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(712) 256-0968



[www.agrointernational.com](http://www.agrointernational.com)

(712) 328-7111

To: Agro National Agents

In the past two years I have not attended a meeting that I have not heard someone expounding on the dangers of Asian Rust. This past fall there were reports of finding Asian Rust in numerous fields of the South and the South East. In fact, one report was from the Boot heel of Missouri. I think there has been a lot of information provided, but not all of it has been accurate or helpful.

As most of you know, Agro International has worked in the international arena for a number of years. For the past four years we have been working in Brazil, Bolivia and Paraguay where Asian Rust has been reported for the past several years. In 2004 it was very much a problem in the Northern areas of Brazil, known as the Matto Grosso. This region experienced significant problems with excessive moisture and very high humidity. This happens to be a region that we developed a crop insurance policy and have had policies in force for the past three years. We experienced first-hand the losses associated with the advent of this new disease in the Matto Grosso last year.

I thought it might be a big help to you and your customers if you heard from someone who had been there and experienced the adjustment of crop losses as the result of Rust. The attached article has been researched and written by my good friend and associate in Agro International, Carey Dunford. I am sure that many of you have met him at various meetings in the crop industry. I met Carey on one of my first adventures in Mexico. He was the manager of a tomato processing plant for Campbells foods and my contact in the adjustment process for processing tomatoes. We became very good friends and after his tour of duty he came back to the United States settling in Tucson and became an employee of Am Ag. His background is excellent for the type of work involved in international business and he has excellent language skills in Spanish and Portuguese. Carey grew up in the Willamette Valley of Oregon working and growing crops of vegetables, fruits and grain crops.

The bottom line – Agro International has been there and we have the experience necessary to understand Asian Rust. We believe this report will help you and your customers to understand the need for preparation in the event that Asian Rust becomes a problem.

Rick Gibson  
Director General  
Agro International



## **Realities of Asian Rust - No Cause for Panic if you are Prepared**

### **Background:**

Asian rust was first detected in Japan in 1902 / 1903 and has slowly spread throughout Asia, arriving to Hawaii in 1994, to Africa in 1997, to South America in 2001, and finally to the United States in the fall of 2004.

APHIS has been warning the soybean industry that it expected the Asian Rust spores to be carried by air currents to the USA from South America, and believes the 2004 hurricane season carried the Asian Rust spores to the infected locations in the US. Winds from hurricane Ivan are suspected to have been the vehicle that carried Asian Rust spores to at least nine states in the continental US, where there is a high probability of over-wintering on susceptible host plants. A map showing the possible paths Asian Rust or "SBR" (soybean rust) may have taken is found at: [www.plantpath.iastate.edu/soybeanrust/node/44](http://www.plantpath.iastate.edu/soybeanrust/node/44)

Soybean rust disease is caused by two different rust fungi: *Phakopsora meibomia* (*P. meibomia*) and *Phakopsora pachyrhizi* (*P. pachyrhizi*). *P. pachyrhizi* is the more aggressive of the two species, causing more damage to soybeans and unfortunately is the one that has been identified in the US.

Plant health epidemiologists commonly believe that when a new disease, such as Asian Rust hits our shores, it normally takes several years to build up to sufficient levels to do major damage. The key here is the ability or inability of the rust spores to over-winter. In the southern states, where the spores were first found in November 2004, it is highly likely that over-wintering and a general increase in spores will pose a threat on a local basis. Winds are likely to move the spores northward to the central soybean growing regions and much will depend on the timing and magnitude of such dispersion. It is believed that even if isolated flare-ups of Asian Rust are found in the central soybean growing region, it is highly unlikely the spores will over-winter in any significant numbers to threaten the next crop year's production. Preventing and curing the damage caused by the Asian Rust disease will be a challenge industry wide, even in the southern regions where soybean growers are more accustomed to managing plant diseases.

Many of you are aware that Agro International supports crop insurance programs worldwide, and that Rick and Kim Gibson were first called upon to provide technical support for reinsurers in the mid 1980's in both Africa and Mexico. In 1990 reinsurers again called upon Rick and Kim to help them launch private crop insurance programs in Mexico, when Mexico shut down its failing government operated crop insurance company. At this time Agro International was formed and Carey Dunford and Herminia Rojo joined the team to begin working on the development of crop insurance programs in Mexico. Agro has since expanded

its involvement into South America, where Rick, Kim, Carey, and Herminia have worked, along with other Agro personnel and adjusters, to aid in developing crop insurance programs in Brazil, Bolivia, and Paraguay. We have had firsthand experience in helping producers deal with the financial impact of their Asian rust problems in Bolivia, Brazil, and Paraguay and have real time experience in their successes and failures in management of Asian Rust in the field.

Some of you may wonder why Agro is involved in foreign crop insurance programs that seemingly support competition to US agricultural products both domestically and abroad. Consider the following:

- 1) We believe it is best to support the reinsurance industry in their effort to spread their risk throughout the world, which ultimately reduces the total risk and keeps reinsurance prices affordable here in the US.
- 2) We believe that it is in our best interest to influence the policy form and administrative rules in other countries so that we are on a level playing field. In this way the loss ratios and subsequent rates are determined similarly to our programs in the US. That being said, we have not seen any soybean producing country that has the same level of private insurance company support, government support, or support from the financial institutions that we have here in the US. Most of the efforts to date are solicited by private industry to offset their financial risk on a local basis rather than nationwide.
- 3) Lastly, the best way to compete in world markets is to know your competition. We believe Agro's involvement in foreign agriculture helps us learn from their successes and failures so we can retain our competitive edge.

### **Practical Management of Asian Rust:**

Agro's South American experience confirms the most important elements in managing the threat of Asian Rust in soybeans are immediate education and then keeping current on information and trends as they develop. Learning everything possible about identifying, preventing, and controlling the disease prior to the start of the 2005 season, must be a soybean grower's first priority.

There has been a flood of information on the internet in recent weeks about upcoming events, sponsored by various government and industry groups, aimed at preparing the US soybean industry to successfully manage the Asian Rust threat. These meetings are now in being held almost daily throughout the soybean growing areas and will be ongoing through the crop year.

One critical point is not to limit your research to area meetings or your local land grant institution, but to read carefully the research and recommendations of your neighboring states and trade organizations, as well. In researching this I found that some sources are much more complete and informative than others. On the internet, it takes awhile to sort through some of the dated articles and theories, so be prepared to spend sufficient time to identify the pertinent, "current", data for your region. While there is a certain redundancy in many of the sites, there are some invaluable links and new information buried within each of them. Please see the listing of valuable sites at the end of this article.

The second most important task is to form a plan for managing the Asian Rust risk on your own farming operation. Most of you are skilled professionals in managing financial risks with

the use of sophisticated marketing plans that you have built around your crop insurance program. The Risk Management Agency published the following statement on their website"

[www.rma.usda.gov/news/2004/07/715soybeanrust.html](http://www.rma.usda.gov/news/2004/07/715soybeanrust.html)

"Unavoidable loss of production due to plant disease (including soybean rust disease) is a covered peril under the Coarse Grains Crop Provisions, provided it was due to natural causes and not agroterrorism. Section 8 of the Coarse Grains Crop Provisions (7 C.F.R. 457.113) states that, in accordance with the Basic Provisions, insurance is provided against loss of production due to unavoidable causes of loss, including plant disease, but not damage due to insufficient or improper application of disease control measures. Therefore, losses to soybean production due to soybean rust disease is an insurable cause of loss provided the insured can verify that the cause was natural and available control measures were properly applied. If there are no effective control measures available or there are insufficient amounts of chemicals available for effective control, resulting loss of production would be covered.

It will not be a covered loss if there are sufficient control measures available, but the insured elects not to use them. Failure to purchase and apply recommended control measures will result in uninsurable causes of loss being assessed. It will be critical for RMA and insurance providers to monitor when outbreaks are detected in an area to determine if an insured could have applied recommended fungicides in a timely manner and did not.

The current recognized good farming practices for soybeans generally should not be an issue as soybean rust is not a soil borne disease and rotation of crops would not be effective for control. It will be necessary to determine if adequate amounts of approved chemicals were available at the time of an outbreak, and if adequate amounts were available, were they applied in a timely manner to achieve optimum control regardless of the cost involved."

### **Prevention is the Key:**

US farmers have always managed the production risks well, but now they are faced with another variable in production management that can upset the balance that has been so carefully maintained.

Probably the biggest error that can be made is to take the "wait and see" posture, while your local monitoring institutions sweep the countryside with their field monitoring campaigns. By the time they tell you that you have a problem you may well be beyond the point of no return, as well as being in breach of your crop insurance contract, which requires you to take the appropriate control measures to ensure that your crop insurance remains in force. Even if you detect a potential problem and make a timely decision to apply the appropriate preventive or curative product you may have to wait in line for your local coop or custom applicator to "schedule" the necessary applications. Your neighbor who applied the preventives prior to a general alert may harvest a normal or better than normal crop, but will you?

## What are the variables?

1. **Timely Detection** - Be prepared to do the monitoring / scouting yourself. The window of opportunity to control Asian Rust successfully and economically is only a few days. Many suggest the window is 7 days, but since weather conditions can complicate both scouting and application efforts, each day is critical. Sampling is time consuming and hard work that requires digging down under the canopy and cannot be accomplished visually from the road, until it is far advanced and then it becomes both difficult and costly to control. The big issue here is timing. If you have to wait for a sample to be sent to and be processed by your land grant university you may have lost the opportunity to prevent the spread of Asian Rust and your cost in both curative applications and yield loss may increase dramatically.

However, even if you are confident in your local identification process and initiate the appropriate defense, please follow through and send samples to your land grant university so they can positively identify the disease and log it in their mapping of the soybean rust advancement. It is imperative to offer them maximum cooperation in their efforts to develop disease management programs, evaluate applications, and log susceptibility by variety, etc.

Apart from the identification aids you may receive in local workshops or from industry groups and chemical distributors, the following sites have some very good color plates and provide additional background and control information, as well direct references to many other identification sites.

The American Phytopathological Society  
<http://www.apsnet.org/online/feature/rust/>

Iowa State University  
<http://www.extension.iastate.edu/Publications/PM1989.pdf>  
[http://spdn.ifas.ufl.edu/2004-Soybean\\_Rust\\_presentation.pdf](http://spdn.ifas.ufl.edu/2004-Soybean_Rust_presentation.pdf)

Purdue University  
[http://www.ppdl.purdue.edu/ppdl/pubs/soybean\\_rust\\_symptoms\\_web.pdf](http://www.ppdl.purdue.edu/ppdl/pubs/soybean_rust_symptoms_web.pdf)

The following site is a directory of plant pathologists cooperating in the positive identification process at land grant universities throughout the soybean growing areas.  
<http://www.apsnet.org/directories/extension/top.asp>

2. **Availability of Fungicides** - Chemical companies are quick to say they will have sufficient supplies on hand to cover any potential need, but they warn that if panic sets in and growers begin to hoard product, there could be regional shortages in an area where actual outbreaks occur. This is exactly what we have seen in South America. State of the art spray equipment sat idle when products became short to control the Asian Rust infections.

Farmers who were prepared and who applied the appropriate preventive chemicals generally fared much better than those who waited for a general alert to launch a curative program and in some cases those who applied preventative fungicides found they actually harvested more soybeans, because they cleaned up other minor disease problems that were previously not cost effective to control.

If you decide to build your program around preventive application, then it may pay to place your order early, which solves both your individual supply problem and helps the industry measure demand and balance production and distribution of products.

3. **Efficacy of Fungicides** - Do your own research now. Some companies have failed miserably, promoting their own shelf items, only to be totally embarrassed when they didn't work.

Some of the products known to be effective in South America are currently going through the section 18 registration processes in the US and will be available for use in 2005. However, use caution, because both very effective and ineffective products can be found on the list of products currently in the section 18 process. For a general idea of product efficacy there is a chart below showing the currently registered products in Brazil and the ratings given to them based on both private and governmental agencies that collaborated in testing products throughout Brazil.

There is also lot of old and just plain bad information circulating. A recent article in the Corn and Soybean Digest has some very good comments from industry leaders, which support our personal observations in South America. Pay particular attention to the comments on efficacy of different formulations, rather than to brand names. The article can be found at:

<http://cornandsoybeandigest.com/news/Asian-rust-fungicides-011205/>  
<http://www.ipmcenters.org/NewsAlerts/soybeanrust/efficacy.cfm>

The current update (Jan. 14, 2005) of the section 18 label process can be found at:

<http://www.planthealth.info/rust/rustfungicide.htm>

The following chart shows the Brazilian field results from 2004 that may be of some help in making decisions. One significant item to understand is these trials were done professionally with significant disease pressure through a cooperative effort involving government institutions, the agricultural chemical industry, and soybean grower industry groups. Some of the lesser rated products perform perfectly well with low disease pressure, but fail when there is a significant disease pressure and at advanced stages of development.

Embrapa, the research arm of the Brazilian Ministry of Agriculture released the information during the 26th meeting for Soybean Research the 22nd of September, 2004, just as Brazilian farmers were beginning to plant the 2005 crop. The meeting results can be found on their website at [www.cnpso.embrapa.br/alerta](http://www.cnpso.embrapa.br/alerta). You will

find 3 different soybean disease charts, but the one below represents a condensed version of the 3rd chart, which relates to Soybean Rust. The chart was condensed both to save space and eliminate confusion with the translation of application rates. Obviously, we are not in the business of making chemical recommendations and you will have to work closely with your local experts to interpret the volumes of information available, pertinent to your particular area.

Products Registered for use in combating Asian Rust in Brazil 2004 - 2005 Campaign Source: Embrapa [www.cnpsa.embrapa.br/alerta](http://www.cnpsa.embrapa.br/alerta).

Common Name	Commercial Name in Brazil	Efficacy
azoxystrobin	Priori	*
azoxystrobin + ciproconazole	Priori Xtra	***
ciproconazole + propiconazole	Artea	
difenoconazole	Score 250 CE	*
epoxiconazole	Opus	
pyraclostrobin + epoxiconazole	Opera	***
fluquinconazole	Palisade	*
flutriafol	Impact 125 SC	***
myclobutanil	Systhane 250	**
tebuconazole	Orius 250 CE	***
tebuconazole	Folicur 200 CE	***
tetraconazole	Domark 100 CE	**
tetraconazole	Eminent 125 EW	
trifloxystrobin + ciproconazole	Sphere	***
Trifloxystrobin + propiconazole	Stratego	*

\* Least Effective - 59% to 74% control

\*\* Effective - 80% - 86% control

\*\*\* Most Effective - Above 90% control

Absence of rating indicates product pending results from current campaign

- 4. Application Equipment** - If at all possible have your own spray equipment ready, rather to rely on custom services, which may be over booked. Researchers in the US confirm the field experiences we have had in Brazil, that higher pressures in the range of 60 - 80 lbs. are best and also to avoid cone shaped spray patterns.

The key is small particulate size and penetration of the canopy to reach infected areas below the surface of the plant canopy.

**Conclusion:** Asian Rust is in North America and can be a serious threat if conditions are right, but with the proper preparation it can be managed just as the many other production risks have been in the past. The degree of prevention and control will be determined by cooperative efforts between soybean growers, researchers, and industry supporters.

Each individual producer must decide what the trade offs are and determine whether it makes more sense to approach Asian Rust proactively, with a well structured preventive and curative plan or just take the "wait and see" approach. Crop insurance may pay when the crop loss falls below the guarantee, but it doesn't make much sense to have a 15% to 25% non payable loss before the crop insurance policy kicks in; especially when there may be an actual production gain with the control of incidental diseases that were not previously cost effective to control, which could offset a portion of the additional cost.

Interesting sites related to SBR - Asian Rust:

<http://www.soygrowers.com/rust/default.htm>

[http://www.aphis.usda.gov/ppq/ep/soybean\\_rust/](http://www.aphis.usda.gov/ppq/ep/soybean_rust/)

<http://amsoy.org/rust/default.htm>