fungicidal activity needed and availability. Protectant fungicides have produced variable results. If used, they are best applied under low disease pressure or before symptoms have developed. One strategy for using a protectant fungicide is to apply it at the late vegetative stage (V5) in order to protect the lower canopy, and then follow with systemic fungicides during the reproductive stages (R1 through R5).

Number of Fungicide Applications –Selected fields may receive from 1 to 4 sprays. In Mata Grosso, rust appeared at the R5 stage during the season of 2002-2003. The soybean acreage received 0.8 applications area-wide. In the season of 2003-2004, rust appeared earlier during the vegetative stage, requiring 1.8 to 2.0 applications area-wide. In Brazil during the 2003-2004 season, it is estimated that 95% of the acreage was treated with between 1½ to 2 sprays. Short season varieties only required one spray, while long season varieties needed 2-3 applications.

Availability of fungicides – As of this meeting, there are no reserves of fungicides in Brazil. Worldwide reserves have been severely depleted, although manufacturers are working overtime to restore stockpiles.

Other effects of fungicides – Fungicides are reported to often have a greening effect on soybeans resulting in an extended season.

Other Management Methods and Yield Effects

Disease Resistant Soybeans – No resistance is evident in Brazilian commercial cultivars.

Soybean Row Width – Narrow soybean row widths have been abandoned in favor of the relatively wide rows between 45 to 50 cm. This allows better penetration of the soybean canopy by soybean fungicides as well as avoiding a microenvironment conducive to soybean rust.

Sentinel Plantings – As an advance warning of SBR infection, sentinel plantings were used in Brazil this season at 1300 sites around the country. These sites generally exhibited disease first, helping in the timing of the first sprays.

Yield Losses – Yield losses can be managed but not totally eliminated. Under conditions conducive to disease, yield losses may be expected to be about 10% with fungicides and at least 50% without fungicides. Fungicide sprays must be applied before infection and adequately cover the plants. A common result of ineffective application is field skips and infections on the lower leaves.