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CROPEST ONTARIO

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Soybean Rust Trying to Make Move in Louisiana and Texas!

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Commercial and sentinel plot soybeans infected with Asian soybean rust have been recently confirmed in Louisiana (June 21) and Texas (June 22). This was not unexpected since for the past month we have been concerned about kudzu infections in south central Louisiana (Iberia and St. Mary's parish). Wind patterns and simulation models suggested that these coastal Parishes could be a source of spores for other regions if weather conditions became favourable. May and June conditions in Louisiana were conducive to potential disease development and the subsequent identification of soybean rust in a soybean sentinel plots in Rapides and Avoyelles Parishes, which are 80 miles north of the rust infected Kudzu, was therefore expected.

In Texas, soybean rust was found Wednesday (June 20) in a 40-acre commercial soybean field 40 miles southeast of Brownsville (Cameron county) that did not have rust when scouted in 2005 and 2006.

This followed the June 14 find in commercial soybeans in Hidalgo County, Texas. The reports of rust occurrences to date are similar to last year with some exceptions of earlier reports of rust in Louisiana and in Texas on commercial soybean fields. These finds put the U.S. count at 26 counties and parishes in five states to have rust at some point in 2007: Florida (10), Alabama (5), Georgia (5), Louisiana (4), and Texas (3).

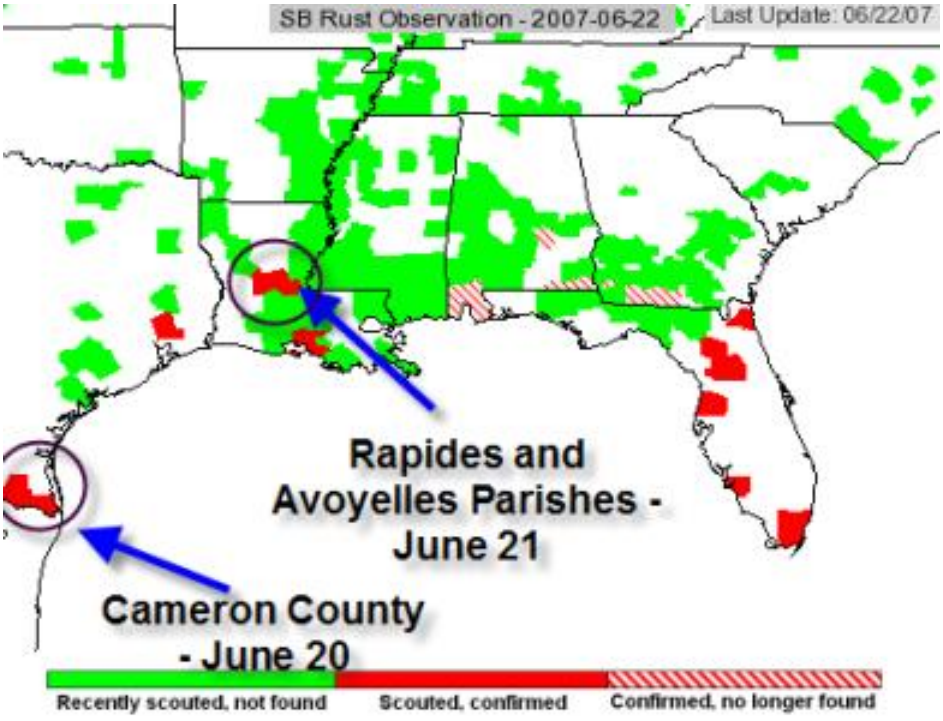
What Does This Mean To The Ontario Producer? The risk level is still low for Ontario due to the limited soybean rust spore production (to date) in the southern US and the dry conditions in some parts of the province. It is a different situation in Louisiana where the weather conditions are favourable and if the weather continues to cooperate could lead to more rust infections over the next month. This could have implications for Ontario producers since a build-up of spores in the south could make there way into the US mid-west and Ontario.

But time is on our side since it will take some time for this to develop but it can occur as witnessed last fall.

One thing is for certain, other soybean rust detections will occur this summer and fall. To what degree will depend on the weather conditions from here on. If things remain favourable in Louisiana that may occur earlier and have a larger geographical impact but if it remains dry over most of the southern US the geographical impact will be minimal as last year ("too little, too late").

Soybean rust updates will continue to be included in future CropPest Ontario issues and the OMAFRA CropLine (1-888-449-0937). You could also visit the Ontario Soybean Growers Website (www.soybean.ca) and the USDA PIPE website (www.sbrusa.net) for updated maps and commentaries.

Figure 1 – Asian Soybean Rust Update Including New Infections in Louisiana and Texas.



Interpretation of Plant Analysis for Soybeans

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and
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The interpretation of plant analyses for soybeans has recently been updated, particularly with regards to potassium concentrations. The information provided here replaces the values in Publication 811, Agronomy Guide for Field Crops. More details can be found on the OMAFRA website at http://www.omafra.gov.on.ca/english/crops/facts/soybean-analysis.htm .

Fertilizer recommendations for soybeans are normally based on soil test results, but plant tissue analysis can provide useful additional information. The most common use for plant analysis is to diagnose nutrient related problems with crop growth, either a deficiency or toxicity. In cases where the soil tests are adequate but there are deficiencies showing up in the plant tissue, it may indicate some problem reducing the ability of the plant to access the nutrients in the soil, such as diseases, insects or soil compaction impeding root function. Plant analysis can also be used to validate the fertilizer program, particularly where there is a comparison between different programs.

Plant analysis is most useful if combined with visual inspection of the crop and soil conditions, knowledge of past management in the field, and a current soil test to provide information about soil nutrient levels and soil pH.

Interpretation of Plant Analysis Results

Table 1 shows the critical and normal concentrations of nutrients in soybean leaves collected at the recommended time (first flowering). Leaf tissue concentrations at or below the critical concentration indicate that the levels of that nutrient are insufficient for maximum crop growth and yield. Occasionally the crop will respond to added fertilizer (e.g. foliar manganese to correct a manganese deficiency), but more often the tissue results will point to management changes for future crops.

The most common errors in collecting plant tissue samples are:

- **not collecting enough material**
- **collecting chlorotic or dead tissue or insect damaged leaves**
- **collecting plant tissue contaminated with soil**
- **shipping the sample in plastic bags.**

Do not sample tissue to which foliar fertilizers have been applied.

Table 1. Interpretation of Plant Analysis for Soybeans

Values apply to the top fully developed leaf (3 leaflets plus stem) at first flowering.

Nutrient	Units	Critical Concentration[1]	Maximum Normal Concentration[2]
Nitrogen (N)	%	4.0	6.0
Phosphorus (P)	%	0.35	0.5
Potassium (K)	%	2.0	3.0
Calcium (Ca)	%	-	3.0
Magnesium (Mg)	%	0.10	1.0
Boron (B)	ppm	20	55
Copper (Cu)	ppm	4	30
Manganese (Mn)	ppm	14	100
Molybdenum (Mo)	ppm	0.5	5.0
Zinc (Zn)	ppm	12	80

[1]Yield loss due to nutrient deficiency is expected with nutrient concentrations at or below the "critical" concentration.
[2] Maximum normal concentrations are more than adequate but do not necessarily cause toxicities.

Common Ontario Deficiencies

Although a range of soybean nutrient deficiencies have been reported in Ontario the most common are listed below:

1. N - Nitrogen deficiency is due to a lack of proper nodulation. This usually occurs in fields where soybeans are being grown the first time and proper nodulation did not occur. Apply 50kg/ha of N at first flower as urea, ammonium sulphate or calcium ammonium nitrate when the foliage is dry to supply the crop with N. Plant symptoms will include stunting, and a pale green colour to the plant, particularly in the older leaves.
2. P – Soybeans respond to adequate supplies of phosphorus from the soil, but do normally respond to starter P like corn or cereals. There are no obvious visual symptoms of phosphorus deficiency, although the plants may be stunted and darker green colour relative to plants with ample P supply.
3. K – If a leaf deficiency has been identified take a soil sample to determine the level of K that should be added to the field for future crops. There is no way to supply enough K during the growing season to improve yields the year symptoms occur. Visual symptoms will generally show up in the older leaves as chlorosis (yellowing) followed by necrosis (browning) of the leaf margins.

4. Mn – Manganese is the only micronutrient deficiency commonly found in Ontario. Symptoms are pale green to yellow leaves developing on the upper part of the plant with veins remaining dark green.

A foliar application of Mn is recommended when visual symptoms occur Soil application is not successful because of the large amounts required.

SERENDADE MAX Biofungicide Granted 1st Canadian Registration for a Range of Crops, Crop groups and Diseases

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Guelph

Agraquest Inc., UAP Canada Inc. and the Pest Management Regulatory Agency (PMRA) recently announced the registration of Serenade Max (*Bacillus subtilis* strain QST 713) biofungicide for a wide range of crop diseases in Canada. Serenade Max is a long-anticipated, new biopesticide which can be used by organic and conventional producers. This is the 1st registration of this product in Canada and marks an important milestone in addressing the biopesticide technology gap. Serenade Max is a disease control product derived from the bacteria *Bacillus subtilis* strain QST 713 and offers growers a novel mode of action to manage some key crop diseases. Serenade is listed by the Organic Materials Review Institute (OMRI) for use in organic production and provides Canadian organic growers with a much needed new disease management tool.

Serenade Max is registered for a number of key diseases of pome fruits, asparagus, berry crops, Brassica crops, Legume vegetables, bulb vegetables, cucurbit vegetables, fruiting vegetables, grapes, strawberries, lettuce and celery. **Table 1** provides a summary of the crop and pest registrations on the new Canadian Serenade Max label.

Certified organic growers are advised to contact their certification body to determine the appropriateness of using this product as a tool in their production program for the management of diseases.

We wish to thank the personnel of Agraquest Inc. for their support of this registration and the personnel of the Pest Management Regulatory Agency for evaluating and approving this important pest management tool. UAP Canada Inc. will be selling and distributing this new product to Canadian producers.

For copies of the new Serenade Max label contact Jim Chaput, OMAFRA, Guelph (519) 826-3539, Hugh Martin, OMAFRA, Guelph (519) 826-4587 or visit the UAP Canada website at www.uap.ca.

Note: This article is not intended to be an endorsement or recommendation for this particular product, but rather a notice of registration activity.

Table 1. Crop and Pest Registrations on the New Canadian Serenade Max Label

Crop or Crop Group	Pest(s)	Rate Product per hectare (kg / ha)	Application instructions	Pre-harvest interval
Pome fruits including apples, pears, quince	Fire blight, scab	3.0 – 6.0	Consult the full product label for specific crop and disease application timings and instructions	0 days for all crops
Apples	Powdery mildew	3.0 – 6.0		
Berry crops including raspberry, blueberry, currant, gooseberry, blackberry	Botrytis gray mold	3.0 – 6.0		
Strawberries	Botrytis gray mold	3.0 – 6.0		
Grapes	Powdery mildew, Gray mold	3.0 – 6.0		
Asparagus	Botrytis blight	3.0 – 6.0		
Brassica crops including cabbage, broccoli, cauliflower, Brussels sprouts, mustard greens	Soft rot	3.0 – 6.0		
Lettuce	Downy mildew, Powdery mildew, Sclerotinia drop	3.0 – 6.0		
Celery	Pink rot	3.0 – 6.0		
Tomatoes, Peppers	Powdery mildew	3.0 – 6.0		
Fruiting vegetables including tomatoes, peppers, eggplant, ground cherries	Early blight Botrytis gray mold	4.5 3.0 – 6.0		
Bulb vegetables including onions, leeks, garlic	Botrytis neck rot, Botrytis leaf blight Downy mildew	3.0 – 4.5 3.0 – 6.0		
Cucurbit vegetables including cucumbers, melons, pumpkins, squash	Powdery mildew	3.0 – 6.0	Consult the full product label for specific crop and disease application timings and instructions	0 days for all crops
Legume vegetables including dry beans, peas, lentils, chickpeas, succulent beans, peas	White mold, Botrytis pod rot	3.0 – 6.0		

Follow all other directions for use on the Serenade Max biofungicide label carefully. Consult individual crop and pest recommendations on the Serenade Max label for application timing and additional use restrictions.

Serenade Max biofungicide should be used in an Integrated Pest Management program and in rotation with other management strategies to adequately manage resistance. Monitor disease populations consistently and apply when treatment thresholds are exceeded. Consult provincial guidelines and local extension specialists for monitoring protocols and treatment thresholds.