THE ECONOMIC IMPACT OF ASIAN SOYBEAN RUST ON THE U.S. FARM SECTOR

JOINT HEARING

BEFORE THE

SUBCOMMITTEE ON CONSERVATION, CREDIT, RURAL DEVELOPMENT, AND RESEARCH

AND THE

SUBCOMMITTEE ON GENERAL FARM COMMODITIES AND RISK MANAGEMENT

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REVIEW THE ECONOMIC IMPACT OF ASIAN SOYBEAN RUST ON THE U.S. FARM SECTOR

WEDNESDAY, APRIL 27, 2005

HOUSE OF REPRESENTATIVES, SUBCOMMITTEE ON CONSERVATION, CREDIT, RURAL DEVELOPMENT, AND RESEARCH, JOINT WITH THE SUBCOMMITTEE ON GENERAL FARM COMMODITIES AND RISK MANAGEMENT, COMMITTEE ON AGRICULTURE

Washington, DC.

The subcommittees met, pursuant to call, at 11:10 a.m., in room 1300 of the Longworth House Office Building, Hon. Frank D. Lucas (chairman of the Subcommittee on Conservation, Credit, Rural Development, and Research) presiding.

Members present: Representatives Moran (chairman, Subcommittee on General Farm Commodities and Risk Management), Jenkins, Conaway, Goodlatte [ex officio], Holden, Etheridge, Herseth, Butterfield, Melancon, Pomeroy, and Peterson [ex officio].

Staff present: Brent Gattis, John Goldberg, Elizabeth Parker, Ryan Weston, Tyler Wegmeyer, Callista Gingrich, clerk; Andy Baker, John Riley, and Anne Simmons.

OPENING STATEMENT OF HON. FRANK D. LUCAS, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF OKLAHOMA

Mr. LUCAS. This hearing of the Subcommittee on Conservation, Credit, Rural Development, and Research and the Subcommittee on General Farm Commodities and Risk Management to review the economic impact on Asian soybean rust on the U.S. farm sector will come to order.

I do first want to express my appreciation to the panelists and ask your indulgence and tolerance. We have just come from the floor of the House and the nature of the body that we are a part of, the floor business of a greatest importance. And also to express my appreciation to the ranking member of the Agriculture Committee, Mr. Peterson for being here with us today.

Today's joint subcommittee hearing on Asian soybean rust, it is not often that we call a joint hearing and even rarer that we do so because of a fungus. However, it is not unusual for American farmers to deal with adverse growing conditions. U.S. producers are currently trying to sort their way through a myriad of information to learn how to best deal with soybean rust.

Asian soybean rust is not a new fungus, it was first known in Japan in the early 1900's. It has made a steady march across the globe. Many Asian countries have been dealing with soybean rust

for years, while those in South America have only been battling it for the past couple of years.

As we have prepared for this hearing during the last few weeks, it is become clear that there are numerous sources of information regarding soybean rust. We want to get the best information out for our producers as quickly as we possibly can. It is important to note that soybean rust, the thing about it is that you can't stop it. You can only hope to contain it. Now that it is here, U.S. farmers like those the world over must deal with it. We are not going to have a hard frost in Florida that will kill the soybean rust and the wintering kudzu.

Our primary purpose for this hearing is to give our producers clear guidelines regarding how to combat rust in a timely and effective manner. We also want to make sure that the USDA's instructions for complying to the farm bill's best management practices are met. And I think that we will see that the weather patterns and the timeliness with which producers react, the soybean rust outbreaks will become the major factor in how greatly U.S. soybean production could be affected by rust. The Brazilians have coexisted fairly well with soybean rust and even increased production through the proper use of fungicide. We should be able to learn more from their battles about how best to minimize the affects of rust.

Members will have the chance to ask what fungicides work best and how they should be applied, what type of input costs to expect. They will also see testimony that is trying to determine how much fungicide is needed throughout the United States is a very tricky question and we have a great panel of witnesses today and I look forward to hearing them.

And I now turn to my colleague, the subcommittee chairman for General Farm Commodities for his opening statement. Mr. Moran.

OPENING STATEMENT OF HON. JERRY MORAN, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF KANSAS

Mr. MORAN. Mr. Chairman, thank you very much for those remarks and thank you for working with our subcommittee to have hold this hearing today. I think this is a significant issue that we base in all of agriculture and has consequences for our farmers across the country. I have known Kansans who raise about 2.5 million acres of soybeans each year are having anxiety about what the consequences are of soybean rust and I am pleased that we will hear from USDA and the private sector today to know what our response has been in this country to the discovery of soybean rust in Louisiana some months ago now.

I was in Louisiana last year and met with the Louisiana State commissioner of agriculture, as well as FSA and RMA officials. One of my concerns from the very beginning is that we cooperate as the Department of Agriculture to make certain that our farmers have the necessary information so that should rust, Asian rust be discovered, they have the ability to respond and know that FSA is there in regard to the financing of farming operations, that risk management is there in regard to the crop insurance issues, that EPA and other entities involved in the use of fungicides would provide the necessary information that those who perform research in the agri-

culture sector are there with the right answers for farmers across the country.

I have been pleased to date to hear reports about USDA's cooperation and their working together to see that a united front is provided for our agriculture sector. I also would remind the members of the committee that next Wednesday, May 4, the subcommittee on General Farm Commodities and Risk Management will conduct a hearing with RMA officials at which I would expect that the crop insurance aspects of this could be raised with RMA at that time.

I thank the chairman for working with me to cooperate to see that this hearing is held today and I appreciate the ranking members, Mr. Holden and Mr. Etheridge for their cooperation as well.

Thank you, Mr. Chairman.

Mr. LUCAS. Thank you, Mr. Chairman.

And the chair now turns to the ranking member of the subcommittee on General Farm Commodities and Risk Management, Mr. Etheridge for any opening statement he might have.

OPENING STATEMENT OF HON. BOB ETHERIDGE, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF NORTH CAROLINA

Mr. ETHERIDGE. Thank you, Mr. Chairman and both you and Chairman Moran for holding the hearing and doing it jointly. I want to thank both of you. Asian soybean rust poses a great threat to our Nation's soybean production and it is appropriate, I think this subcommittee has a joint hearing today as we plan our defense on an issue that could have a significant impact on soybean production in America. As we do this, we need to be remindful as we work on budget issues that we not cut the R&D money, the research money that would fund and help deal with these issues and I hope we can talk about that today as well.

North Carolina ranks only 17th in soybean production, but my district farmers grow more soybeans than any other crop. The district ranks only fourth in our State soybean production. However, if we look at North Carolina, it is one of the largest consumers of soybeans and soybean meal in the whole Nation. So our livestock industry is a tremendous soybean consumer and those farmers are focused on anything that impacts soybean production and consequently the price but our consumers certainly our focused because it will have a significant impact on the cost of food.

So I believe that we are looking at, in this whole issue of soybean rust. And unfortunately, I have a markup going on at the very same time in the Homeland Security Committee so I will miss a good part of the hearing, but I can assure you I plan to read and look at the material and hope I get back in time to ask some of the questions. So I appreciate the witnesses taking your time to be here today. I trust that my colleagues will do the adequate job which I know they will in asking the appropriate questions to get this on the record.

Thank you, Mr. Chairman.

Mr. LUCAS. Thank you.

And the Chair wishes to thank the gentleman for his comments and to note also that in addition to the ranking member, we have

the chairman of the full committee here today. Mr. Goodlatte, thank you for joining us, sir, and I think that just reflects the importance of this issue.

With that, the Chair would now like to request that other members submit their opening statements for the record so that the witnesses may begin their testimony and to ensure that we have ample time for questions.

[The prepared statements of Members follows:]

PREPARED STATEMENT OF HON. COLLIN C. PETERSON, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF MINNESOTA

I would like to thank Chairmen Lucas and Moran as well as their ranking members, Congressmen Holden and Etheridge for holding this important hearing today.

I am hopeful that this hearing as well as actions by growers, producer groups and government entities at the State and Federal level will continue to educate and motivate soybean farmers to stay on top of this issue.

Given the importance of the soybean industry in Minnesota as well as other parts of the country, I would hope that the Federal Government would make surveillance and education efforts a priority. The impacts of Asian rust on soybean production could potentially impact the bottom lines of not only soybean farmers, but livestock producers and the soybean crushing industry.

Education and outreach efforts continue to be major tools in helping producers to deal with this disease. There is a lot information out there on Web sites and in media outlets, not all of it may be accurate. We owe it to our producers to ensure that USDA, EPA, our land grant and other universities as well as State Departments of Agriculture have adequate resources to help producers determine fact from fiction and take the best course of action on their farms.

I also want to thank the witnesses from the crop protection side of this issue who have joined us today. The crop protection companies and those who will advise farmers and help apply those products are going to play a key role in this fight.

PREPARED STATEMENT OF HON. TIM HOLDEN, A REPRESENTATIVE IN CONGRESS FROM THE COMMONWEALTH OF PENNSYLVANIA

I would like to thank Chairman Lucas. Chairman Moran, and Ranking Member Etheridge for holding this hearing on Asian Soybean Rust.

I am especially concerned about this issue because my home State of Pennsylvania is in the soybean growing region of the United States. At 41 bushels per acre in 2003, the State had some of the Nations best yields, tying for second place in the country. The biggest soybean growing areas in Pennsylvania are in the central, south central and southeastern portions of the State, including my district.

I am alarmed about the effect soybean rust could have on our farm economy. Unfortunately, there is not much we can do to completely erase Asian Soybean Rust from our fields.

However, I hope this hearing will help us to look at options that may be available in case of an outbreak of soybean rust. I am very interested to hear the steps USDA and others are taking to aid our farmers in becoming more educated about soybean rust. I also hope to hear about what we can do to help our farmers prevent soybean rust from ruining their crops in the future.

I look forward to hearing from our witnesses.

PREPARED STATEMENT OF HON. G.K. BUTTERFIELD, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF NORTH CAROLINA

Mr. Chairman, thank you for holding this important hearing.

Mr. Chairman, in these difficult times, soybeans have sustained many farmers across the Nation. As soybeans become a critical part of biodiesel fuel, food aid, animal feed, and other critical items, the price has risen, and farmers have produced accordingly.

Acreage has expanded in recent years, and has profoundly expanded in parts of the country such as my home State of North Carolina. Rust, one of the most insidious invasive species to impact farming in the United States cannot be easily contained because it is airborne and can easily infect crops great distances away.

I thank the chairman for holding this important hearing and will strongly support any action taken by this committee to control the spread of soybean rust in the United States.

Mr. LUCAS. Now we would like to invite already at our table the first panel, Dr. Joseph J. Jen, Under Secretary for Research, Education, Economics, USDA, Washington, DC. He is accompanied by Dr. Matt Royer, Senior Program Analyst for APHIS Pest Detection and Management Programs, and Mr. Burleson Smith, USDA Special Assistant for Pest Management Policy. We also have Dr. Joseph Glauber, Deputy Chief Economist, USDA here in Washington, DC, as well as Mr. Jim Jones, Director of the Office of Pesticide Programs, U.S. Environmental Protection Agency here in the USDA.

And the Chair would now like to recognize Dr. Jen for his comments.

STATEMENT OF JOSEPH J. JEN, UNDER SECRETARY, RESEARCH, EDUCATION, AND ECONOMISTS, U.S. DEPARTMENT OF AGRICULTURE

Mr. JEN. Mr. Chairman and members of the subcommittees, it is my pleasure to appear before you to discuss the issue of soybean rust and to represent the Research, Education, and Economics mission area agenccies of the USDA.

The REE agencies are at the center of the research system supporting the food and agriculture sector. They have a proud history over many decades of finding solutions to the challenges confronting farmers, ranchers and others involved in agriculture, resulting in a high return on the Federal investment to our Nation which enjoys a plentiful, affordable, and safe food supply. This remarkable history of success continues today yielding new knowledge, technologies, statistics, and analysis for effectively addressing today's problems and building the scientific and technological foundation for addressing tomorrow's problems and opportunities.

A most notable example of addressing today's problems relates to the recent arrival of soybean rust on our shores. For some time, scientists have been saying that this plantdisease would inevitably arrive in the United States, carried by winds from South America where the disease has been residing for several years.

REE agencies, their partners in other USDA agencies, the research and scientific community, State departments of agriculture, and soybean industry organizations have been preparing for this anticipated event that became a reality last November in Louisiana. There have been 29 confirmed cases in nine States in 2004, and a few cases of kudzu in Florida so far in 2005.

Effective management and control of soybean rust relies on early detetion, correct identification, and proper and timely application of fungicides. Starting in 1998, REE agencies have played a critical leadership role with the ultimate goal of providing producers with effective disease management options.

For example, ARS scientists have developed a real time rapid detection test that has been adopted by APHIS. It will provide a quick, easy, and accurate means to detect soybean rust as part of a national surveillance system. Over 20,000 soybean lines from the USDA Soybean Germplasm Collection at Urbana, Illinois have been evaluated in preliminary screening, none of which exhibits broad spectrum resistance. Among those soybean lines, 800 commercial quality lines are under further study in intermediate trials.

CSREES has been at the forefront of training first detectors. In June 2004, a regional soybean rust teleconference attracted nearly 1,000 participants who grow or service 9 million acres of soybeans. CSREES has also been instrumental in establishing a National Plant Diagnostic Network of strategically located university-based laboratories that support AHIS laboratories facilitating rapid and accurate detection. Additionally, through CSREES support of system extension grants, Cooperateive Extension continues to play a vital role in getting the word out to farmers and other stakeholders in our soybean producing States.

In September 2004, ERS published an article on the economic risks of soybean rust in the United States in its publication, Amber Waves. The article indicates that the economic effects of the pathogen's entry into the United States could vary considerably depending on growing conditions, the severity and threat of the disease, and producers' responses. This analysis presented to policy makers and the soybean industry was information to make more informed decisions in responding to the detection of soybean rust in 2004.

Our agency will continue in aggressive and comprehensive soybean rust research and education strategy. The attached addendum provides more detailed information on REE activities to combat soybean rust. I look forward to discussing this issue further with the members of the subcommittees.

Thank you.

[The prepared statement of Mr. Jen appears at the conclusion of the hearing.]

Mr. LUCAS. Thank you, Dr. Jen.

Dr. Glauber.

STATEMENT OF JOSEPH GLAUBER, DEPUTY CHIEF ECONOMIST, U.S. DEPARTMENT OF AGRICULTURE

Mr. GLAUBER. Mr. Chairman and members of the subcommittee, thank you for the opportunity to be at today's hearing on soybean rust and its implications for U.S. agriculture.

As many of you are aware, on March 15, Secretary Johanns unveiled USDA's interactive soybean rust Web site as part of a national soybean rust plant disease surveillance and monitoring network. The purpose of this Web site is to help ensure farmers and producers have easy access to the best information and guidance on soybean rust.

Since Asian soybean rust was first discovered in the continental U.S. in November of last year, U.S. soybean futures markets have taken a wait and see attitude. While future markets have shown increased volatility in recent months, most of this volatility has been in the 2004 crop contracts and less in the new crop contracts and can be largely attributed to market expectations concerning Brazil and China, not soybean rust in the United States. This shouldn't be surprising. It is early in the soybean growing season and to date observations indicate that soybean rust is confined to isolated areas of over wintering kudzu in central Florida.

As the growing season unfolds, however, much of the market's focus will be on the monitoring of the hundreds of soybean sentinel plots throughout the soybean growing regions in the U.S. market reactions will largely reflect the extent and severity of the disease.

On March 30, USDA published its annual prospective plantings report. For the Nation as a whole, soybean producers intend to plant 73.9 million acres in soybeans in 2005, down 1.3 million acres from last year's record high levels. This decline was less than many in the trade had expected and reflects changes in both economic conditions, as well as the threat of soybean rust. The largest percentage decline from 2004 levels were in States where soybean rust had been detected in 2004, Florida, Louisiana, Alabama, Georgia, and South Carolina.

The survey also showed that the awareness of soybean rust was high, nearly 90 percent of the farms intending to plant soybeans were aware of soybean rust, an indication that the vast majority of soybean farms are prepared to combat rust if necessary. Of these farms, 5.4 percent reported that because of soybean rust, they would reduce the number of soybean acres planted in 2005. Again, most of these farms were located in the areas where soybean rust had been detected last fall.

Based on Brazil's experience, we know that where the disease is found, producers can and will manage the disease. Average costs have been estimated at $25 to $30 per acre. Put this in perspective for a farmer with an expected soybean yield of 50 bushels per acre, this adds roughly 50 to 60 cents per bushel to their cost. However, for someone with an average yield of only 30 bushels per acre, the added per bushel cost could top $1. For some producers, particularly those producers in low yielding regions, these costs may force them to seek more profitable cropping alternatives.

Crop insurance can provide protection producers. Soybean rust is considered a covered peril under the crop insurance policy. However, producers must follow good farming practices. USDA's risk management agency encourages affected producers to seek and follow recommendations of agricultural experts such as extension agents and certified crop consultants to control soybean rust. RMA also recommends that insured producers document the date of discovery of the disease, any recommendations received from agricultural experts, and actions taken regarding the application of appropriate control measures.

Lastly, I note that while participation in th crop insurance program is high in most parts of the country, many soybean producers are insured at minimal coverage levels, particularly in those areas that currently face the highest risk of soybean rust. For example, in 2004, 89 percent of planted acres in Louisiana were enrolled in the crop insurance program; however, more than two-thirds of this acreage was enrolled at the CAT level. This would suggest that many of these producers could suffer significant losses but still not meet the deductible on their insurance policy. I might note that that is 2004 data. We do not yet have sign up data for 2005.

That concludes my testimony. I look forward to answering your questions.

[The prepared statement of Mr. Glauber appears at the conclusion of the hearing.]

Mr. LUCAS. Thank you, Doctor.

The Chair now turns to Mr. Jones.

STATEMENT OF JIM JONES, DIRECTOR OF PESTICIDE PROGRAMS, OFFICE OF PREVENTION, PESTICIDES AND TOXIC SUBSTANCES, U.S. ENVIRONMENTAL PROTECTION AGENCY

Mr. JONES. Good morning, Chairman Lucas and Chairman Moran, and members of the subcommittee. I welcome the opportunity to talk to you this morning about EPA's efforts to prepare for and minimize the potential impact of soybean rust for U.S. soybean producers.

EPA is responsible for evaluating and registering pesticides so that effective means of pest control are available which meet the Federal Insecticide, Fungicide, and Rodenticide Act and the Federal Food, Drug, and Cosmetic Act Safety Standards.

In attempting to make these determinations, EPA requires literally dozens of studies to evaluate a pesticide's potential impact on public health and the environment. In addition, EPA establishes tolerances for pesticide residues on food and feed. Known throughout most of the rest of the world as maximum residue limits or MRL's, tolerances are the legal limit of a pesticide on a food item.

The pesticide registration and tolerance setting process typically takes about 2½ years for a new active ingredient and a little over 1 year for registering a new food use to a previously registered active ingredient. Some pest situations, however, won't wait that long. Therefore, Congress has authorized an emergency exemption process outlined in section 18 of FIFRA. Under this provision, other Federal agencies or an authorized State official may request that EPA allow growers the use of an unregistered active ingredient or an additional use of a registered pesticide to respond to emergency conditions. EPA works very hard to evaluate emergency exemption requests within 50 days or perhaps more importantly before the emergency conditions actually exist.

Underpinning both full registrations and emergency exemptions is our rigorous assessment of the potential risks imposed by using pesticide products. Before an emergency exemption can be granted, EPA must conduct risk assessments for dietary exposure, occupational exposure, and environmental impacts.

In a typical year, EPA receives approximately 500 emergency exemption requests from State and Federal agencies. Virtually all of these requests involve the use of a single pesticide active ingredient on a particular crop, although there are often multiple States involved.

Soybean rust was first brought to EPA's attention in 2002 by our colleagues at USDA. Due to the dearth of pesticides registered in the United States in the time and the likelihood this disease could have potentially devastating effects on U.S. soybean producers, we immediately began working with the USDA, our State partners, pesticide manufacturers, and soybean producers to change that situation.

Due to the potential magnitude of a possible soybean rust infestation, EPA became convinced of the wisdom of authorizing multiple active ingredients to control soybean rust. Working with the USDA, soybean producers, manufacturers, and the States, we identified products for which either full registration or section 18 emergency exemptions were feasible.

By the time soybean rust first appeared in the United States in November of 2004, EPA had already approved section 18 exemptions for three active ingredients used in six unused products in 25 States. Today, just 5 months later, there are nine active ingredients approved for use in soybeans to control rust, developing 19 different in use products in 32 States. Four of these nine active ingredients are registered for use in soybeans and five have been authorized under our emergency exemption program.

Recently, EPA has received additional emergency exemption requests involving five active ingredients that aren't currently registered for any use in the United States. Because these are chemicals that EPA has not previously reviewed for any other use, EPA must be creative in evaluating the safety of these products and the time needed for this use season. We are already in touch with our colleagues and pesticide regulatory authorities around the world to determine if EPA can utilize their assessments in making our safety determination.

In closing, I would like to say that EPA has worked hard over the past few years to ensure that there are an adequate variety and supply of pesticide products for growers to control soybean rust. We are driven to provide these registrations in a timely manner because we understand it is important to have safe and effective pesticide products available. We look forward to continued collaboration with Congress, our Federal, State, and private sector partners to ensure the impact of soybean rust is minimized for the food supply, the economy, and human health in the environment.

Thank you.

[The prepared statement of Mr. Jones appears at the conclusion of the hearing.]

Mr. LUCAS. Thank you, Mr. Jones.

Dr. Glauber, do you think that the soybean markets have enough access to timely and reliable information to prevent unnecessary, some might describe large speculative swings, whatever since this information about rust outbreaks as they occur certainly will have an affect on prices and how the markets will react?

Mr. GLAUBER. I do. I think that like any new thing, the market is going to have to sort through the information that it is receiving. The thing that is striking, most striking I think is how much information there is available right now on the Web site. One can go up on a daily basis and get forecasts. North Carolina State, for example, puts out forecasts on potential movements of spores on a daily basis. And I think as again as the market follows these sentinel plots and the reporting on those, the scouting reports, you will see the market begin to try to synthesize that information just like it does any weather market I might add.

And so I do think the information is actually quite good and the market will be trying to assess this. But again, we are still very, very early in this and so as this emerges, we will get a little better feel for that.

Mr. LUCAS. Mr. Jones, I have asked this question primarily of you and perhaps anyone else on the panel who would like to touch on it. Are the fungicides used to control rust in other countries basically the same that U.S. producers have access to?

Mr. JONES. A number of the products that are available now in the United States through our registration or section 18 Program are products that have been available in Brazil in particular, however, there are a couple of products that were used in Brazil over the last few years that have not been authorized in the United States.

Mr. LUCAS. Because that has always been one of the classic comments from my constituents back home was of this issue or other issues about how the battle to fight these kind of things differs from around the world. You mentioned the application approval process on the fungicides. Have the most recent applications for soybean rust treatments been approved as far as you know, Mr. Jones?

Mr. JONES. If you are referring to, there are a group of 5 active ingredients that are currently not registered at all in the United States that came to EPA on March 30, that group. They have not been and as I mentioned in my testimony, we are actively working with colleagues around the world to see if their safety assessments can be used by the EPA in making our determinations here.

Mr. LUCAS. The Chair now turns to Mr. Pomeroy for any questions he might have.

Mr. POMEROY. I would like to ask a question of Dr. Jen.

Doctor, it is very nice to see you again and I appreciate your leadership, ongoing leadership in ARS. You note in your testimony that you were at the center really of the effort to proactively and preemptively respond to this crisis including establishing a line of first attention and that you will continue an aggressive and comprehensive soybean rust research and education strategy. That is precisely within the strike zone of what we would hope you would be doing within the ARS, yet I have been very alarmed at the budget cuts the administration has recommended that would impact your capacity, to cite one place, Fargo, ND, a site you and I visited summer before last, I think it is a $3 million hit to that one center alone.

Now we don't have a Soybean Rust Research Program under way there, although we have a number of other important projects that would be severely disrupted if Congress would go along with that recommendation. I am wondering whether you anticipate the need to reduce the resources you are applying to the soybean rust problem in light of the budget cuts advanced by the Office of Management and Budget in the administration.

Mr. JEN. It is nice to see you again as well, Congressman, too in that.

As you know, the President's budget in the big picture is trying to reduce the Federal deficit. USDA is part of that big picture and research is part of the USDA's big pictures. As far as we are able to, I think dealing with soybean rust, the mission area's budget actually has requested increases in the 2006 budget. In fact, from 2004 to 2005, the research dealing with soybean rust has been doubled in the RS budget. In 2006, we have requested more. As to overall research budget, there is a small leeway for us to switch parties from year to year in doing some of that.

Fundamentally, I think our crops research programs will be affected by a very small cut in the research budget really. Actually compared to the other agencies, we were much better off, sir.

Mr. POMEROY. I am pleased to hear that although I—and I understand, you do not have full freedom of speech might I say as a scientist when it comes to opining on the wisdom of cutting agricultural research. To me, it looks like you are eating your seed core. Not you but the USDA policy of eating your seed core if you whack research and I think that the rust issue before us is a perfect example of why we cannot back down from trying to technologically and scientifically maintain our edge in the world of what has become an extraordinarily competitive global market.

So I do appreciate very much the substance of work you are doing with in ARS under your leadership, Dr. Jen and wish to help you however I can relative to preserving the priority funding for agricultural research. This is no place to impact, I think our efforts to stay competitive in the global marketplace. And I thank you and yield back.

Mr. LUCAS. The Chair thanks the gentleman.

The Chair now turns to the gentleman from Kansas, Mr. Moran.

Mr. MORAN. Mr. Chairman, thank you, very much.

Dr. Jen, just a bit of follow up to the gentleman from North Dakota's question. Has there been a reassignment of any resources at USDA for research directed at the issue of Asian rust? Have you created a focus on Asian rust as a result of its discovery in Louisiana several months ago?

Mr. JEN. I think we have been anticipating more of an emphasis into the soybean rust research and because of the fact that we did get fundings in 2005, a budget to emphasize that yes, we have put more emphasis on research, on this soybean rust research on ARS's part.

Mr. MORAN. Where is that research ongoing and what is its nature?

Mr. JEN. I would probably have to get back to you in terms of all the research that is going on I think in this area. A lot of them are in the midwest States, Illinois, Iowa, and possibly Kansas, as well, sir.

Mr. MORAN. My question wasn't that provincial, although I would be please to see if it was occurring at Kansas State.

I am somewhat interested in knowing whether the focus of that research, Doctor, is to eliminate the threat of Asian rust in the United States or whether it is all directed toward how do we respond once it is discovered?

Mr. JEN. I think the long-term solution from a research point of view of this type of, I think fungus disease is to develop genetically resistant varieties on that.

And one of the research that we have done is really trying to map, partly map the genomes of this pathogen so that we can understand and try to find markers that we are able to find genetic resistant variety because the existing varieties at this time we haven't seen any with the preliminary screening that we have not seen in that. But we are looking all over the world actually of potential resistant varieties in that and try to bring them in.

So we are tackling it both from the traditional genetic research of finding the gene somewhere in, that type of breeding, as well as, probably attaching it from a more modern way of doing it sort of genetic research.

Mr. MORAN. Is there cooperation between USDA and EPA in research dealing with chemical fungicide application?

Mr. JEN. We have been working in testing the fungicide's effectiveness efficacies, I think because of the fact we up until now we don't have any in this country so most of these testings that we were doing is in foreign countries like in Brazil, Argentina, and I think we have some done at South Africa, as well.

Mr. MORAN. I thank you, Doctor.

Dr. Glauber, when I was in Louisiana, my concern was in listening to USDA officials that we had the research, the extension folks there and they were talking about the need to gain additional information to know what to recommend to a farmer. You had FSA officials there saying that in the business plan and on the financing side of agriculture, we are going to have build into the operation plan of the farmer the cost of additional fungicide applications, additional costs associated with treating Asian rust. And then you had RMA there to which we were talking about how do we make certain that crop insurance is applicable that the farmer receives an indemnity for loss. And the answer was as long as the farmer is doing what is expected, what is reasonably required to respond to the rival of Asian rust, then crop insurance will come into play. And the scientist is saying, the extension folks saying, well we are not sure what advice that should be and I was there early shortly after discovery.

My impression is that USDA does have its act together. Is coordinating these kind of questions and issues among yourselves so that when soybean rust is discovered someplace in Kansas, we are not going to have a farmer calling us saying I did everything I thought I was supposed to do and then crop insurance saying but they didn't do enough, therefore they are not covered. We worked our way through that scenario?

Mr. GLAUBER. That is my impression. And I understand you are having a hearing next week on crop insurance and I know Dr. Collins will be up and he and I have been talking about this a bit. I know RMA has posted a number of notices on their Web site with increasing detail in terms of what is going to be expected of the producers.

I think on March 28 if I am not mistaken, they sent a letter out to the insurance providers with specific information in terms of what constitutes a good farming practice with attachments and instructions to get this out to the producers. They have also been working with the extension service and others to train crop experts. These would be the people farmers would be relying on to tell what constitutes good farming practice.

The other thing is they have been very clear with the producers at least on the Web site with their outreach activities to document as much as possible because you are right, I mean, for a producer to be sitting, trying to decide what to do to know one, to control the disease, and the other thing to make sure whatever he is doing

he qualifies for an indemnity payment I think is credible. And particularly with the costs involved, you are absolutely right.

My impression is—and again, you will have a better opportunity to talk to RMA about this but just in the last month alone there have been several posting on the Web site with detailed information. I think far more information is up on those Web sites back in December and January. I know the FCIC Board of Directors have been asking those questions but I think there is a lot more information up there right now. And again, with instructions to the insurance providers and to the producers themselves.

Mr. MORAN. Has there been any estimate of indemnity losses, of losses of soybean production that would be subject to crop insurance indemnity? Is that known by you?

Mr. GLAUBER. Due to soybean rust?

Mr. MORAN. Yes.

Mr. GLAUBER. No, not right now. And I think that yes, again it is so preliminary, we will have a better idea once we get into the growing season and as the crop starts immerging in other areas we will have some idea about what the incidents might be and again the severity. The critical thing of course and as everyone has said up here is getting it early, getting it at first instance, spotting it, and then applying the fungicides and that is going to be the real critical thing here.

Mr. MORAN. Thank you for your perspective and helping me prepare for next week's hearing.

Mr. GLAUBER. OK.

Mr. LUCAS. The Chair turns to the gentleman from North Carolina.

Mr. BUTTERFIELD. Thank you, Mr. Chairman.

Mr. Chairman, I want to thank you very much for holding this important hearing today and I particularly want to thank the witnesses for coming forth today with your testimonies.

I am from eastern North Carolina and am one of the newer members of this committee and so I am having to learn so much about this issue but I thank you for your testimony and I thank you for the information that you have provided.

It seems to me that these spores have now found in eight southern States, North Carolina not being one of those eight southern States but I suspect that it is just a matter of time before they come over to my region. And so I just want to thank you on behalf of the people of eastern North Carolina and all of the State of North Carolina for the work that you are doing and for the research that you are engaged in.

I just want you to know that we are deeply concerned about this issue and we stand ready to help you in any way that we can. Certainly North Carolina State University has been very proactive in this issue and they are on the cutting edge of research and I just want to encourage you to continue to work with North Carolina State University because they have a profound interest in this issue. So thank you very much for your testimony. I yield back to balancing my time.

Mr. MORAN [presiding]. I thank the gentleman.

The gentleman from Texas, Mr. Conaway is recognized for 5 minutes.

Mr. CONAWAY. Thank you, Mr. Chairman.

Gentlemen, thank you for coming today. Being one of the newest members on the Agriculture Committee, I get to ask the ASR Asian soybean rust one on one questions.

Mr. Jones, let me ask Mr. Lucas's question a little bit differently. Are there treatments in pesticides or fungicides that the industry or growers want that you guys have turned down? Can you help give a sense of the ratio of the ones that you approved versus not approved on these questions?

Mr. JONES. We haven't turned any down. As a matter of fact, when we first heard of Asian soybean rust a few years back, it is now almost 3 years, we took our lead from the growers, the USDA, and the soybean growers, USDA, and the companies about what they thought were the most important products. All of those products that were brought to us that 2 years ago have been approved.

Then in March 30 about a month ago, a couple of States came to the EPA and said there are some additional active ingredients we would like the agency to give consideration to. We have not made decisions on those as they are what I refer to new active ingredients. They have never been reviewed before in the United States. So we need to slog through all of the information to see if we can make the appropriate safety findings.

Mr. CONAWAY. OK. We don't have any cotton, I mean any soybeans growing in west Texas but we do have a lot of cotton. Are there risks of transfer of this Asian rust menace to other cash crops or other crops that are grown?

Does that make sense, Dr. Jen, or anybody? Is this just risk to soybeans or can it transfer to other species?

Mr. JONES. Well I will pass this to our plant pathologist but I know dry beans for example or some pea and lupines if I am not mistaken are susceptible but I will let Matt.

Mr. ROYER. Let me try to summarize the information we have to date. There are many different species that can be infected by the organism. Perhaps a handful may be important in the field environment. I think time will tell what the true impacts will be in the United States. I would like to point out that there is special concern with dry beans especially in four States this year. And we have a pretty good program of sentinel plots that we have agreed to with those four States.

Mr. CONAWAY. Would you flesh out the phrase sentinel plots for me? I think I understand what it is but how do we keep those from spreading the disease elsewhere?

Mr. ROYER. Sentinel plots are basically portions of fields or special plantings that are generally earlier than usual. They are designed to detect soybean rust. They have a second purpose which is to observe spore production or disease intensity over time. So what these plots will do is help us understand more about the epidemiology and about the impact of soybean rust and also to measure its progression perhaps from the southern States to those to the north.

Mr. CONAWAY. It is windborne spores. How do we protect surrounding countryside from infection?

Mr. ROYER. Again, the protection is one of a web based delivery system to report the observations of rust in the United States. It

is to provide guidance on fungicide usage but as much as anything, it is an information delivery system so we can understand as much as possible about rust to learn from it, especially this year and in future years.

Mr. CONAWAY. Thank you, sir.

Mr. Chairman, I yield back my time.

Mr. MORAN. Thank you, Mr. Conaway.

The gentlelady from South Dakota is recognized.

Ms. HERSETH. Thank you, Mr. Chairman.

And I would like to echo the appreciation to those on the panel today that are testifying and for the chairman and others for calling the hearing and investigating the challenges that lie ahead with Asian soybean rust.

I have just a couple of follow up questions in wanting to reiterate what Mr. Pomeroy and Mr. Moran have identified as the importance of how we allocate limited resources to research in this area as it relates to different parts of the country that have been affected and those that are at risk. But we know that there are studies showed over winter in Florida. But so far it hasn't been determined that it can over winter in a hearty climate like we have in South Dakota and even more so in North Dakota so there are some benefits to negative 20 degrees below temperatures, right?

But my question is have you found in the research either that we have done in the southern States here or anywhere else in the world that in addition to the spores being spread by the wind, does then it manifest itself differently based on region, based on climate, as well as been exacerbated by the types of winds that we experience in the Great Plains and just really what the state of the research is right now for the northern Corn and Soybean Belt?

Mr. JEN. As far as we know, that there is I think we have only found that the spores of the fungus is going to be carried by wind and transferred on that. And they have been fairly resistant in terms of weathers in that. We do not know whether it will happen here in the United States, however, in Brazil which does cover quite a large area, when it was first discovered within 2 years it was spread throughout the whole country.

Ms. HERSETH. Right. But I don't know that there is any place—and I guess Brazil isn't going to help us out much because I am not familiar with any climates in Brazil that would mirror those in the northern Great Plains. But is there anywhere else where it has been identified in other countries that would help us here?

Mr. JEN. I would probably have to get back to you on that answer because right off the top of my my head, I do not. Burleson Smith, do you have any information?

Mr. SMITH. There are indications that in South America there are areas of Argentina for instance that are more similar to areas of the Midwestern United States. By in large, the observation has been that the disease severity has not been as great in those areas as in the humid and moist areas for instance in Brazil.

This disease is highly weather dependent and so we can expect different conditions each year in terms of disease development and that is why it is going to be so important for us to be able to monitor the progression of the disease and to provide information to growers to allow them to make decisions as to whether or not they

do need to make applications or to decide whether or not they are at a low risk of incurring the disease in their local area.

Ms. HERSETH. Thank you. And much of the testimony today focused and some of the questions on the treatment here in the short-term, the chemicals that are available, the fungicides that have been approved, let us talk a little bit about the long-term. And there was some discussion about the disease resistant varieties and where we are in that research. If you could elaborate on where we are in that research, how far away we might be, and of course, I would like to see some of the varieties that are developed to be in the public domain.

And Dr. Jen, in your written statement, as well as your addendum and some of what you have shared today, it does sound like there is some research going on with the land grant universities but I would like to know the mix of what is going on in the public domain versus the research being done in private companies and your thoughts from USDA's perspective on how we can facilitate more of this research with the land grant partners.

Mr. JEN. Thank you. National scope, therefore, it is essential, I think the public research money be devoted to it as much as possible to try to come up with a resistant varieties in one form or another. I said earlier that we are taking it fairly aggressively through most the traditional genetic resistant variety which is screening a lot of the existing variety and see if some of them have some resistance and you start to trying to transfer those through breeding and crossing and trying to develop something that will be totally resistant. And on the other hand we do try to through the modern genomic research to see whether or not we able to find markers and insert some resistance into existing varieties. I think at this time, we are not at the stage where we have either one of them being totally successful yet. It is a project in progress and we are doing it very aggressively in a sense.

The other thing is we do not understand enough about this disease yet in the different conditions, weather conditions. I was just told that more than likely the spore would not survive, I think the winter in the northern Plains area where you are, however, if it does happen during the summertime the wind carries from the south to the north during the summertime, it will manifest itself to the point that you will have economic loss in that.

I am not able to answer your question really to what the private industry is doing in their research.

Mr. MORAN. Thank you.

We are honored to have the committee chairman, the gentleman from Virginia is recognized for 5 minutes or longer, sir.

The CHAIRMAN. I will try not to abuse that. I thank the gentlemen, both chairmen for holding this hearing.

I think this is an important issue and it is one that is an impending crisis. So to get as much information out as possible, as quickly as possible is a very good thing.

I don't have the comfort of having many subzero temperature days as North Dakota or South Dakota might have but I think for the most part I am grateful for that. However, I have noted that my farmers in Virginia have already cut back on soybean production.

The reports that I received just last week indicated that the expectations for planting this year were going to be many thousands of acres less in soybean than have been the case in recent years. And I am wondering if any of you could comment on that and tell me whether you think that is a reasonable decision to making this early.

Is it possible that it could arrive in Virginia in this current planting season or is this an overreaction to the news?

Mr. GLAUBER. Well, you are right. Virginia farmers, at least according the planting intentions report indicated they intend to plant about 10,000 fewer soybean acres this year. That is about 2 percent less than what they did last year. I understand that we had record yield or record acreage last year. Soybean prices a year ago were quite high at planting time and so there were a lot of incentives to plant and they have been lower this year particularly early, at least at planting time this year compared to where they were a year ago so there is plenty of price factors that may be playing a role as well.

Generally, I think the survey indicates that about 86 percent of the Virginia farmers had some awareness of soybean rust which is fairly high, fairly close to the national average. And generally, when NASS asked that question not surprising where you really found those States were the major soybean producers producing States, those producers knew all about soybean rust and those States in the affected areas generally had very high awareness levels of soybean rust. Generally, the Southeast was one area just as region as a whole where producers did say that soybean rust was going to influence their planting decision. So it wouldn't surprise me that they have taken that into account.

Again, at the time you are making planting decision particularly right now because we haven't really had incidents of soybean rust, you really are trying to factor in a lot of uncertainty in terms of your decision, in terms of whether or not you are going to have to apply fungicides, et cetera. And so I think that if I were looking at the situation, I would say a lot is based probably on prices but I think it is the incidents of this disease it grows that it will influence producer's decisions.

Mr. JEN. If I may add, Mr. Chairman, just a little bit on the answer. Up to 89 percent of the soybean farmers that is aware of, soybean rust, only 11 percent of these producers consider soybean rust a factor in determining their planting in that.

The CHAIRMAN. And what sample was that taken from?

Mr. JEN. It is the NASS survey.

The CHAIRMAN. But that is not the survey. What I am referring to was a report about Virginia and it specifically cited soybean rust as a factor. I am sure the economic circumstances also are a predominant factor but a factor in their decision to cut back on planting. Is there any indication that soybean rust is going to arrive in Virginia this quickly?

Mr. JEN. It will mostly depend on the weather, sir.

The CHAIRMAN. What is the closest place now, Florida?

Mr. JEN. Right now I think it is. Burleson, do you have any latest information?

Mr. SMITH. I believe the information on the Web site is indicating that Florida is still the area where the disease is located on wild host but to follow on Dr. Jen's comments, it is very likely that the eastern seaboard of the United States would be a possibility in any given season because of Florida being a source of inoculants.

The CHAIRMAN. Thank you.

Let me ask Dr. Royer, I am very interested in the sentinel system and what you are doing there to detect it. What is APHIS's plan for eradication of it or control of it? A tougher question.

Mr. ROYER. Sure. The APHIS has no plan for eradication. We have had lots of discussion with scientists both in the United States and abroad in the past couple years. What we have learned is that spores are carried long distances, transcontinental, transportive spores, and any effort to eradicate it would be ineffective. It simply spreads too quickly. And our whole strategy has been one of providing information for timely disease management.

The CHAIRMAN. If I may abuse my privilege, just one more question, a very basic one that everybody, I think would like to know.

Dr. Glauber, I know you touched on this in your testimony but if a producer is going to make one call to a local USDA person to discuss his or her options, who should they call? And I know that the Web site is a great first step but some producers may not have web access. What should farmers do to prepare themselves to deal with rust?

Mr. GLAUBER. Well I think local extension agent would be a good source because those are the people that will be telling you and advising on terms of what to do about the presence of rust and how to scout. And there are also obviously crop consultants if those are available in the area. You are right: Not everyone has access to the web but I know APHIS and CSREES have spent a lot of time trying to train extension agents in terms of the best management practices, good farming practices in regard to soybean rust.

The CHAIRMAN. Thank you, Mr. Chairman.

Mr. MORAN. Thank you, Mr. Chairman.

The gentleman from Minnesota, Mr. Peterson.

Mr. PETERSON. Thank you, Mr. Chairman.

I apologize for having to step out and if I am asking something that has already been covered but I was reading somewhere in here where the estimate is that it costs $25 an acre to treat this. Is that correct?

When I was in Brazil, they had experienced this. It was a year ago or whenever it was and the people that had sprayed, I thought they told me the cost was like $4, $5, $6 an acre because I remember having the discussion that some people took a chance and didn't spray and they got wiped out and the guys that did spray had a good crop. But it seemed me they told me that the cost was between $4 and $6 an acre so why would it be so much higher in the United States compared to what it is in Brazil?

Mr. GLAUBER. Well there are two things to point out. One is there is variance in these prices for—depending on the chemical that is applied. And so when we typically talk about the cost of soybean rust, we typically give a range in the order of $15 to $30 per acre so a lot will depend on what is available at the time. The other thing is the application cost itself. You have the chemical but

then you also have to apply it and I think that is probably where our costs are higher than what they are in Brazil.

Mr. PETERSON. Why?

Mr. GLAUBER. I just presume labor and things like that, some of those costs are slightly higher.

Mr. PETERSON. Well these guys were spraying with agricultural caps that looked just like the ones in my district.

Mr. GLAUBER. Yes.

Mr. PETERSON. And I am a pilot. I was looking into airplanes and they cost just as much in Brazil as they do in the United States so I am not sure there would be much different.

Mr. GLAUBER. Well all I can say is I am using the cost estimates that have been used by a lot of the land grants and the extension service, people who have tried to put together those costs based on machinery and chemical costs. I believe that is what ERS when they did their report back in May of last year, they did a survey and came up with roughly $25 per acre.

Mr. PETERSON. Are you working in any kind of relationship with Brazil to try to use what they have learned or what their experience is to help us deal with it?

Mr. GLAUBER. Matt, do you want say anything?

Mr. ROYER. We have been talking to the researchers all along trying to learn about their experiences with timing and what types of products work best in which situations. We have been talking to them about sentinel plots and how we can put in place a system in the United States that borrows from their experiences. I think I defer to Dr. Jen to maybe elaborate some more though.

Mr. JEN. Well I think we have been working with the Brazilian scientists in terms of trying do field testing in Brazil on different fungicides and all that. And we have learned for example from them that the timing of the application is actually very, very short. That is why we put a lot of emphasis and preparedness in this country of early detection and the correct identification because of the fact that it looks like a lot of other possible disease as well in that sense.

So one of the things we did at ARS is a real time rapid test which can very quickly decide what it is in that and hopefully you can do, I think application within that 5 days window.

Mr. PETERSON. Yes. Well I have been to some meetings in my district where they have talked about this. I think we are doing what we can but I think it is going to be a problem because if it does show up and in terms as I understand it, you have to get out there right away and there is some question whether we can even get in front of it. I think you are going to have a heck of a time getting that stuff on because there just aren't enough airplanes and maybe not enough chemicals and whatever else so I know everybody is working on this but it makes me nervous. The thing that we have got going for us that the wind doesn't blow our direction from Florida very often so hopefully we will be out of the path unless some kind of freak storm happens, so thank you.

Mr. MORAN. Thank you, Mr. Peterson.

The gentleman, the ranking member, Mr. Holden from Pennsylvania.

Mr. HOLDEN. Thank you, Mr. Chairman.

I apologize for being late. I had a mark up on another committee. And I have an opening statement that I would like to submit for the record.

I also have some questions about sentinel plots and research that have been already been asked and answered. So I guess I would just associate myself with the remarks from the gentleman from North Carolina who expressed his desire to work the panelists as we try to address this problem.

As was mentioned it has been isolated in Florida so far but it was just stated a few minutes ago that the eastern seaboard should be of concern depending on the weather and that is a concern of Pennsylvania. Pennsylvania is in the soybean growing region of the country. As a matter of fact, we had a pretty good yield last year tying us for second place nationwide so I do want to work very closely with the department and all others to see that we can address that.

So, Dr. Royer, with that, I guess my one question would be is does the department feel that it has authority under current statutes such as the Plant Protection Act to ensure supplies of fungicide are widely available or do we need to do something else? Or anyone else in the panel.

Mr. ROYER. We have looked at the fungicide availability question and we have been in discussions with industry. Our understanding is that the issue of fungicide quantity and availability is really not an issue that we would address under the Plant Protection Act. Industry has told us that there is sufficient supply to control soybean rust this season.

Mr. HOLDEN. OK. Anyone else?

Mr. SMITH. Allow me to say that the approach that we have taken was since July 2002 was to work as Mr. Jones indicated with industry, with growers, and with the States in order to assure that the largest number of efficacious products would be available. In so doing, being able to offer the greatest opportunity for growers to have access to the tools that they need to control this or to manage this disease.

Mr. HOLDEN. Thank you.

Mr. Chairman, I have some time left and the gentleman from North Dakota has a follow up question.

Mr. MORAN. The gentleman from North Dakota is recognized.

Mr. POMEROY. I thank the chairman.

Congressman Peterson's questions, Dr. Glauber made me think. I am wondering if some of this price differential other countries have with our costs in fighting this disease are related to differential in pricing of imports, pesticides, herbicides, I am going to have to leave so I won't get to pursue this with Mr. Vroom directly, although I know he is on the next panel that would probably want to speak to this. Have you noticed the pricing patterns relative to the fungicides, herbicides, whatever they are using to fight gorge and seeing whether they are fairly consistent across countries or are they doing as we have had evidence in the past in this committee doing market research to determine what the price bears and then essentially surcharging North Dakota farmers among the highest rates in the entire world for these pesticides?

Mr. GLAUBER. Well it is a good question. Frankly, I have not compared prices. What I did do while I was at—right after both answering the last question, I went back to some of my notes and I will note that at least in some of our anti-shay reports they have been reporting similar cost estimates for Brazil on the order of $20 to $25 per acre so without seeing the data, I don't know how different they actually are. And understand that there are scale issues. Some of those large operations in Brazil where you are flying over several miles, the application cost may be somewhat less than if you are doing a smaller plot. So trying to get directly comparable data is important but in regard to your specific question, I don't have the answer.

Mr. POMEROY. Would it be possible to undertake a survey not necessarily an exhaustive one and not one that would be all that involved but a survey of the primary elements used to fight this disease and compare pricing in the countries that are engaged in vigorous disease control programs?

Mr. GLAUBER. We certain could check with the attaches to see if that is readily available to do some—again, nothing scientific obviously to design this sort of survey that you would want the confidence in but I think that certainly we could request the post to provide information on that.

Mr. POMEROY. Your research, I mean, I could probably do it out of my office. I mean, you call down to the store and say how much are you charging for this.

Mr. GLAUBER. That is right.

Mr. POMEROY. And so if you could bring us some spot information that would give us evidence of whether there is no pricing discrimination or whether there may be pricing discrimination relative to what U.S. farmers are paying relative to world prices, that would be very, very helpful.

Mr. GLAUBER. Yes, well I will get back to you on that.

Mr. POMEROY. Thank you very much.

I yield back, Mr. Chairman.

Mr. MORAN. Thank you.

The gentleman from Louisiana, Mr. Melancon.

Mr. MELANCON. If I could follow up on Mr. Pomeroy's question. I would like to know—and of course doing the NAFTA negotiations, the agricultural community in Mexico are allowed to continue for at least 15 more years using chemicals that our farmers have been weaned off of 20, 25 years ago, chlordane and other stuff. Would you also check not just for the pricing differential but would check to see what chemicals are still allowed down there that are banned in the United States because I think we have found and I may be wrong, that those chemicals are a lot cheaper than the newer chemicals that we are getting into in this country unless you have some knowledge of that right now.

Mr. GLAUBER. No, we can check into that for you though.

Mr. MELANCON. Thank you, Mr. Chairman. I appreciate it.

Mr. MORAN. Thank you. With that, that concludes the testimony and the questioning of our first panel. We thank you for your presence with us today and I would ask the second panel to come to the table.

That second panel consists of Mr. Neal Bredehoeft, president of the American Soybean Association from Alma, MO; Mr. Jay Vroom, president and CEO of CropLife America; Mr. Steve Dlugosz, chairman, Certified Crop Advisor Program, Indianapolis, IN on behalf of the Certified Crop Advisor Program and the American Society of Agronomy; and Mr. James D. Thrift, vice president of Regulatory Policy and Corporate Relations, Agricultural Retailers Association, Washington, DC.

Gentlemen, welcome to the joint meeting of these subcommittees. Mr. Bredehoeft, we will begin with your testimony. Thank you very much.

STATEMENT OF NEAL BREDEHOEFT, PRESIDENT, AMERICAN SOYBEAN ASSOCIATION, ALMA, MO

Mr. BREDEHOEFT. Good morning, Mr. Chairman and members of the subcommittees.

I am Neal Bredehoeft, a soybean farmer from Alba, MO, currently serving as president of the American Soybean Association which represents 26,000 soybean producers. Additionally, I had the opportunity to visit Brazil recently to view soybean rust firsthand.

Mr. Chairman and members of the subcommittees, let me first thank you for holding this hearing. Soybean rust is a top priority of the American Soybean Association. During the first 2 years, ASA has been the leader in soybean rust education and nearly 2,000 producers have participated in seminars we have hosted in cooperation with the USDA and industry partners. Through print, radio, and Internet, ASA has reached more than quarter of million U.S. producers over the last 2 years. ASA has worked cooperatively with governments in all sectors of the soybean industry in preparing for the arrival of soybean rust.

I would like to express our appreciation to the many agencies of the Federal Government that we have worked with including USDA's APHIS, Office of Pest Management Policy, Agricultural Research Service, Cooperative State Research Education Extension Service, Risk Management Agency, and the Foreign Agricultural Service. We appreciate that earlier this month, USDA provided funding for soybean rust surveillance and monitoring.

The EPA deserves recognition for their work to register fungicides, especially for their attention to soybean rust before it was confirmed in the United States. We appreciate that Congress had provided just over $1 million on research on developing rust resistant varieties of soybeans in the fiscal year 2005 Consolidated Appropriations Act.

The contributions of soybean farmers in preparing for soybean rust have been significant and played a critical role in getting U.S. research off the ground. Through national and State checkoffs, soybean farmers have already contributed nearly $2.7 million of their own money to rust research and monitoring.

The confirmation of rust last November gave farmers and industry the chance to focus on preparedness over the winter. I am pleased to say that we are better prepared to manage soybean rust as a result of these efforts.

Still there is much work ahead of us. ASA continues to have great concerns that despite the time and effort putting into prepar-

ing for soybean rust we may still see the following outcomes on some farms or in some areas of the country. First, detection in USDA confirmation will come too late for effective treatment to prevent significant yield losses. Second, fungicide supplies will be inadequate or improperly distributed. And finally, shortages of application equipment or custom applicators will occur. Another area of serious concern is Federal crop insurance. Soybean farmers have ruled out that despite our best efforts to protect ourselves through the insurance program out losses will not be covered and disaster assistance will be necessary.

I would like to focus on two issues of a paramount concern to ASA: fungicide availability and soybean rust research. We make great strides in making sure a variety of fungicides are registered to treat rust. However, we still do not know if there will be enough fungicides available or they will be in places where farmers need them. Rumors abound in the countryside about shortages and hoarding. Farmers in the South question whether the supply will go the Midwest and vice versa.

Of course, private industry must make decisions about production and distribution based on their own projections and no company is in the charity business. Yet we fear that if rust is widespread this year, meaning 30 to 40 million acres out of the intended 75 million acres to be planted, we will be in an emergency situation with fungicide availability. Some and perhaps many farmers will not be able to buy them in time.

ASA continues to believe that only the Federal Government in this case, the Department of Agriculture can undertake the task of coordinating with the private sector to ensure a sufficient supply of fungicides. ASA strongly encourages USDA to coordinate with manufacturers and distributors to determine what supplies are available and make sure they are accessible to farmers across the country.

Second, ASA asks that Congress and administration increase funding for research efforts on soybean rust. We have asked Congress for an additional $2.1 million in soybean rust research for fiscal year 2006. This funding will locate and determine the function of genes involves in rust resistance. In the absence of development of rust resistant varieties, the application of costs of fungicides is the only management tool available to farmers today. We strongly urge Congress to provide an additional $2.1 million in funding to help us defeat soybean rust and maintain soybeans as a viable cropping opportunity.

Mr. Chairman, on behalf of the ASA, thank you for convening this hearing and allowing me to share what we see as accomplishments and concerns as we head into our first year of soybean production with an undetermined but certainly dangerous threat. We appreciate your interest in our industry and look forward to a successful growing season.

Thank you.

[The prepared statement of Mr. Bredehoeft appears at the conclusion of the hearing.]

Mr. MORAN. Thank you.

Mr. Vroom, welcome back. We welcome your testimony.

STATEMENT OF JAMES VROOM, PRESIDENT AND CEO, CROPLIFE AMERICA, WASHINGTON, DC

Mr. VROOM. Thank you, Mr. Chairman and members of the subcommittees.

I am pleased to be here today to represent the members of our association and to also thank you for convening this forum to allow for more information to be transferred.

While I appear today in my official capacity of CropLife America, the Association represents nearly all the crop protection industry in the United States.

I have another personal interest in the subject of Asian soybean rust. My family is actively involved in farming back home in Illinois and as it happens, I was on the farm last weekend and as I stood in our machine shed where literally tens of thousands of dollars of agricultural production inputs are arrayed, seed, herbicides, insecticides, fertilizers, and even some soybean fungicides all carefully inventoried for the season of planting that is already under way, my brother-in-laws took me aside and showed me the supply of soybean fungicides that they have been able to purchase so far which is about enough to treat about a quarter of the acres that we plan to plant on our farm one time over this year. We talked about the full range of issues associated with this new pest threat, the detection methods, how quickly the disease may spread, the spray equipment capacity, adjustments, and so on. So I really have had firsthand within the last few days from my own personal focus group about the issues as seen from the farm level.

Three weeks ago today I was standing in a soybean field in northern Argentina near the city of Rosario. Three combines were harvesting a crop of field as I conversed with the owner operator, a family farm operation about the wide range of issues and challenges that his family faces, among them Asian soybean rust. I learned that in this particular area of northern Argentina which would be roughly equivalent in terms of latitude to Charlotte, NC, that soybean rust was just beginning to be detected near the end of their growing season this—their fall and that they are certainly very concerned about it and anticipating the threat for their planting horizon.

From my industry's perspective, there are three broad priorities that need to be addressed at today's hearing. Increase awareness, increase support for rapid approval of product tolerances, and encourage expeditious decision making on the remaining product use applications. To generally increase awareness of this new disease threat and the huge number of variables that are ahead of us in producing the 2005 soybean crop in the United States is absolutely paramount. And your hearing today will contribute to that significantly, learning detection methods, patterns of disease movement in our climate and cropping patterns, effectiveness of treatments, and techniques of application, and the supply and effective distribution of affective ASR fungicide products.

The USDA farmer's survey recently shows that some 11 percent of soybean farmers that answered their survey, didn't know anything about Asian soybean rust. That indicates that there is still work for all us of to be done with regard to getting the word out educating growers and those who support them in all walks of life

across rural America. The same survey, of course, show that about 89 percent of soybean farmers are aware and clearly have done substantial homework already as evidenced by the fact that in some small part they have adjusted but not gone away from soybean producing knowing that there are crop protection solutions available to help manage this disease.

Once our 2005 crop is harvested this fall here in the United States, American farmers will still expect to sell about half or more of this crop in 2005 to foreign customers and earn hopefully $9, maybe $10 or more billion in sales from those customers outside the United States.

Legally established residue tolerances for these crop protection products that farmers use to grow this year crop are absolutely essential. We are all pleased to hear EPA's commitment in getting this tolerance work done early and effectively according to Mr. Jones's testimony earlier on the panel. USDA has also got lots of work to do in this arena ensuring that our foreign customers and their governments have all the information that they need to know about EPA tolerances for these products in order to guarantee that we don't have any trade issues with the export of the 2005 U.S. crop.

Both USDA and EPA are to be commended for the great work they have done individually and collectively alongside our industry and the growers in getting new products to the market. EPA's work in getting those 18 new products approved is terrific as we have already heard. There are still some section 18 products that are in the queue and are waiting final EPA decisions. EPA work in this area might yet result in additional products being made available this growing season.

One of the things that are industry has learned along with farmers in Brazil is that quite often multiple treatments are required of different products and sometimes it is very advantageous if different chemistries are used either in combination or in separate treatments. Further, it is shown in Brazilian research that combination products are very effective. It is likely that some or all of the products in this last or third wave of section 18 applications could be valuable to the U.S. effort if they could receive rapid EPA review, particularly if we have a severe ASR infection across the U.S. soybean crop this year. These approvals could well add to both the variety of products available and the total supply.

The Agriculture Committee has been very supportive of efforts to harmonize pesticide registration work between U.S. EPA and other pesticide and government authorities around the world and I was pleased to hear Mr. Jones's comment this morning that they are looking at exchanging review data with the European Union that have already looked at some of these last remaining products for approval and consideration.

Finally, even if the ASR impact this year in the United States is minimal, the opportunity for American farmers to use all the available tools, including potentially these last remaining section 18's that are pending in EPA, will give us the best possible indication of what works best in our climate and our growing conditions.

Once again, Mr. Chairman, I appreciate the opportunity to be here to participate in this forum.

We know that we have products that can allow farmers to manage this disease but we do not know where and how the disease may spread here. So our challenge is to prepare for the variables, to be open and transparent with each other and work together.

If a picture is worth a thousand words, then perhaps just illustrating with the Soybean Association's Rust Preparedness Guide that they have put together over the winter is illustrative here. It is 20 pages in length. Nine of the pages are full page advertising support of the effort. Most of those ads are from the members of CropLife America promoting their soybean fungicides, so I hope that the common sense analysis would say that no salesman would promote a product that they wouldn't be prepared to be ready to sell.

I think our industry is prepared for significant demand for these products this year, prepared to work with our growers and Government to ensure that we get through this storm. We look forward to answering your questions.

Thank you.

[The prepared statement of Mr. Vroom appears at the conclusion of the hearing.]

Mr. MORAN. Thank you.

Mr. Dlugosz.

STATEMENT OF STEVE DLUGOSZ, CHAIRMAN, CERTIFIED CROP ADVISOR PROGRAM, INDIANAPOLIS, IN, ON BEHALF OF THE CERTIFIED CROP ADVISOR PROGRAM AND THE AMERICAN SOCIETY OF AGRONOMY

Mr. DLUGOSZ. Thank you, Mr. Chairman.

My name is Steven Dlugosz. I am a CCA which is a certified crop advisor from Indiana. I work in Indiana and Ohio. I work with growers daily, as well as, different retailers that support those growers.

I would like to share with you a little bit about what certified crop advisor is. The question came up earlier from the chairman about who can a farmer call. We think certified crop advisors are going to be a big part of that. There are nearly 14,000 of us across the United States. In your packet of information you see a map. We match up pretty good with our intense soybean growing areas is where we have a lot of certified crop advisors on the ground.

It is a voluntary organization, voluntary certification. We are actually part of the American Society of Agronomy. To get our credentials, we have to pass two comprehensive exams, a national, and a State. We have to be proficient in four subject matter areas, one of which is pest management. We subscribe to a code of ethics. And then also every 2 years we have to attain 40 hours of a continuing education. Much of our past winter has been spent studying up and trying to become experts on soybean rust. That is one of the opportunities we have with this education part of it.

We have been quite active in a number of USDA programs. NRCS and us enjoy a good relationship, particularly in the area of protecting those service providers, TSP's. We have got that I think working for us pretty well.

Most CCAs work directly with the farmers. I guess we look at ourselves as being kind of a major conduit of information to the

farm. We will help with many, implementing many of the best management practices that are good for agronomics and good for economics.

CCAs are quite diverse. We are employed by a number of different people. People such as myself, we are employed by retailers, agricultural retailers, those that sell crop production products, seed, chemicals, and fertilizers. Many are independent consultants. Others might be seed company representatives and still others might work for extension or other parts or other agencies. But I think bottom line, CCAs are a major part of the farmers partnership in helping solve problems.

Now with that kind of as a background, let us talk about soybean rust in particular. Obviously, it is a concern. This is a very important hearing about a very important issue. I guess to put it in perspective, yield losses in Brazil where it is untreated can reach 80 percent. I can't think of anything in soybean production that even comes close to that type of threat. I have been doing this for about 20 years. I can't think of any pest, any weed, any disease that has ever approached that type of loss. So from that standpoint it is somewhat unprecedented. I think not only the industry but growers as well have never faced this type of threat before and it is good to know that there is a lot of people aware of it. I am not always sure that everyone is aware to the degree of what this actually could become.

CCAs will be on the front line with this whole problem. We will be an active part of monitoring crops. We will be a major way of disseminating this information. A lot of the good information that is on some of the Web sites, particularly the USDA and some of the industry Web sites, will be the ones that will help translate that, some of that take that right to the farm.

We will be actively involved in making treatment decisions, product selection in all these different products that are out there, we will be actively involved in helping the farmer decide what to do. And then many of us will be involved in the actual logistics of applying it which I will address here in a minute.

In fact, that is what I would like to go to next to talk about some of the challenges that I think we face. Some of them are already echoed in our first comments from the American Soybean Association. Obviously, early detection is critical. The thing that kind of complicates it a little bit is there is about 5 other common diseases that look very similar to soybean rust. And the bad news is, none of us have any experience with soybean rust. So who is going to be the first one to say that is soybean rust or who is going to be the first one to say no, that is not soybean rust because there are ramifications either way. So that is quite a challenge.

Proper fungicide selection, one of the things that we don't talk about too much is there are two types of fungicides. There are protectants and curatives. Protectants need to be put on ahead of the soybean rust. Once soybean rust has come into an area in a particular State, protectants can no longer be used because they don't work and then you need to use curatives. OK, which product do you have, Mr. Farmer? Which product do you have, Mr. Retailer? Is it the right one at the right time? A good example of how this can play out, if a farmer, for example, has been able to procure

a supply of a protectant. Let us say rust comes into the area unbeknownst to some people. It is on the field, it is on the field, it is now actively growing. He sprays the protectant. He will not get control. And not only that, but he has now spent that money which he will find out that it doesn't have a whole lot of guarantees behind it and that is a whole other area. But a lot of our farmers are used to using a product seen in performance and moving on.

This is a first time for a lot of soybean growers using fungicides that there is not necessarily a performance guaranteed based on timing and timing is very, very important. Many of us are also concerned about product availability. The companies I worked for have been very aggressively procuring and pursuing products since late in December. At this point in time, we have only fraction of what we need. And I guess it is safe to say if a major outbreak occurs, we will be significantly short in being able to get over the acres that we service. And this is only talking about one application. Much of the management in Brazil is multiple applications. Multiple applications of multiple products. Different take mixes use a different race depending on the infestation. Again, very little bit of that has been talked about in detail and again becomes quite an area of concern.

The other thing is too is just our overall awareness of the farmers. Just a kind of little quick anecdote, I have had one guy in a farm I had, he just said, well it sounds to me like it is one of those Y2K things again. And I had to laugh because I thought it was kind of interesting. I said well I think it is somewhere between Y2K and soybean Armageddon, where I am not quite sure. But we do have quite a wide range of farmer's awareness but also their willingness to actually actively act on it.

The challenge we are going to have then also is just the logistics of it, being able to get over a large number of acres in a short period of time. A quick story, Favorite Farmer A, Favorite Farmer B, Favorite Farmer C, Favorite Farmer D, they all come in in the morning and say they want their fields sprayed, rust is in the area. So the question is who is first, who is last? How do you tell four of your best customers that he has now got to get in line and by the way, we have got a window of about 3 days to get this done and oh, yes, there is a front coming. Then you can see what we are getting into real rapidly.

The good news is we think these concerns are relatively short-term issues. Some colleagues of mine that just returned from Brazil were able to share some experiences that sound very similar to us. The first 2 years it was kind of a real picnic so to speak. But after that, things kind of settled out and product supply became quite prevalent and people were able to make the right decisions at the right time. But at this point in time, it appears that we have a long ways to go as far as getting that system sorted out. As we gain understanding, I guess we are confident that our soybean production system will be able to get the job done. That we will be able to effectively manage soybean rust but it could be a little bumpy in the meantime.

So in summary, certified crop advisors are doing to play a major role in managing soybean rust. They are a proven trusted partner to the farmer. And we will be intimately involved in helping him

make the right decisions and keep us very productive in soybean production in the United States.

Thank you.

[The prepared statement of Mr. Dlugosz appears at the conclusion of the hearing.]

Mr. MORAN. Thank you very much.

Mr. Thrift.

STATEMENT OF JAMES D. THRIFT, VICE PRESIDENT, REGULATORY POLICY AND CORPORATE RELATIONS, AGRICULTURAL RETAILERS ASSOCIATION, WASHINGTON, DC

Mr. THRIFT. Good afternoon, Mr. Chairman.

The Agricultural Retailers Association, ARA, which represents the retail sector of the U.S. agricultural industry, thanks to House of Agriculture Committee Chairman Jerry Moran and Frank Lucas for holding this joint hearing and allowing ARA to provide our views on the issue of Asian soybean rust in the United States.

ARA represents America's retail dealers who own and operate approximately 6,000 retail outlets, provide crop protection input information materials to America's farmers.

I am the vice president of regulatory affairs & corporate relations for the ARA in DC. Our association and member companies understand this disease threat to America's soybean industry. We have been both monitoring the progression of the disease, as well as, being proactive in our communications with the agricultural retail and distribution industry. I will divide my brief comments into three key parts, pest awareness and identification including discovery, disease life cycle, fungicide selection, and application timing; commercial issues to include equipment availability, product distribution; and industry involvement which include ongoing discussions with industry experts.

With the rapid spread and devastating impact of the Asian soybean rust problem in South America, the question was not really if but when it would arrive at our Nation's doorstep. The first signs of the disease appearing in farmer's fields occurred last year. As a first step in being proactive on this issue, ARA invited Burleson Smith, USDA Special Assistant for Pest Management Policy, to attend ARA's annual convention and conference in December 2004. Mr. Smith addressed the open session with comments directed at creating more industry awareness on soybean rust.

Open dialog with USDA concerning soybean rust development has and will continue. And enormous campaign of training and awareness has occurred at the local level before the pest has even impacted yields. Probably more training and information has actually occurred for this pest than has ever been done in U.S. agricultural history.

ARA has and continues to be supportive of advising our members to work closely with local soybean producers including local experts on rust such as Agriculture Extension Agents and university research experts. Many ARA members have their on agronomy staff that are becoming proficient in disease discovery techniques, as well as, the disease life cycle in order to spot disease symptom. ARA has encouraged members be become well versed in all of the current disease control products available and systems including

all current integrated test management programs applicable and appropriate for the control of soybean rust. This knowledge will greatly facilitate a rapid response when the initial disease is discovered. Included in this process is a selection of the best fungicide materials for disease control and the appropriate product sourcing routes from either manufacturers or distributors.

ARA asked the committee to review the option of using retailers as first responders under the Technical Service Provider Program, TSP, administered by USDA's National Research Conservation Service. The TSP was established by Congress as a public private partnership in the 2002 farm bill to assist USDA officials with field tasks at an efficiency rate equal to or better than any current systems. Over 90 percent of America's farmers rely on their local agricultural retailer as their primary source of agronomic technical information.

ARA as an association and area members have written countless articles and stories and held numerous meetings to educate our farmer customers on the best management practices for disease control. ARA has supported and encouraged retailers to participate in online seminars with countries leading experts to provide front line information to growers. ARA has also written in a question and answer format several newsletter stories to assist our members with key concepts that retailers will need to know to combat this new threat. ARA has discussed agronomic application practices with several national organizations to better understand the role of cooperation that will be needed should a major outbreak occur.

For example, ARA has reviewed options and ideas on rush with executives of the American Soybean Association and we are looking forward to working together to ensure that any disease outbreak is not only handled efficiently but also handled with the most economical control system possible. We fully realize that soybean rust adds an entirely new cost in management dimension for soybean producers.

We thank you very much for this opportunity to testify this afternoon and we look forward to answering your questions.

[The prepared statement of Mr. Thrift appears at the conclusion of the hearing.]

Mr. MORAN. Thank you very much.

Best farming practices seems to be a phrase of importance. Has that been adequately defined such that a farmer in Kansas or Illinois or Minnesota knows what that means? Maybe this is Mr. Bredehoeft.

Mr. BREDEHOEFT. Well I believe there is probably some difference of opinion out there as farmers when you take a look at what risk management has sent out. When you have to do the documentation when you visit your field, when you scout, when you apply fungicides, then it becomes a question of who is going to be the third party if there is a need of a third party to verify. So I think there is some differences of opinion out there as far as a producer looking at what the best farming practices are.

We can also look at a crop and be to the point of maybe with soybean rust, if you don't catch it early enough, you could have a point of a loss of a crop and then my best farming practice is why should I spend more money to try to save a crop that is already lost. But

others might say you need to go out there and save it even though it is saving a few bushels.

Mr. MORAN. That is not an unusual issue. That is one farmers face in dealing with risk management agency and crop insurance in other sectors. Is that true?

Mr. BREDEHOEFT. Well it is probably true to a point but I think this is probably more critical. I don't think any producer has ever faced a disease in their crop like this that is so fast moving that one day you can detect it and if you do not apply a fungicide within a day or two, you could lose 80 percent of the crop. There is some correlation there but I don't think we as producers have never faced a situation like this before.

Mr. MORAN. The circumstance I think of is at home in which after 5 years of drought loss of a corner wheat crop, corn generally and told you need to go turn on the irrigation pumps or you have not done enough to save your crop despite the fact that the corn is clearly dead, what percentage of—we are going to discuss the crop insurance issues in more depth next week. And my understanding is the American Soybean Association is submitting written testimony. I would be happy to know from you in advance questions that you would like for us to ask the risk management agency in regard to crop insurance. What is your sense of how many acres are insured and what level of coverage? I can tell by your reaction, you can answer that at your convenience.

Mr. BREDEHOEFT. Yes, I think we would have to get back with you on that. I don't have those figures with me today.

Mr. MORAN. Would crop insurance be normal? Would that be something that most of your members would have when it comes to soybean production?

Mr. BREDEHOEFT. That I really don't know but we could look that up, too.

Mr. MORAN. Mr. Dlugosz, this best farming practices, thoughts about that? How do you satisfy your farmer client that he or she have done everything necessary to feel comfortable that their crop is fully insured?

Mr. DLUGOSZ. Yes, that is the problem is I think understanding them or knowing those things and then being able to put them in practice. That is the part I am concerned about. We are asking people to do things that they have really never done before. The concept of closely monitoring your crop within days and then making a decision to do something, especially something as expensive as the fungicide, just those logistics, who is going to make the first call.

If I am in area and I say hey, there is soybean rust and oh, yes, by the way, that was brown spot and if you told me later that was brown spot and I just told 50 of my best farmers to spray $25 of product, see that is the stuff that we are scared about.

The other thing is too, to be honest with you, is in the past, we have seen that reaction to let us say soybean aphid in the past or spider mites that become just a regional reaction and regardless to what is going on, I need to spray. So I can see those dynamics kicking in quite rapidly especially in light of how sensitized everyone is.

Mr. MORAN. Who has the ability to definitively determine whether what you see on the leaf is soybean rust? What does that require?

Mr. DLUGOSZ. Yes, the system right now, that requires an accurate diagnosis. We are going to be relying on our local land grant universities, that NPDN system that was referred to in earlier testimony. That is based primarily on the land grant system so for example we would run some leads up to West Lafayette, Indiana and have someone verify it.

Now with that said, there is an alert system that is being developed such that there may be a proclamation that then comes out, hey, it is in Hancock County, it is in Spencer County, whatever, most of Indiana is now considered infected, start to spray. And again, I am talking about a system that has yet to ever be tried or worked.

Mr. MORAN. Is this a novel circumstance that farmers face either in I assume in soybeans but other crops as well? Is it something different than the magnitude and consequences than we have ever faced?

Mr. DLUGOSZ. To be honest with you, there is some similarities of the tobacco guys several years ago, it has probably been 20 years ago, they had a thing called blue mold. That was windblown spores. That all of a sudden came and decimated crops. That is kind of a good example. They had a lot of trouble. Part of it is because it came and no one was ready for it. The thing that we have going for us this time is we have a good head start. We have been knowing about it since November so from that standpoint but with that said, I humbly submit that again knowing what to do and being able to do it is quite concerning.

Mr. MORAN. Let me go back to something you said earlier about submitting the specimen to the land grant college. Does the county extension agent, the agronomist know the answer to that question?

Mr. DLUGOSZ. At this point in time, none of us feel—and I am speaking for some other people, but none of us probably feel that qualified because again we are being asked to diagnose something that we ourselves have never seen except on a slide. Now I can envision years from now some colleagues from Brazil just got back that their technicians—they call them technicians, but they are agronomists, RCCAs I think there will be a year coming that we will have confidence in diagnosing it in our own hand with our hand lens and say this is it, let us go. This early step, very few of us are going to go out on a limb and make that call because we just don't have the qualifications.

Mr. MORAN. Mr. Vroom in part, Mr. Melancon and the gentleman from North Dakota, Mr. Pomeroy's questions, would you like to respond to the question about price differential?

Mr. VROOM. Thank you, Mr. Chairman.

Yes, first of all to the question that Congressman Melancon was referring with regard to after NAFTA, are there still lots of pesticides used that have been cancelled in the United States for many years. By and large, no, however NAFTA as a trade agreement established rules for the detection of pesticides on food and fee crops that might move between these countries but the countries remain their own sovereign entities with regard to deciding what may be

used in their own production systems for agriculture and other pest control considerations and for their own domestic consumption.

So there are certainly some instances where chlorinated hydrocarbon insecticides like chlordane or heptachlor that he mentioned in his remarks have continued to be used in places like Mexico and other places that are more tropical in terms of their climates and science has shown that the half life of those chlorinated hydrocarbons is much less, they are much less persistent in the environment than they are in the tempered zones, like most of the United States, and they are effective for mosquito control, for Malaria control and other disease vector controls. So countries like Mexico and other tropical countries have chosen to use those products but primarily for disease control and not for agricultural production.

With regard to price and availability, the Congress has had in place the Sherman Anti-Trust Act for a long time. And it is most explicit with regard to Trade Associations being very careful not to get into these areas but I could tell you that from my own personal experience, the fungicides that my brother-in-law's were showing me in their shop on Saturday, they are in Central Illinois, the value of the chemicals to treat the acres that they thought it would cover for one pass was probably about $7 an acre and they would be the preventative kinds of chemistries that Steve was referring to. We probably will have $2.50 to $3 an acre cost to apply those products and from what I could tell from the farmers I have talked to in Argentina and industry folks from Brazil, the fungicide costs are pretty much a world kind of a market today. This tends to be a smaller part of the overall crop protection industry.

In my written testimony our estimate is that fungicides have been about 10 percent of the U.S. crop protection marketplace in recent years. There is a lot of competition but there isn't so much varied generic competition in this market as compared to herbicides which are much larger in the United States where you would have widely varying prices. So I think that the prices will tend to be seen and be relatively comparable across places, around the world where soybeans are produced and soybean fungicides are needed.

I hope I have addressed your question while still satisfying my legal counsel's constraints on anti-trust compliance.

Mr. MORAN. I would not practice law but you were sufficient answering my question, thank you.

In regard to the 18 applications that are pending at the EPA is there something special about those 18 that create problems or are you expecting to have the necessary approval in the near future?

Mr. VROOM. Actually, the 18 list are those that have already been approved and there are eight or nine that are still pending under section 18 State applications from Minnesota and South Dakota.

And I think number one, all of us in the industry and production agriculture who are enthusiasts for EPA to work more efficiently would like to see them make sure that the trains run on time. However, we don't want to see the trains run off the tract. If you saw the news coverage of the train accident in Japan but it is a good analogy that we want EPA number one to make sure that the decisions that they make are grounded in sound science.

But in this case, as I indicated in my remarks, we understand that some of the safety data on these pending remaining fungicides for consideration decision at EPA have already been reviewed by their counterparts in the European Union.

And I heard Mr. Jones remark in his testimony from EPA this morning that they are in contact with those authorities in the European Union in Brussels to see if they can go faster around making these decisions relying on the reviews that European authorities have already made. So we know that there are some data out of Brazil that show that some of those products that are yet to be decided on by EPA have been some of the most efficacious in certain applications.

And once again as I said in my oral remarks, the more of these products we can get in the hands of the American farmer this year, even if we have a relatively minimal soybean rust problem, the more practical experience we have to use to employ in the planning for 2006 when undoubtedly the threat of soybean rust in the United States will be more severe.

Mr. MORAN. Mr. Thrift, I want to give you a chance to respond to that same kind of question but also add this to the question. Is there sufficient—and Mr. Vroom addressed this and it caught my attention. Is there sufficient number of competitors providing the chemicals necessary that there is competition within the industry or will a farmer generally be advised that a certain area that this is the only chemical that will work to meet your needs?

Mr. THRIFT. That is actually a very good question.

First of all, the chemistry falls into two major classes that are curative and preventative. So to take the total bundle and you move those into separate areas of technology. And then besides, we don't know USDA and other sources have not been able to tell us what would be the actual projection on the infestation acres. We can't tell exactly if the market is oversupplied or undersupplied and we won't be able to tell that unfortunately until the season is over.

There is obvious significant reaction to the infestation with the current data because no one knows and the economic losses could be so devastating. We believe only anecdotically have we heard supplies that are not adequate in all areas. We believe the supplies in fact are adequate for what is appearing to be a pending infestation. On the other hand, you heard the experts in the first panel not really being definitive on what the infestation could potentially be. And I agree with what Mr. Vroom just said that for what we know about it, we believe supplies are adequate with the various products.

On the part on the competition and competitiveness in the marketplace, the competitiveness is not particularly, I would believe between the companies or the products it will be for the supply chain of who can get what product. There will be growers that fall into various agronomic decision making mentalities. In other words, there could be some that want to go with a preventative. Some want to wait until they see something and then the CAAs spot it and they go with a curative.

So it is very difficult to say at this time that there is any problem with really product shortage or competitiveness among the prod-

ucts that are in fact available. And I think we have to wait for the season to play out as several people have said and find out at a later date how well we did in the training of this first year.

Mr. MORAN. Will there be recommendations to change farming practices such as row spacing and will application of those chemicals be different aerial versus surface application?

And then I am also interested in this question again about best farming practices when it comes to deciding whether you are using something curative or something that is a treatment. Does that depend upon the location of your farm where you are growing soybeans and the discovery of the rust in your area if it is there but you don't have it on your plants then is best farming practices require the security of application and once it is discovered then it is the treatment?

Mr. THRIFT. Those are at least three or four good questions. We will try and break them down a little bit.

First of all, let us go back to BMP's best management practices. Those are not national practices. Those are practices that a professional in the field that advises practitioner advice would look into. They would include such things as scouting, targeting the entire area and not just finding the first plant with rust, ID and identifying the problem, getting experts, making sure that they have checked to see the total extent, and then they will check to see availability of the product. Is this a preventative application or a curative? So there is a lot of different things that would go into not just best management practices in a State or a county, they would be best management practices that would be done by CCAs as Mr. Dlugosz indicated that would be on a local farm.

Then after that, depending on the stage of the disease if it is already present, the size of the plant agronomically being able to put ground application to the filed or not, then you would have to make a determination probably with a CCA or other professional of whether they should use ground equipment or air. In fact, in reality in South America, 70 to 80 percent of all fungicide applications go on by air. We believe that our member companies have adequate equipment to put on materials by ground again depending on the extent of the infestation.

Mr. MORAN. That is a very circular circumstance you all face. How big is the problem? Where is it going to arrive? What is the extent of the disease?

Yes, sir, Mr. Melancon?

Mr. MELANCON. If I could weigh in?

Timing is everything. We talk about the most critical component is timing. When do the products go on? Protectants? It is debatable depending on the product but protectants if they are on are going to last somewhere between 20 and 28 days. So the question is when it coming so I can get my protectants on. Well see, that is what we don't know. It is a weather-driven phenomena. So then if you are putting everything into protectants, if all of your inventory is in protectants then you have introduced another level of risk that someone who has puratives may not have to face. So it is quite a dilemma.

Mr. MORAN. Mr. Thrift said something that caught my attention that I hadn't thought about because in my concern about RMA cre-

ating a standard that farmers, I guess it is that my phone will be ringing and that the farmers will say I did what I thought I was supposed to do but the crop insurance just doesn't provide coverage. And I guess what is important for me to remember is that there is not this national standard of what best farming practices are. That is going to be determined presumably farmer by farmer, location by location which I suppose is no different. Every farmer has to determine what their best farming practices is. The uncertainty is will they be agreed with.

Yes?

Mr. MELANCON. Again, just kind of a ground real life experiences occur. Right now a lot of the farmers are coming to us and saying are you going to help us make that determination? What is that? And we are going well, and then so some of them will say well now if I can't spray because you don't have the product does that let me go with—or if you couldn't get the field, if you have the product but it rained and you couldn't get over the field, I would love for you all to be able to sort that out next week and have those questions come out because we would love to hear the answers.

Mr. MORAN. Isn't there a precedent for that circumstance though in crops and crop insurance? Doesn't a farmer face that on a continual basis of demonstrating that he or she has done what they are supposed to do?

Mr. VROOM. Well I think that has very much been the case and one of the concerns I have heard is that because of the way that risk management agency is structured it drives decision making down and standard making down into the regions of the States. Certainly it is appropriate for someone here in Washington to make sure that there is a degree of uniformity in the standards particularly around that part of best management practices that pertains to whether the farmer, adequately did scout and find the detection and make the proper treatment.

Mr. Chairman, I think it is also appropriate to note that most soybean farmers were already practicing a ton of best management practices before Asian soybean rust ever arrived and a number of farmers had been reporting doing some trials on preliminary application of fungicides to soybeans in the last couple of years and having detected some yield response and positive investment returns on applying fungicides to soybeans before we had Asian soybean rust.

And that goes to the point that there are lots of other disease pathogens out there that have been holding back production capacity in some places in soybean production that we actually could have been doing some good with fungicide applications more broadly in soybeans previously.

And it goes to the point that was referenced in one of the USDA witness comments earlier in the panel first before you this morning that, in fact, there may be a net benefit overall to the investment of soybean fungicide applications in addition to suppressing and containing Asian soybean rust.

Mr. MORAN. Is the application of the fungicide that is directed at soybean rust provide the protection against other diseases?

Mr. VROOM. Yes.

Mr. MORAN. Maybe that is what you were just saying.

Mr. VROOM. Right.

Mr. MORAN. OK. That there is a reason that this may be beneficial beyond soybean rust?

Mr. VROOM. Correct. And the other things that American farmers have done for a long time is effective use of herbicides to keep that weed infestation competition back so that the soybean plant can be as healthy as possible. And good fertility support, inoculating the seed, and on, and on, and on. And these are practices that the American Soybean Association have established as the best management practices and have been advocates for four decades, so all of that we take for granted but it is part of the overall equation.

Mr. MORAN. Do you all have any questions that you would like for us to raise with the panel that preceded you? Was there something that was said this morning that caused you to wish that you were a Member of Congress at least briefly so that you could ask the question?

Mr. DLUGOSZ. I think you can all keep your jobs and we will struggle with what we are doing.

Mr. MORAN. All right. Nothing that you heard that you would like us to follow-up on?

Mr. Bredehoeft?

Mr. BREDEHOEFT. I guess there is one thing. Getting, probably getting back to your previous question about best management practices, like I stated it earlier that we are faced with that in other crops, there is no doubt. But I don't think we are faced with the timeliness issue that we have to have here. If we wait a day we could lose a substantial part of our crop here if we don't get the fungicide treated treatment on there on the crops so we have to have that timeliness to get that leaf sample in to a land grant college and it has to be done on a very timely basis so there are some concern there about if that time is going to be quick enough turnaround that we will find out if we do actually have rust and can treat it. So I think the timeliness issue is probably more prevalent here than any other crop.

Mr. MORAN. And the point I guess you would be making to me as we have discussions with the Risk Management Agency in a hearing next week that is something to remind them of about the timeliness, the necessity of a timely application of a response?

Mr. BREDEHOEFT. Yes, I think that is one thing that needs brought up because if we do have a major outbreak, there could be substantial crop insurance payouts.

Mr. MORAN. I would also make the same offer to you that if any of you have anything that you would like for us to raise in next week's hearing, we would be glad to hear from you between now and then. Any other members would like to ask questions?

I appreciate the opportunity to have more than my normal 5 minutes and appreciate this panel and the discussion that we have had on what I think is a very serious issue that deserves significant cooperation by private sector and Federal Government and State government as well.

Without objection, the record of today's hearing will remain open for 10 days to receive additional material and supplementary written responses from witnesses to any question posed by a member of the panel. This joint hearing on the Subcommittee on Credit,

Conservation, Rural Development and Research and the Subcommittee on General Farm Commodities, Risk Management is adjourned.

[Whereupon, at 1:10 p.m., the subcommittees adjourned.]

[Material submitted for inclusion in the record follows:]

For release only by the House
Committee on Agriculture

RESEARCH, EDUCATION, AND ECONOMICS

Statement of

Dr. Joseph J. Jen, Under Secretary

For the House Subcommittees on Conservation, Credit, Rural Development, and Research and General Farm Commodities and Risk Management

Mr. Chairmen, members of the Subcommittees, it is my pleasure to appear before you to discuss the issue of soybean rust and represent the Research, Education, and Economics (REE) mission area agencies of the USDA.

REE agencies are at the center of the research system, supporting the food and agricultural sector. They have a proud history over many decades of finding solutions to the challenges confronting farmers, ranchers, and others involved in agriculture, resulting in a high return on the Federal investment to our Nation, which enjoys a plentiful, affordable, and safe food supply. This remarkable history of success continues today, yielding new knowledge, technologies, statistics, and analysis for effectively addressing today's problems and building the scientific and technological foundation for addressing tomorrow's problems and opportunities.

A most notable example of addressing today's problems relates to the recent arrival of soybean rust on our shores. For some time scientists have been saying that this

plant disease would inevitably arrive in the U.S., carried by winds from South America where the disease has been residing for several years. REE agencies, their partners in other USDA agencies, the research and scientific community, State departments of agriculture, and soybean industry organizations have been preparing for this anticipated event that became a reality last November in Louisiana. There have been 29 confirmed cases in nine States in 2004, and a few cases on kudzu in Florida so far in 2005.

Effective management and control of soybean rust relies on early detection, correct identification, and proper and timely application of fungicides. Starting in 1998, REE agencies have played a critical leadership role with the ultimate goal of providing producers with effective disease management options.

For example, ARS scientists have developed a real-time rapid detection test that has been adopted by the Animal and Plant Health Inspection Service (APHIS). It will provide a quick, easy and accurate means to detect soybean rust as part of a national surveillance system. Over 20,000 soybean lines from the USDA Soybean Germplasm Collection at Urbana have been evaluated in a preliminary screening, none of which exhibits broad spectrum resistance. Among these soybean lines, 800 commercial quality lines are under further study in intermediate trials.

CSREES has been at the forefront of training first detectors. In June of 2004, a regional soybean rust teleconference attracted nearly 1,000 participants who grow or service nine million acres of soybeans. CSREES has also been instrumental in

establishing a National Plant Diagnostic Network of strategically located university-based laboratories that support APHIS laboratories, facilitating rapid and accurate detection. Additionally, through CSREES support of system extension grants, Cooperative Extension continues to play a vital role in getting the word out to farmers and other stakeholders in our soybean producing states.

In September 2004, ERS published an article on the economic risks of soybean rust in the U.S. in its publication, *Amber Waves.* The article indicated that the economic effects of the pathogen's entry into the U.S. could vary considerably, depending on growing conditions, the severity and spread of the disease, and producers' responses. This analysis presented policymakers and the soybean industry with information to make more informed decisions in responding to the detection of the soybean rust in 2004.

REE agencies will continue an aggressive and comprehensive soybean rust research and education strategy. The attached addendum provides more detailed information on REE activities to combat soybean rust. I look forward to discussing this issue further with the members of the Subcommittees. Thank you.

ADDENDUM TO STATEMENT OF DR. JOSEPH JEN

Q. What is USDA's predicted impact on supply? Demand? How are the markets currently reacting to soybean rust?

Planting intentions for 2005 are estimated at 73.9 million acres. This figure is down 1.3 million acres from 2004's record. Eighty-nine percent of farmers who produce soybeans indicated they were aware of soybean rust. Of the 89 percent, only 11 percent of these producers considered soybean rust a factor in determining their planting intentions. Of the 11 percent, nine percent said they would increase soybean acreage, 49 percent decrease soybean acreage, and 42 percent reported no change. The Southeast and Delta States reported the highest percentage of soybean producers who considered soybean rust a factor in their planting intentions (29 and 19 percent, respectively). In both regions, 63 percent said their intentions decreased.

An April 2004 analysis by the Economic Research Service (ERS) estimated that depending on the geographic extent and yield impact of the SBR infestation, net economic losses to the agricultural sector would likely range from $0.6 to $2.0 billion. These losses include increased soybean fungicide costs, soybean production losses, feed price increases to the livestock sector, soybean export reductions, and higher prices for soybean-dependent consumer goods.

Additionally, ERS estimated soybean production would likely decline between one and ten percent (from a baseline level of 3.15 billion bushels), leading to price increases of one to six percent (baseline of $5/bushel) and export declines of about one to six percent (baseline of 1.1 billion bushels).

Q. What particular area/state will be most affected?

Potentially, wherever soybeans are grown could be infected. All of Brazil became infected in two years.

Q. What is the timing of when rust will threaten the US the most this growing season?

Soybeans are susceptible to rust at all stages of development, and they are planted in the southern U.S. starting in mid-March. SBR therefore is a threat from March until the end of the soybean-growing season.

Soybean rust is currently confirmed in kudzu in three eastern-Florida counties, so the timing of spread will depend on weather patterns that move air parcels from the eastern Gulf of Mexico. It is expected that extension personnel will start finding rust in soybeans first in the southern Gulf Coast region, possibly by June;

and then moving north over time, it could peak around late July early August in the north. This is heavily dependent on weather factors and also whether farmers in the south control the disease with timely sprays.

Q. What impact does weather have on rust? What weather patterns are the most threatening to the U.S.?

Weather, particularly wind and rain, has a significant role in soybean rust infection and spread. High humidity or wet weather provides a favorable environment for increased SBR infection. The rust fungus does not do well under conditions of drought.

Soybean rust spores disseminate primarily by wind. Wind patterns from infection sites in the direction of soybean production areas will likely increase spread of the disease. Weather patterns that move air from the Gulf coast into the North Central states or up the eastern seaboard such as lows, tropical storms, and hurricanes, will move soybean rust a long distance very quickly, possibly crossing the continent in 3-5 days.

Q. How will the organic soybean crop be affected? Where are the majority of organic acres grown and what is the threat to this market?

Organic producers may be more vulnerable to SBR because resistant varieties, natural interventions, and other organic pest management tools have not yet been identified for controlling this disease.

Industry analysts estimate that U.S. retail sales of organic soymilk will reach nearly $1 billion this year. In 2001, approximately 175,000 acres of soybeans in the U.S. were certified organic, according to estimates from ERS. While only 0.2 percent of U.S. soybean production was certified organic in 2001, at least 34 States had organic soybean producers. The top three States were Minnesota (with 30,000 certified organic acres), Iowa (27,000 acres), and Wisconsin (22,000 acres).

Q. What should farmers do to prepare themselves to deal with rust?

Farmers and their Certified Crop Consultants must be prepared to apply fungicides. To do this most effectively, they should use the real-time mapping tools provided by USDA at http://www.usda.gov/soybeanrust to determine how close the rust is to their location. This will be coupled with local extension expert recommendations about whether there is an imminent need to spray. Farmers and pesticide applicators need to learn the exact application specifications for the soybean rust-approved fungicides. These are available on the web at -- www.plantmanagementnetwork.org/infocenter/topic/soybeanrust/

Q. Is USDA (FSA, RMA, and Extension) using a standard and comprehensive outreach program to tell producers how to react to soybean rust?

USDA is working hard to ensure its message is consistent and coordinated. USDA maintains a national web site to promote and distribute information on soybean rust: http://www.usda.gov/soybeanrust. The Land Grant University Cooperative Extension System has been actively educating the producer community and supports a web site that provides information on identifying and controlling soybean rust: http://www.eden.lsu.edu/Default.aspx. In addition, the Plant Management Network, a consortium of private, university, and non-profit organizations, supports a web site on soybean rust: www.plantmanagementnetwork.org/infocenter/topic/soybeanrust/.

Q. What is currently being done to educate farmers on what soy rust is and how to prevent and treat it?

There have been extensive grower and other first detector educational programs.

- The Cooperative State Research, Education and Extension Service (CSREES) Regional Integrated Pest Management Centers organized a regional soybean rust teleconference, held in June of 2004, **which attracted nearly 1000 participants who grow or service 9 million acres of soybeans**. Topics for this teleconference included: regulatory issues, risk management, and identification and dispersion of soybean rust.
- In 2004, with support from CSREES and the Animal and Plant Health Inspection Service (APHIS), **the National Plant Diagnostic Network trained 10,000 first detectors** of plant diseases.
  - The CSREES sponsored National Plant Diagnostic Network (NPDN) has delivered poly-plex coated soybean rust leaf examples to recipients of first detector training in the southern region, and are working to acquire more for the north central USA. NPDN laboratories are to perform diagnostics on soybean samples in all states http://www.npdn.org.
- The NPDN and Integrated Pest Management Centers sponsored the participation of six extension professionals on a February Brazilian soybean growing region tour to observe the current management strategies of soybean rust. This trip contributed to the content of extension's first detector resources.
- In addition, the following are examples of individual state extension system activities:
  - Kansas State University has been training county agents how to help their clientele manage soybean rust.
  - Oklahoma State University has trained 110 first detectors (county educators, consultants) on the identification of soybean rust; held eight well-attended grower meetings, printed and distributed soybean rust identification information to soybean-growing counties; and published three newsletter articles on soybean rust.

- The University of Illinois is addressing soybean rust during both commercial and private Pesticide Safety Education Program (PSEP) clinics.
- Iowa State University is training producers in private continuing instruction courses held in every Iowa county from December to April.
- The University of Kentucky provided intensive soybean rust training at ten locations in January and February.
- The University of Minnesota is gearing much of its commercial pesticide applicator recertification workshop content to soybean rust.
- Mississippi State University developed a PowerPoint presentation specifically tailored to Mississippi soybean production that has been delivered at all private applicator certification meetings.

- Grower and Other First Detector Resources:
  - The Extension Disaster Education Network (EDEN) acts as a clearinghouse of emergency information for extension professionals, including soybean rust resources. See: http://www.agctr.lsu.edu/eden/Issues_View.aspx?IssueID=86FF9359-2C0C-40A2-BBB3-CC5C41C2CBC1.
  - The CSREES-Regional Integrated Pest Management Centers and APHIS have distributed over **500,000 soybean rust pest alerts** in English and Spanish.
  - The Regional Integrated Pest Management Centers website hosts a web clearinghouse of breaking soybean rust information, including fungicide efficacy and scouting tips, available at: http://www.ipmcenters.org/soybeanrust.

Q. What if anything is being done to address rust over-wintering in kudzu in Florida?

Kudzu is being monitored along the Gulf coast for signs of rust. Only a hard freeze very far south would freeze back and eliminate the kudzu as an overwintering site. Such freezes would not, however, kill the kudzu vine, only the foliage. This has never happened since the introduction of kudzu to the continental United States.

Q. Lay out the timeline in which farmers have to treat rust once it is first detected and what measures producers will have to follow to ensure that they are following best management practices.

Producers and their extension specialists will need to watch the USDA site for real-time updates as to where rust is being found. Warnings and alerts will be posted as new counties are infected, and farms near infected areas will have to watch weather patterns to determine if they will be in the path of a spore plume.

The window of effective fungicide application from first disease symptom expression is approximately five days depending on the compound used. Early

detection therefore is critical to allow the maximum time available to apply sprays. Re-sprays may be required at 2-3 week intervals. (Growers should follow label instructions.) There are no known cultural or biological measures for control of soybean rust.

Q. How is USDA monitoring the current and future detection and spread of rust?

USDA-APHIS is facilitating the development of a federal/state/industry coordinated framework for surveillance, reporting, prediction, management and outreach for the 2005 growing season. Beyond the 2005 season, it is expected that APHIS will step back from providing the leadership, and CSREES and ARS will have increasingly more prominent roles in long-term disease research, extension, and education. ARS will continue to conduct epidemiological investigations on the extent of the disease and provide research for diagnostics and detection in support of CSREES research, education, and outreach efforts.

During 2005, State departments of agriculture, industry, universities, and the CSREES National Plant Diagnostic Network (NPDN) are cooperating to process diagnostic samples of soybean rust. Within the NPDN, samples are processed within 24 hours of entry to the laboratory. In a state where rust already has been officially confirmed by APHIS, these NPDN results serve as the first confirmation of soybean rust in a county. NPDN diagnoses are entered twice daily into a database. Data from all cooperators drive a real-time outbreak map. Once a positive diagnosis has been confirmed, the county where the sample came from is colored red by the State-recognized soybean rust specialist, indicating infection is present in that county. See http://www.sbrusa.net/.

Q. What current research is being done and what future research is being considered to help mitigate the impact of rust on soybean yields and production?

CURRENT RESEARCH:

USDA has initiated a research program that involves five research units in Illinois, Maryland and Mississippi, plus cooperative agreements with several Land Grant universities. In addition, USDA scientists coordinate research supported by the United Soybean Board to establish overseas field tests to identify disease-resistant varieties in South America, Africa and the Philippines where the disease has been problematic.

RAPID DETECTION TEST

ARS scientists have developed real-time PCR molecular diagnostic assays to detect soybean rust and distinguish the two species of rusts that occur worldwide. These tests are being adopted by APHIS and the protocol has been validated. These highly sensitive and accurate tests are an easy and accurate means to detect soybean rust as part of a national surveillance system.

FUNGICIDE EFFICACY
Fungicide trials involving eight chemicals have been initiated by ARS in South America and Africa where the disease was known to occur prior to its entry into the United States. In these studies, fungicides when applied under optimal conditions reduced disease losses. Fungicides called "triazoles" have been found effective against soybean rust in our studies in Africa and South America.

SBR GENOME SEQUENCING
ARS scientists working closely with the Joint Genome Institute, Department of Energy in California, have partially sequenced the genome of the more virulent SBR species (*Phakopsora pachyrhizi*) and are preparing genetic maps for further diagnostic development. Genome sequence data from the soybean rust pathogen will be indispensable in identifying polymorphic DNA sequences with high potential for strain identification, and will be essential to long-term genetic strategies for the identification of genes that regulate pathogenicity.

SBR RESISTANCE FIELD TRIALS
Agreements are in place in Brazil, Paraguay, China, South Africa, Thailand and Zimbabwe to evaluate soybean varieties currently grown in the U.S. for tolerance to soybean rust and to screen exotic soybean germplasm for resistance to soybean rust under field conditions. Over 170 soybean lines are being tested to facilitate progress toward the development of resistant varieties. In addition, ARS has proposed research to exchange and evaluate Vietnamese and other soybean germplasm for resistance to soybean rust in Vietnam and in other locations.

20,000 SOYBEAN LINES EVALUATED
Over 20,000 soybean lines from the USDA Soybean Germplasm Collection at Urbana, Illinois have been evaluated in a preliminary screening. None of which exhibits broad-spectrum resistance. Among these soybean lines, 800 commercial quality lines are under further study in intermediate trials.

REMOTE SENSING
Studies conducted in South America, in cooperation with Iowa State University, are testing the capacity of remote sensing technologies for detection of soybean rust. LandSat satellite passes were conducted in February and March 2004 at one-meter resolution, and cooperators collected ground truth data. The feasibility of remote sensing for soybean rust is being investigated as a potential component of a national surveillance system.

ADDITIONAL RESEARCH AT UNIVERSITIES
USDA CSREES is funding research at our land grant partners and other institutions including --

- alternative control options for organic soybean growers
- alternative diagnostic methods
- dry bean variety susceptibility
- fungicide product and application efficacy
- soybean varietal resistance

FUTURE RESEARCH PLANS:

Develop rust resistant soybean varieties

a. Complete the evaluation of germplasm from the USDA Soybean Germplasm Collection and international sources for resistance to soybean rust
b. Combine known rust resistance genes into soybeans
c. Identify DNA markers associated with rust resistance
d. Identify new sources of resistance from species other than soybeans
e. Increase current genome sequence information for host and pathogen

Improve effective monitoring network/decision criteria tools

a. Evaluate and compare sampling protocols and early detection tools
b Improve, validate and implement models: climate, atmospheric, biological
c. Define decision criteria for disease management

Evaluate pathogen biology

a. Develop understanding of pathogen life cycle
b. Characterize the pathogen genome
c. Develop additional efficacy data required to register chemical control treatments for soybean rust

Evaluate the economics of soybean rust

a. Update the April 2004 ERS economic assessment
b. Update regional control-cost estimates in cooperation with Louisiana State University researchers, using the most recent information about the various fungicides that will be available to soybean producers during 2005 and their unit costs
c. Update regional, rust-outbreak likelihoods in cooperation with Penn State University and APHIS researchers, using a weather-based model of disease spread and the most recent information available concerning the location of disease spores
d. Examine the economic, environmental, and policy impacts of SBR outbreaks with respect to three over-wintering scenarios – mild, moderate, and severe

Testimony of Steve Dlugosz, CCA
Presented on behalf of the Certified Crop Adviser (CCA) Program and the American Society of Agronomy (ASA) to the House Ag Subcommittee on Conservation, Credit, Rural Development and Research and the Subcommittee on General Farm Commodities and Risk Management
April 27, 2005

The Certified Crop Adviser (CCA) Program is a voluntary certification program of the American Society of Agronomy (ASA) that only 62% of those starting the process achieve. There are approximately 14,000 CCAs throughout the United States and Canada. Each Certified Crop Adviser must pass two comprehensive exams covering nutrient management, soil and water management, integrated pest management and crop management, meet experience, education and reference requirements plus agree to abide by the code of ethics. A Certified Crop Adviser must earn at least forty hours in continuing education every two years.

Certified Crop Advisers are recognized by USDA-NRCS as Technical Service Providers (TSP) in nutrient management, pest management and residue management or tillage practices. Certified Crop Advisers represent over 50% of the TSPs.

A Certified Crop Adviser is an agronomist, providing both agronomic advice and information as well as, in many cases, agronomic inputs to growers. According to Steve Dlugosz, CCA Board Chair, "being a CCA separates us from the 'peddlers of products'. You can peddle products without the work of being a CCA." The majority of Certified Crop Advisers work for an Ag Retail or Farm Cooperative business while others may have their own business providing only services or work for USDA NRCS, Extension, or state/local government agencies.

A Certified Crop Adviser is committed to working with their grower customers in adopting the best management practices that are both economically and environmentally sound. A Certified Crop Adviser is considered a business partner to the grower because both have a lot to gain or lose based on the recommendations that are made. A recent study by the Kansas Farm Management Association on farm profitability and good management identified eight primary traits that contribute to farm profitability: yield, price, government payment, technology, cost, planting intensity, rent and size. Certified Crop Advisers influence five of them: yield, cost, technology, planting intensity and size.

Precision Ag technology adoption is greatly influenced by Certified Crop Advisers from nutrient management planning for more precise placement and amounts of nutrients added to the land to precision seed placement. One grower commented that he was able to add the equivalent of 100 additional acres of production through the adoption of more precise row spacing without adding one more acre of land.

Soybean rust is the most recent challenge facing Certified Crop Advisers and their farmer customers. Yield losses in Brazil approach 80% when the disease goes untreated. The US produces 40% of the world soybean crop. The location of Certified Crop Advisers matches very well with the soybean production areas of the country as displayed by the maps contained in this

packet. Certified Crop Advisers will be involved in monitoring the crops, providing up to date information and intimately involved in decisions to be made. They will be assisting soybean growers with best management practices, product selection and timing of application. In effect, they will be the "go to" resource for the growers.

Early recognition of soybean rust symptoms can be very difficult due to similarities to other common soybean diseases, however, early detection and action is critical to minimize yield losses. Proper product selection is critical. There are two common fungicide modes of action used to combat soybean rust – protectant and/or curative. Protectants must be applied before rust infection takes place. Curatives are the choice once infection has occurred. The problem is in the timely identification of the disease and application of the correct product. For example, if a grower applies a protectant product to a field after soybean rust infection has already occurred, he is unlikely to achieve satisfactory control and may have wasted his money. Both US soybean growers and their Certified Crop Advisers have never faced this type of decision making before.

Further complicating this situation is the painful realty of product availability. Many companies, such as the ones where I work are receiving only a portion of what they ordered and could be needed if an outbreak of rust occurs. This assumes a single application of fungicide. Current experience in Brazil shows that multiple applications are usually needed of a protectant and/or curative fungicides. Many Certified Crop Advisers are concerned about this situation particularly in light of what farmers think is available. An additional concern is the basic logistics of spraying large numbers of acres in a very short time period.

These concerns are primarily short-term issues. As we gain experience and understanding, the soybean production system will adapt to the requirements for the long-term management of soybean rust. However, the urgency in the short term cannot be overstated.

In summary, Certified Crop Advisers will be a conduit of information for soybean growers. They are a trusted, business partner who will help farmers make sound agronomic decisions. Certified Crop Advisers will be intimately involved in treatment decisions and treatment logistics on the farm as they combat the newest challenge for American farmers.

Thank you for the opportunity to speak with you today.

Certified Crop Adviser Program
American Society of Agronomy
677 S. Segoe Road
Madison, WI 53711
www.certifiedcropadviser.org

Contact: Luther Smith, Executive Director
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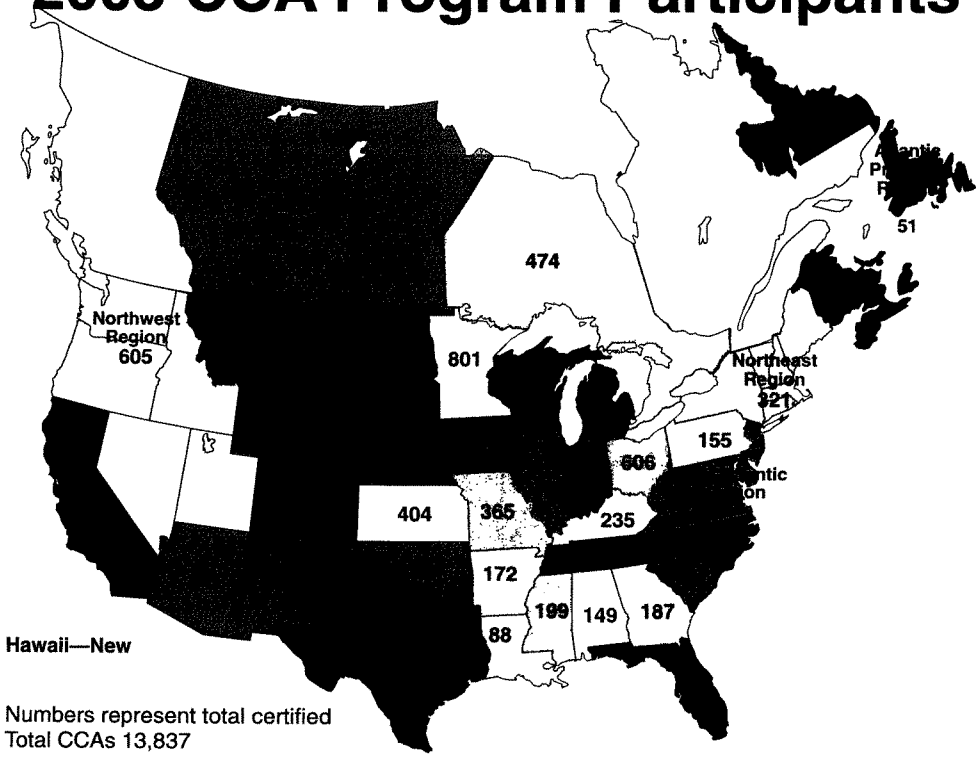
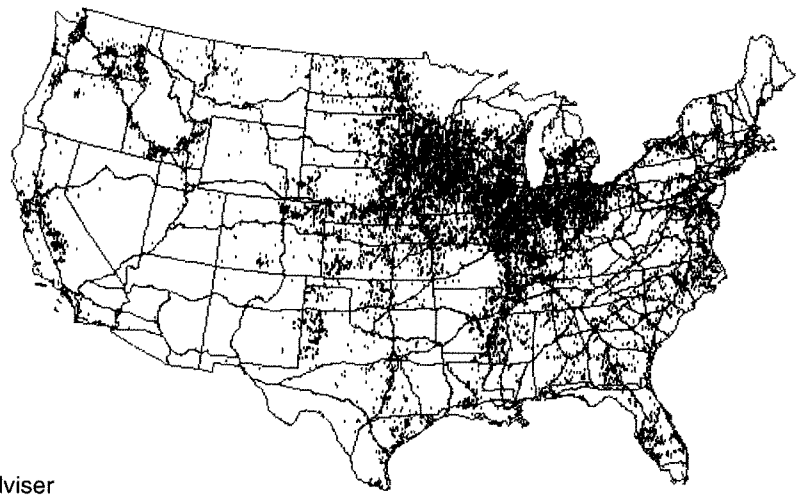
2005 CCA Program Participants



Numbers represent total certified
Total CCAs 13,837

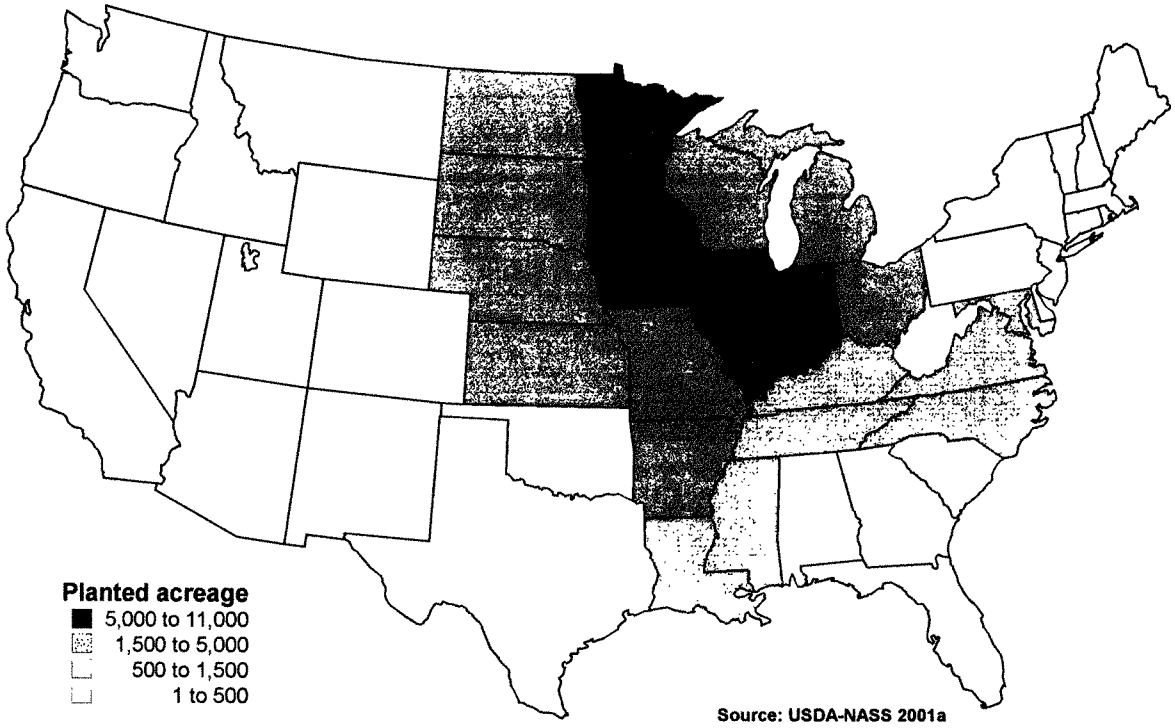
2005 U.S.Certified Crop Advisers (CCAs)



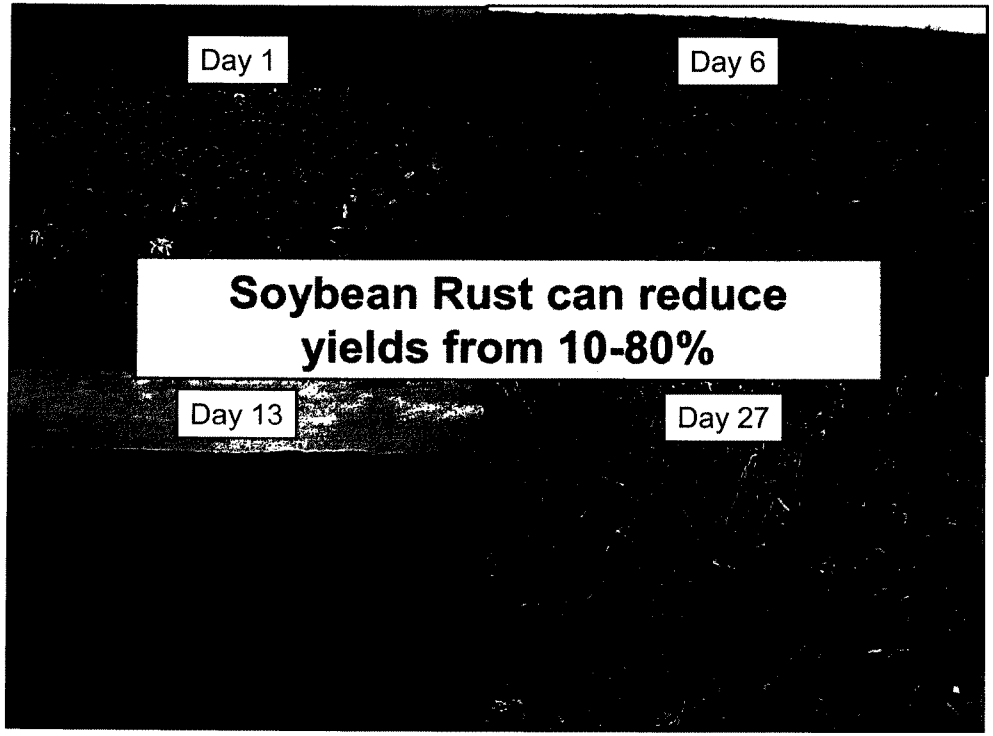
● = 1 Adviser

Total U.S. CCAs 12,761

U.S. Soybean Production



Rust development



INTRODUCTION

The Agricultural Retailers Association (ARA), which represents the retail sector of the U.S. agriculture industry, thanks House Agriculture Subcommittee Chairmen Jerry Moran (R-KS) and Frank Lucas (R-OK) for holding this joint hearing and allowing ARA to provide our views on the issue of Asian Soybean Rust in the United States. ARA represents America's crop input dealers who own and operate about 6,000 U.S. retail outlets and provide crop input materials to America's farmers.

I am the Vice President of Regulatory Affairs & Corporate Relations for the ARA, in Washington, DC. During the past 35 years in the agricultural industry, I have held various executive management, marketing, sales, and association positions. I have a Bachelor of Science degree in Agronomy from California State Polytechnic University and a diverse background in U S Agriculture. I have coordinated extensive support programs with industry groups, food groups, not-for-profit commodity organizations, agricultural consultants, and farm management investors. Currently, I serve on the DHS Food and Agriculture Committee as the industry representative for the Input sub-council. Previously I have managed agricultural affairs at both the Federal and State levels in the private sector.

ARA and member companies understand this disease threat to America's soybean industry. We have been both monitoring the progression of this disease as well as being proactive in our communications with the agricultural retail and distribution industry. I will divide my brief comments into three key parts:

1) Pest Awareness and identification (discovery, disease life cycle, fungicide selection and application timing);
2) Commercial issues (equipment availability, product distribution); and
3) Industry involvement (ongoing discussions with industry partners).

PEST AWARENESS AND IDENTIFICATION

With the rapid spread and devastating impact of the Asian Soybean Rust problem in South America, the question was really not if but when it would arrive at our nation's doorstep. The first signs of this disease appearing in farmers' fields occurred late last year. As a first step in being proactive on this critical issue, ARA invited Burleson Smith, USDA Special Assistant Pest Management Policy, to attend the ARA's annual convention and conference in December 2004. Mr. Smith addressed the open session with comments directed at creating more industry awareness on soybean rust.

ARA provided USDA a complimentary booth area for dissemination of USDA rust leaflets to the hundreds of industry representatives from across the nation in attendance. Retailers were directed to discuss with Mr. Smith disease specific issues and take home literature with background information on the disease and key steps that could be taken to mitigate the problem. Open dialogue between ARA and USDA concerning soybean rust developments has and will continue. ARA members have been provided guidance where they could obtain more background from government web sites and industry sites on Asian Soybean Rust. An enormous campaign of training and awareness has occurred at the local level before the pest has even impacted yields, probably more training and information dissemination has occurred for this pest than has ever been done in U.S. history.

Commercial Issues

ARA has been and continues to be supportive in advising our members to work closely with local soybean producers and include local experts on rust disease such as Ag extension agents and university research experts. Many ARA member have their own agronomy staff that are becoming proficient in disease discovery techniques as well as the disease life cycle in order to spot disease symptoms. ARA has encouraged members to become well versed in all of the current disease control products available and systems including all current Integral Pest Management (IPM) programs appropriate for the control of soybean rust. This knowledge will greatly facilitate a rapid response after initial disease discovery. Included in this process is the selection of the best fungicide materials for disease control, and the appropriate product sourcing routes from either manufacturers or distributors. ARA asks the committee to review the option of using retailers as first responders under the Technical Service Provider (TSP) program administered by USDA's Natural Resource Conservation Services (NRCS). The TSP program was established by Congress as a public private partnership in the 2002 Farm Bill to assist USDA officials with field tasks at an efficiency rate equal to or better than present systems. As program participants, retailers could become an extension of USDA officials in discovery of soybean rust, since agricultural retailers truly are the bridge between science and the soil. Over 90% of America's farmers rely on their local agricultural retailer as their primary source of agronomic technical information. To be considered a first responder and included in the TSP program an agricultural professional should hold at least on of the following certifications: Certified Crop Advisor, Certified Professional Crop Professional, Certified Professional Agronomist, or a similar or related certification.

ARA as an association and ARA members have written countless articles and held numerous meetings to educate our farmer customers on the best management practices for disease control. ARA has supported and encouraged retailers to participate in on-line seminars with the countries leading experts to provide front line information to growers. ARA has also written in a question and answer format several newsletter stories to assist our members with key concepts that retailers will need to know to combat this new threat.

Questions for retailers to consider include:

- Do you already have enough equipment to deliver fungicide control at the proper timing to the target crop?
- Have you reviewed equipment for agronomic crop fit, i.e. will a late season fungicide application hurt the crop from the physical damage caused by the equipment?
- Have you calculated breakeven trigger points for justifying disease control costs, and held appropriate discussions with your farmers?
- Have you discussed soybean rust issues with your soybean growers to ensure a short learning curve if an outbreak occurs?
- Have you secured supplies of product from your distributors if an outbreak occurs? Have you discussed higher credit lines with customers who are potential users of a new soybean fungicide product?
- Are you taking key IPM steps to be good environmental stewards and neighbors?
- Are you recommending drift management materials to be good stewards and avoid chemical trespass?

ARA has encouraged retailers to consider these as well as other questions with their local soybean farmers.

INDUSTRY INVOLVEMENT

ARA has discussed agronomic and application practices with several national organizations to better understand the role of cooperation that will be needed should a major disease out break occur. For example, ARA has reviewed options and ideas on rust with executives of the American Soybean Association, and we are working together to ensure that any disease outbreak is not only handled efficiently, but also handled with the most economical control system possible. ARA realizes that soybean rust adds an entirely new cost and management dimension for soybean producers, and as an industry we are fully committed to make this potential problem as worry free as possible. America's crop protection retailers will continue to work closely with their customers as well as fungicide suppliers to keep America's food supply safe, abundant, and economical.

CONCLUSION

In conclusion, I thank the committee for allowing ARA to participate in this hearing and having the foresight in dealing with this new threat to American agriculture. If ARA can be of any further service we are ready to assist.

Jay Vroom
President and CEO
CropLife America
Written Testimony Before The
Subcommittee on Conservation, Credit, Rural Development & Research
Subcommittee on General Farm Commodities & Risk Management
Committee on Agriculture
U.S. House of Representatives

April 27, 2005

I. Introduction

Good morning, Mr. Chairmen and Members of the Subcommittees.

I am Jay Vroom, President and CEO of CropLife America (CLA), a trade association that represents the developers, manufacturers, formulators and distributors of virtually all crop protection chemicals and crop biotechnology products used by American farmers. I appreciate the opportunity to testify before you today and thank you for your invitation.

CropLife America and our member companies have a critical role in providing fungicide products for use by U.S. soybean farmers and for developing diagnostic and other scientific solutions to help manage Asian soybean rust (ASR).

Just over five months ago, on November 10, 2004, USDA's Animal and Plant Health Inspection Service (APHIS) confirmed the detection of Asian soybean rust in an experimental field in Louisiana, the first time that this disease had been detected in the United States.

It is important to note, however, that planning by the industry, government and growers and work to combat this disease began several years before that. In anticipation that the disease might eventually reach the U.S., CropLife America and its member companies have worked to develop a variety of crop protection fungicide products, and we have worked closely with the states to seek additional fungicides under FIFRA Section 18 for use by growers as emergency crop protection tools. Manufacturers are doing all they can in the face of uncertain conditions to predict the market needs and provide products for domestic use.

As the American Soybean Association (ASA) has said, "This is the first time in U.S. history that EPA has granted prior approval of products needed for emergency treatment of a plant disease before that disease was confirmed in the United States. This unprecedented level of preparedness would not have been possible without the tireless efforts of the ASA, CropLife America, and the EPA."

At the outset of my testimony, I would like to commend the USDA and EPA for their efforts to help American agriculture meet the challenges it faces with Asian soybean rust. We recognize this is an unprecedented situation with potentially serious consequences if timely actions and effective coordination are not achieved by the government, industry, growers and other stakeholders.

CropLife America and its members look forward to continuing our ongoing cooperation with the USDA, EPA, the American Soybean Association, State Departments of Agriculture, the National Association of Independent Crop Consultants and other stakeholders to effectively manage this disease. We also stand ready and willing to work with the Congress, and specifically members of this committee, to meet the needs of your constituents.

While recognizing that there is a certain amount of anxiety among soybean growers since the arrival of this new disease in the United States, I would like to (1) emphasize the importance of keeping lines of communication open, (2) outline the effectiveness of fungicides in treating Asian soybean rust, (3) detail the current toolbox of fungicides available to growers, and (4) summarize some important actions taken by CropLife America and our membership to respond to the needs of American agriculture.

II. The Fungicide Segment of the U.S. Crop Protection Industry

It may be helpful for subcommittee members to first have an overview of the fungicide segment of the crop protection industry and where fungicides are currently applied in the United States.

The United States fungicide market is valued at approximately $700 million, or just under ten percent of the total U.S. pesticide market. Of the total quantity sold domestically, $500 million in fungicide products are applied to agricultural crops while the remaining fungicides are employed in the non-crop market, primarily on turf.

In the U.S., agricultural fungicides are primarily used on fruits and vegetables and are applied to cure and protect plants from fungal and bacterial pathogens. American farmers rely on the use of 50 different chemical active ingredients as fungicides to control over 225 different disease pathogens that attack crops each year. Additionally, over 80 percent of the acreage of most horticultural crops is treated with fungicides. According to the EPA, approximately 73 million lbs. of synthetic fungicide active ingredients are applied annually, which is about six percent of the volume of pesticides applied in the United States.

Examples of fungicide use by growers include potato production where farmers have doubled the volume of fungicides used to grow their crops in the 1990s. The crop protection industry met this increased demand to supply potato growers with fungicide tools and helped them to protect their yields. Without fungicide applications, estimates

show that U.S. potato production would be reduced by 43 percent annually, which represents 18 billion pounds of rotted potatoes. Fungicides have increasingly been used to control fungal diseases introduced into western U.S. states. Due to new disease organisms arriving in the 1980s and 1990s, fungicide use dramatically increased in almonds, pistachios, garlic, artichokes, hops and hazelnut crops.

Internationally, fungicide usage by growers has increased significantly, especially after the appearance of Asian soybean rust in Brazil and that country's adoption of fungicides for its control. Since initial South America detections of Asian soybean rust in 2001, the Brazilian fungicide market has climbed from approximately $100 million to nearly $700 million in 2004. Throughout this period, Brazil continued to increase its soybean acreage and national production. This was made possible through the use of fungicides which proved very effective in controlling soybean rust.

The Crop Protection Research Institute, a research arm of CLA's Foundation, will soon release a major study that analyzes the use of all fungicides in U.S. crop production. Upon completion in June 2005, the study will outline the value of increased crop production due to the application of fungicides. Twenty-three commodity organizations have reviewed and endorsed the study thus far. I would be pleased to share this report with members of this committee.

III. The Crop Protection Industry's Preparations for the Arrival of Asian Soybean Rust

While the arrival of an exotic crop disease in the United States is never welcome news, the good news is the discovery occurred before the planting season and has allowed the industry time to work with farm organizations and federal officials to ensure that crop protection products and information are available to growers, retailers, professional applicators and others on the front lines in combating Asian soybean rust.

In anticipation that the disease would eventually reach the United States, CropLife America first began planning for the arrival of soybean rust in May 2002, hosting a meeting of grower organizations, industry representatives and government experts. Our member companies have worked hard for years to develop a variety of crop protection fungicide products.

In addition to routinely working with EPA's Office of Pesticide Programs (OPP) on fungicide registrations and Section 18 requests by various states for emergency exemptions, CropLife America has participated with USDA's Technical Science Working Group on Soybean Rust along with a wide variety of stakeholders including university scientists, state departments of agriculture representatives, federal regulatory officials, commodity group representatives, and independent crop consultants. We are also participating in a second USDA work group formed to develop quarantine exemptions and plans for the potential impacts of soybean rust on specialty legume crops.

CropLife America and its members have worked to coordinate and consult with a number of USDA's agencies including the Animal and Plant Health Inspection Service, the Agricultural Research Service, the Agricultural Marketing Service, the Cooperative State Research, Education and Extension Service, the Economic Research Service, the Foreign Agricultural Service, the Risk Management Agency as well as state extension service personnel in their efforts to combat ASR. This work has included helping to develop sampling protocols for fungicide-treated soybeans, working on MRLs for export markets, mapping rust-resistant soybean genes as well as sharing efficacy and resistance data on fungicides. For example, at the request of USDA's Foreign Agriculture Service, we hosted a meeting on February 11, 2005 to work on issues of international MRLs for newly approved treatments to combat rust and to help protect overseas markets for soybean producers.

Our member companies that manufacture and distribute fungicides have generously shared their expertise in combating soybean rust in Latin America and Africa with plant scientists, federal regulators and U.S. soybean growers. This experience is significant, since these companies have several years of efficacy data and experience in refining application rates and methods that can be adapted to address circumstances in the U.S. Several companies have transferred personnel with experience dealing with soybean rust from their South American posts to the United States to provide some additional reinforcements and expertise for U.S. soybean growers.

We have met with numerous agricultural stakeholders to discuss a multitude of soybean rust issues and also enhance coordination and communication within the agricultural community. These organizations include the American Soybean Association, United Soybean Board, North American Grain Export Association, National Association of Independent Crop Consultants, the American Farm Bureau Federation, the American Phytopathological Society, the National Oilseed Processors Association, the National Agricultural Aviation Association, the Agricultural Retailers Association, the North American Grain Congress, the National Association of State Departments of Agriculture and the National Association of Farm Broadcasters.

We believe that collectively we all have a stake in working to minimize the potential damage from Asian soybean rust. Towards this end, CropLife America is collaborating with dealers and distributor organizations to help ensure their grower customers receive information about fungicides and also communicate field data back to manufacturers during the 2005 season.

We are keenly aware that ASR is a relatively new disease outside of Asia and discovered in the U.S. just five months ago. Additional information is becoming rapidly available. However, because of a variety of circumstances, this new challenge will require constant communication and coordination within the agricultural community. To quote Mississippi State plant pathologist emeritus, Billy Moore, "The main thing farmers need to know about the disease is there is no reason to panic. But there is need to plan."

Interestingly, when USDA recently surveyed producers about their awareness of Asian soybean rust, among farmers intending to plant soybeans the awareness was 89 percent. This group had heard, read or seen information on Asian rust, while among all producers surveyed only 43 percent indicated they had heard about the disease. Only six percent of producers indicated that soybean rust was a factor in their soybean planting decisions, and of this group seven percent told USDA they were increasing their acreage, while only three percent indicated that they intended to decrease their plantings. Farmers in the Mississippi River Delta states and the Southeast were most heavily influenced by the disease in their decision making. Farmers growing less than 100 acres of soybeans were least exposed to information about the disease, according to the Prospective Plantings Report released in March by USDA's National Agricultural Statistics Service.

To ensure adequate communication with agricultural stakeholders, CLA and many of our member companies have ramped up the industry's outreach efforts by participating in numerous agricultural industry meetings, trade shows, web-based seminars and trade press interviews in recent months. Our members have also launched communications outreach campaigns to reach dealers, applicators and growers and update them about fungicide products, efficacy, application technologies, resistance management and other issues. Fungicide companies have also established soybean rust web sites and launched paid advertising campaigns to the grower community.

IV. Benefits of Fungicide Products and Best Management Practices to Control ASR

A fungicide is a specific type of pesticide that controls fungal diseases by specifically inhibiting or killing the fungus in the plant. Fungicide treatments to manage Asian soybean rust have proven very effective in other countries. However, to be effective, most fungicides need to be applied before infestation occurs or at the first appearance of symptoms.

Given the nature of Asian soybean rust, which is spread long distances, even intercontinental distances, by wind, there is nothing any of us could do to prevent its ultimate arrival in North America. We were probably successful in delaying its arrival through strict phytosanitary measures, but the day of reckoning has come. USDA-ARS plant pathologists say the odds for an epidemic of Asian soybean rust this year depends on the infestation level, winter spore survival along the Gulf Coast and weather conditions.

Rust was found in November and December 2004 scattered over nine states, but there were few soybeans left in the field at that time. Still, USDA's Soybean Research Center in Illinois predicts that ASR will be present in the southeastern United States most years from now on. The further north and west you go, the chances for rust infestations decrease, but ASR will be present in most soybean production areas at least 50 percent of the time, according to the USDA.

As you've heard today, soybean rust dispersal is highly dependent on environmental conditions. Once the pathogen is present, abundant spore production occurs during wet leaf periods and moderate temperatures (60 to 80 degrees F). The disease can spread quickly within a field, according to plant scientists with experience in South America. However, U.S. conditions - in the Midwest for example - are not akin to those in Mato Grosso, Brazil and regions in Africa where soybean rust has spread.

Long-distance dispersal is dependent on wind patterns and weather conditions, and is the subject of current research and close monitoring by the USDA, CropLife America member companies, extension service personnel and growers. We applaud the USDA for setting up its soybean rust monitoring framework for reporting where rust has been confirmed and is likely to spread during the 2005 season. In addition to monitoring efforts by the government and growers, CropLife America members have in place their own tracking programs, including internet-based systems, which are designed to be early warning systems. Fungicide manufacturers have indicated that they are prepared to move products quickly into affected areas, sometimes within 24 hours of detection.

USDA's Economic Research Service estimates yields in soybeans treated with fungicides will average just four percent lower than rust-free yields. Assuming that there are no control efforts and fungicide applications are not applied, yield loss can be significant. Soybean yield losses caused by ASR of up to 80 percent have been reported in other parts of the world. Losses of 50 percent are not uncommon during severe outbreaks if crops are not effectively treated with fungicides. Although data on fungicide efficacy for rust control in the U.S. are currently limited because it has not yet affected crops, there is valuable information gathered from the African and South American experiences about fungicides and their effectiveness in controlling soybean rust. Still, this is a new disease and circumstance with unique conditions for domestic growers.

In parts of many southern U.S. soybean-producing states, growers already routinely use fungicides on soybeans to control foliage diseases other than soybean rust, and nearly 1.5 million acres of soybeans were treated with fungicides commercially in 2004. As a result, U.S. growers are seeing what producers in Brazil experienced – the potential for yield increases - as they worked to control the pre-soybean rust fungal threats of frogeye leaf spot, aerial web blight, brown leaf spot and other diseases. Observations by fungicide manufacturers in Brazil, as well as field-trial data with U.S. growers in 2002 and 2003 show an increase in yields – a 7-bushel per acre response on average – with the application of fungicides to treat these combined diseases.

Soybean rust resistant plant varieties are not available to growers at this time, and their development is part of ongoing scientific research and remains a long-term goal. CropLife America and its member companies are extensively involved with scientific efforts to generate a better understanding of soybean diseases and enhance breeding and biotechnology efforts to develop rust-resistant genes. One member company, for instance, has entered into a collaborative agreement with USDA's Agricultural Research Service and the University of Illinois to map the locations of rust-resistant soybean genes. This public-private sector partnership is expected to develop information for plant

breeders about rust-resistant genes by identifying genetic markers within the soybean genome.

In the interim, research and the crop protection industry's experience with rust in South America and Africa demonstrates that a proper fungicide treatment regime results in yields comparable to uninfected plots, even in heavily infected areas. Brazil is the second leading soybean producer next to the U.S. and its exports of soybeans to its key markets have not been affected by ASR, indicating that fungicide treatments have been effective, according to the USDA and other observers. This information will be supplemented by what we learn from actual experience in the U.S. over the next few years.

Generally speaking, fungicides can be categorized as either preventative or curative. Preventative treatments are most effective when applied before an infection has occurred. Curative fungicides are effective as a first application when rust symptoms are visible. However, none of these fungicides can cure advanced lesions in a leaf – underscoring the critical importance of monitoring by growers, the USDA and others to ensure the timely applications of fungicides. Frequency of treatment will depend on the level of infection at the initial application of fungicides. Therefore, to manage the disease, early applications are critical. Simply put, early detection is required for effective management of the disease with fungicide products.

Monitoring environmental conditions and scouting the crop for signs of disease increase will help indicate whether a second or third spray is needed. Typically one to three and occasionally four applications are needed to control the disease, according to plant scientists and USDA officials who have estimated an average treatment cost of $25 per acre for two fungicide treatments. Other estimates have put approximate fungicide costs in the area of $45 dollars for three applications. Actual economics have yet to be formulated, however, since the number of applications, types of fungicides, rates, adjuvant and application costs have yet to be determined in the U.S.

Growers should carefully follow all label directions on individual products. Fungicide manufacturers are supplying information about spraying and proper procedures for effective coverage such as spray volume, pressure, ground speed, placement, application timing and coverage. However, it is important to emphasize that just applying fungicide to a rust-infected field will not be enough to control the pathogen.

Multiple applications of the fully registered fungicide products are allowed. A maximum of three applications per season of Section 18 products is allowed, with no more than two applications of any one fungicide active ingredient from among those products.

Fungicide manufacturers, dealers and distributors will be working closely with all stakeholders during the current growing season. But, it is important to stress that growers be well informed about the available options and have a management plan in place should rust arrive in their area. CropLife America suggests that decisions about what types of fungicides to apply are best discussed with the local expertise of retail dealers, extension agents or crop consultants. Treatment decisions must be based on closely monitoring the

spread of the disease, detection in local fields, weather conditions and other factors. Our understanding is that local extension services, State Departments of Agriculture and other crop consultants will offer fungicide management plans to growers as the 2005 season progresses.

While not a drop of fungicide has been sprayed in the U.S. on soybean crops this season, our industry has received multiple questions about the efficacy of fungicides to manage soybean rust. The potential for resistance development is an important question addressed by the manufacturer in deciding whether and how to develop any new product, including fungicides, insecticides and herbicides. Information and research to improve the efficacy of fungicides is an important and ongoing part of product development with CropLife America's members.

However, it is important to reiterate that ASR has been a problem in Brazil and elsewhere around the globe for some time and has been effectively managed with fungicides. This experience has given the scientific community important insights into managing fungicide use to manage resistance development to ASR. Certainly, one of the best ways to prevent resistance development is to have a variety of products, approaches and classes of chemistry to attack the problem, which is another reason why we are working closely with the EPA to ensure that approvals are granted promptly and a full toolbox of fungicide products is available to growers.

V. Fungicides Available to Treat Asian Soybean Rust

Fungi are the number one cause of crop losses worldwide. Because fungicide treatments have proven effective in managing Asian soybean rust in other countries and currently provide the only option for U.S. soybean growers to contain rust, it is critical that growers have an adequate array of fungicides.

CropLife America, the crop protection industry, EPA, USDA, state departments of agriculture, the American Soybean Association and others have worked hard in recent months to ensure that these products are approved for use by soybean growers. This level of preparedness has produced results and the list of approved fungicides for soybean rust control has expanded significantly.

Prior to the discovery of ASR in Louisiana last November, there were only two fungicides approved for use on soybeans to combat Asian rust in the United States. As of mid-December, there were eight chemicals approved with at least 12 different fungicide products available for farmers to buy. Today, nine active ingredients manufactured by ten companies are formulated individually or in combination into 18 different fungicide products that are available to U.S soybean growers. These nine fungicide active ingredients from four chemical classes: triazoles, strobilurins, chloronitriles and carboxamides, are currently available for management of soybean rust in the U.S.

Currently, some fungicide products have Section 3 registrations for use on soybeans, while others have emergency exemptions for limited use under FIFRA Section 18 while their registrations are pending. Of the 18 products currently approved, eight have Section 3 registrations and can be used by growers in any state. The remaining ten rust control products have Section 18 approval for use in 30 soybean producing states. Not all ten products are currently approved for use in all of these states; however EPA's review of additional Section 18 requests is underway.

Currently some Section 18 fungicides are pending, along with refinements to approved Section 18 labels. Nine products, containing a total of six new active ingredients plus two already approved active ingredients, are the subject of a Section 18 application which was submitted by the States of Minnesota and South Dakota in March 2005. CropLife America believes that EPA's review of these requests can move expeditiously by taking advantage of risk assessment work that has already been completed to ensure that timely decisions are made in its approval process.

VI. Market Supply and Distribution Issues

To determine demand and distribution decisions, each manufacturer is doing all it can, in the face of uncertain conditions, to predict the market needs and provide products for domestic use. These decisions will require careful consultations by individual companies with a variety of government experts and stakeholders such as dealers, distributors, meteorologists, plant pathologists, extension agents, growers and others to ensure the availability and timely distribution of products.

Several factors will help facilitate this process and enable the markets to meet demand. For example, soybean planting seasons are a bit different across U.S. soybean production regions. Southern soybean farmers, distributors and suppliers may be busy while Midwestern farmers, distributors and suppliers may not. The difference in seasons allows manufacturers, distributors and applicators to help each other manage this challenge. Wind patterns and climatic conditions will also be key factors in determining where and to what extent ASR affects U.S. crops during this season and requires manufacturers and distributors to respond to these market needs.

As a not-for-profit trade association, CropLife America takes anti-trust laws very seriously and is prohibited from discussing or addressing issues of inventory, price, distribution and market segmentation. While can't comment about these issues specifically, let me say that CropLife America believes the marketplace works effectively and our membership has extensive experience working with a highly sophisticated chemical distribution system.

We know that whatever we can do to manage an outbreak of Asian soybean rust and protect crop yields will benefit U.S. growers, consumers and industry alike. I can assure you that our members are well aware of the situation and I believe they will be fully responsive to the needs of their customers. Of course, each company will continue to

make independent decisions about production consistent with anti-trust laws. But they all have a strong incentive to meet this demand by soybean growers for fungicide products.

Overall costs to manufacturers for the discovery and development of a new pesticide currently average about $184 million. The data, which take many years to develop, undergo rigorous scientific scrutiny by EPA experts. Only upon completion of this extensive research and review process will EPA register the product for use. On average, the screening of 139,000 compounds yields just one commercial product. In the year 2000, the entire process from initial discovery to commercialization took over nine years.

Thanks to the leadership of Congress in passing the Pesticide Registration Improvement Act (PRIA) in 2004, the predictability and speed of the approval process for new fungicide products that are in the pipeline may be improved. EPA's efforts to meet decision timelines under PRIA during this first year of implementation are encouraging. However, the Administration proposals to reinstate old registration and tolerance fees in the President's FY 2006 Federal Budget threaten to undermine these potential improvements which were passed by Congress just last year. CropLife America strongly urges Members to oppose the reinstatement of these fees.

Although it is difficult for us to predict what the next generation of fungicides for rust control will be and when they will come to market, we can assure you that CropLife America's members are working to ensure that any new products in the pipeline are available to growers as quickly as possible. On an ongoing basis, crop protection companies, university researchers and the soybean industry are aggressively searching for additional efficacious fungicides and formulations, as well as application rates and methods to combat rust.

VII. Establishing Tolerance Levels for Soybean Export Markets

Market analysts and USDA economists have suggested that the discovery of ASR in the United States is not likely to have an impact on U.S. soybean exports because nearly every major soybean producing country in the world also is infected by Asian soybean rust. However, with half of all U.S. soybeans destined for overseas markets and an export value of approximately $9 billion annually, CropLife America believes that timely government action by the EPA is necessary to establish the tolerances for residues in soybeans treated with fungicides.

Along with the American Soybean Association and the American Farm Bureau Federation, we are urging that adequate EPA resources be made available to establish tolerance levels for fungicide products approved for use on soybeans prior to the harvest season. We are also joining with farm organizations to urge the government to formally notify major soybean export customers of these U.S. tolerances through the World Trade Organization notification process.

VIII. Recommendations from CropLife America

CropLife America would like to emphasize the importance of all stakeholders, both public and private, ensuring that lines of communication remain open as the soybean growing season progresses.

Greater transparency about Section 18 approval timeframes and communications outreach efforts by EPA should also be considered to reduce uncertainty and speculation within the stakeholder community since registrants are legally restricted under FIFRA from advertising products to combat soybean rust while awaiting Section 18 or Section 3 approval. This limits the information available to extension agents, crop consultants, distributors, applicators and growers about the options for control of the disease.

We also believe that review by the EPA of additional state requests for Section 18 emergency exemptions should consider taking advantage of risk assessment work that has already been completed to ensure that timely decisions are made.

Finally, because plant scientists cannot precisely predict the extent of any outbreaks of ASR this year, CropLife America believes it is critical to provide an adequate array of fungicide products for growers and ensure that government resources are allocated to facilitate fungicide approvals and establish the corresponding tolerances.

IX. Conclusion

Asian soybean rust is a new disease in the United States with a wide array of possible outcomes, so it is impossible for stakeholders to have absolute answers. This is a new challenge for American agriculture and experts believe that ASR may not behave the same in North and South America due to differences in U.S. weather patterns, soybean development, acreage, genetics, growing season, host distribution, and other factors.

Nonetheless, a large amount of work has already been completed to prepare for the arrival of Asian soybean rust on U.S. soil. Additional information, as well as new tools and technologies to combat rust, are rapidly becoming available. Fungicide manufacturers are adapting successful ASR management strategies from other areas of the world to effectively manage the disease in the U.S.

CropLife America and its membership are actively coordinating and communicating with public and private stakeholders. We look forward to providing effective plant science solutions and products for use by U.S. soybean producers during this and future growing seasons.

Certainly one thing that was accomplished this morning by Chairman Moran, Chairman Lucas and Members of the subcommittees is to send a clear message to all stakeholders in the agricultural community – including the crop protection industry – that suppliers of agricultural inputs have a responsibility that we must take seriously.

CropLife America will take Congress' message from today's hearing and encourage our members to continue their work to ensure that sufficient fungicide products are produced, distributed and made available where needed. While it is important to understand that individual companies will make their own commercial decisions, CropLife America will make sure that your message is communicated to our members.

Mr. Chairmen, we look forward to working with you and the other subcommittee members in the coming months.

April 27, 2005

STATEMENT OF JOSEPH GLAUBER

DEPUTY CHIEF ECONOMIST, U.S. DEPARTMENT OF AGRICULTURE

BEFORE THE SUBCOMMITTEE ON CONSERVATION, CREDIT, RURAL DEVELOPMENT AND RESEARCH AND THE SUBCOMMITTEE ON GENERAL FARM COMMODITIES AND RISK MANAGEMENT

April 27, 2005

Mr. Chairman and Members of both Subcommittees, thank you for the opportunity to be at today's hearing on issues on soybean rust and its implications for U.S. agriculture. Soybean rust (SBR) is caused by two species, Asian (Old World) rust (*Phakopsora pachyrhizi*) and South American (New World) rust (*Phakopsora meibomiae*). My testimony will focus on Asian soybean rust because it is more destructive than the New World rust.

Status

Before I get into my testimony, I would like to spend a few minutes providing you with an update on what USDA is doing to inform the public on this issue and where we stand with respect to Asian soybean rust in the United States.

As many of you are aware, on March 15, 2005, Secretary Johanns unveiled USDA's interactive soybean rust web site as part of a national soybean rust plant disease surveillance and monitoring network. The purpose of this website is to help ensure farmers and producers have easy access to the best information and guidance on soybean rust.

The web site provides information on the extent and severity of soybean rust outbreaks in the United States, Caribbean basin and Central America; will give users up-to-date forecasts on where soybean rust is likely to appear in the United States; reports where the disease exists by

county; and provides links to the National Plant Diagnostic Networks laboratories and other web sites to give producers effective disease management options.

USDA agencies, including the Animal and Plant Health Inspection Service; the Cooperative State Research, Education and Extension Service; the Risk Management Agency; and the Agricultural Research Service, partnered with soybean industry organizations, state departments of agriculture and many in the research and scientific communities to launch this comprehensive web site. This effort is part of the strategic plan that USDA implemented in 2002 in anticipation of a potential soybean rust find in the U.S., which established priorities of protection, detection, response and recovery.

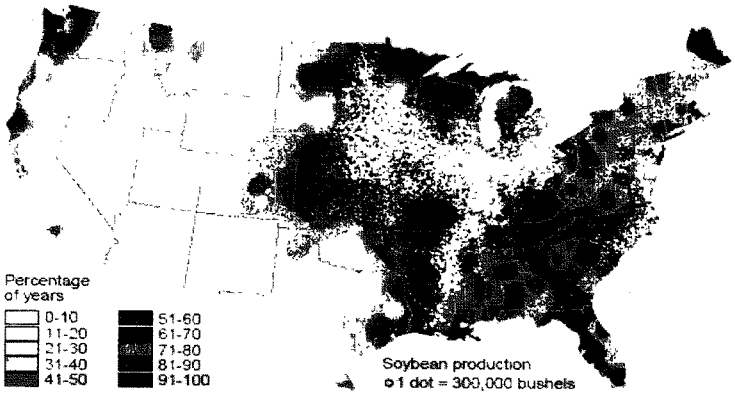
With respect to the spread of soybean rust in the United States, as of April 19, 2005, the first cases of soybean rust in 2005 has been confirmed in Pasco, Marnando and Marion Counties, in Florida. In all three counties, the rust was confirmed on kudzu and no cases of rust have been found on soybeans. National activity has increased in terms of surveillance of rust on other crops as well as the planned/planted sentinel plots. Most states in the southern U.S. have planted at least a portion of their sentinel plots and some plots have been planted as far north as Illinois. Recent spore transport simulations indicate a northerly flow from Florida with concentrations higher in northern Florida and parts of Georgia.

However, no national advisory is active at this point in time because it is early in the soybean growing season, and observations indicate that soybean rust is confined to isolated areas of over-wintering kudzu in Florida. Disease forecast models show little or no spore deposition and available host is limited to restricted plantings and non-soybean hosts in southern areas.

Model predictions do not indicate that scouting is required in commercial soybean fields at the present time.

The figure below provides some guidance as to which areas of the United States may be most suitable to support the establishment of soybean rust. As described in the figure, climatic conditions in the eastern part of the United States are expected to support soybean rust in 70 percent of the years while climate conditions in the central United States are expected to support soybean rust in 50-70 percent of the years. The reason for concern about soybean rust in the United States is that most of the soybeans produced (represented by the yellow dots in the figure) in the United States are grown in those areas where climate conditions are expected to support soybean rust in greater than 50 percent of the years.

Percentage of years out of 30 that climatic conditions are expected to support establishment of soybean rust



Source USDA's Animal and Plant Health Inspection Service and National Agricultural Statistics Service.

History of Soybean Rust

Asian soybean rust is a fungus that is spread primarily by windborne spores that can be transported over long distances. Seed-borne transmission has not been documented with normal soybean production practices; furthermore, soybean rust could not be produced in controlled experiments with spore-contaminated soybean seed. Clouds of spores are released if infected plants are disturbed by wind or by individuals walking through rust-infested areas.

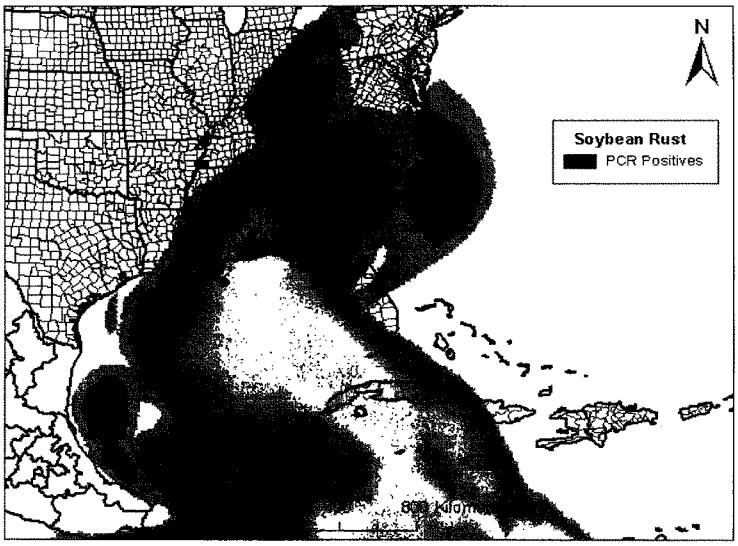
Soybean rust is very mobile and has been reported in numerous countries throughout the world including Australia, China, India Taiwan, Philippines and Thailand in the Eastern Hemisphere; Brazil, Argentina, Paraguay in the Western Hemisphere; and in Zimbabwe, Nigeria and South Africa on the African continent. Researchers believe it was spread by wind currents from Asia to Africa, then to South America.

Soybean rust was first reported in Japan in 1902. By 1934 it had been found in other Asian countries and Australia and by 1951 it was reported in India. While there have been early reports of soybean rust in equatorial Africa, the first confirmed report on the African continent was in 1996 from Kenya, Rwanda, and Uganda. In 1998, spores were blown 1,350 miles from Uganda to Zimbabwe. Since 1998, soybean rust has been reported in Zambia, Mozambique in 2000, and South Africa in 2001.

The first detection of soybean rust in the Western Hemisphere occurred in 2001 in Paraguay. By 2002, soybean rust was widespread throughout Paraguay and in limited areas of Paraguay's border with Brazil and in northern Argentina. Between 2001 and 2003, the disease spread more than 1,500 miles, from Paraguay to near the equator, infecting as much as 90 percent of Brazil's soybean acres on the way.

In November 2004, USDA's Animal and Plant Health Inspection Service confirmed the first instance of Asian soybean rust found in the contiguous United States on soybean leaf samples taken from two fields in a production farm associated with a Louisiana State University research farm in Baton Rouge.[1] Model predictions indicated that soybean rust spores had been widely dispersed throughout the southeastern United States weeks earlier, and subsequent field and laboratory observations confirmed this distribution. The figure below depicts the predicted incursion of soybean rust deposition in the United States as of January 12, 2005, with counties that have experienced actual positive soybean rust spores detections since November 2004 depicted in red. Higher predicted concentrations of spores during the active hurricane season of 2004 are represented by the lighter colors on the map (orange and yellow) while lower predicted concentrations are represented by the darker colors (blues).

[1] Soybean rust was first found in the United States in Hawaii in 1994 on cultivated soybeans on the islands of Oahu, Kakaha, Kauai, and Hilo.



Source: D. Borchert, G. Fowler, and R. Magarey (USDA-APHIS-PPQ-CPHST-PERAL).

While the exact source of infection in the United States may never be known, a probable explanation is the spread of the disease from South America to the United States during the active hurricane season in 2004.

Treating Soybean Rust

Fungicides provide protection and delay soybean rust epidemics as long as they remain in sufficient concentration in or on the soybean leaf. For fungicides to be optimally effective against soybean rust, they must be applied at the proper time. Experience from Africa and Brazil indicates that early treatment is critical for optimum fungicide performance with soybean rust.

Fungicides must be applied in the early stages of a soybean rust epidemic (i.e., pre-infection to less than 5 percent incidence on leaves in the lower canopy) to be highly effective. Disease control may be severely compromised if applications are made after soybean rust is firmly established (greater than 10 percent incidence in the mid-canopy). Reports from Brazil indicate that when 20-30 percent of the soybean leaves in the mid canopy are affected by soybean rust, fungicides are no longer able to protect plants sufficiently from additional infections, or yield reduction is already so great that a fungicide application cannot recover treatment cost. The U.S. Environmental Protection Agency (EPA) has approved several fungicides for soybean growers. A list of pesticides that were available as of March 31, 2005 can be found at the following web site: http://www.epa.gov/oppfead1/cb/csb_page/updates/soybean_rust.htm. Updates will follow if additional new products clear the pesticide registration process.

Economic Impacts

Soybean rust has devastated soybean crops in many parts of the world, with reported yield losses as high as 80 percent in some afflicted areas of Africa and South America. In Australian test plots where no fungicides were applied, yield losses reached 60-70 percent. In 2003, Brazilian producers lost $1.3 billion to soybean rust, a figure representing lost yield and the cost of fungicides applied to combat further losses.

Effects on Producers

Determining the effects of soybean rust on individual producers is difficult because of the uncertainty about the disease and the lack of experience in treating the disease in the United

States. Even the costs of fungicides used to treat soybean rust are highly variable. For example, a study by researchers at the Louisiana State University found that fungicide costs ranged from $6.53-$20.00 per acre depending on the fungicide and the use rate. Those researchers concluded that the estimated cost associated with 2 applications ranged from $19-$50 per acre with an average of $30 per acre. Researchers at the USDA's Economic Research Service (ERS) also noted the wide range fungicide costs associated with treating soybean rust and assumed an average annual treatment cost of $25 per acre was reasonable.

The ability of producers to absorb higher fungicide costs will be determined by soybean yields and prices; with farmers who can produce higher yields better able to absorb the costs compared to farmers with lower yields. In a breakeven analysis conducted by researchers at the Louisiana State University, farmers who could not produce soybeans with yields greater than 30 bushels per acre found it difficult to produce soybeans profitably at current prices. Similarly, researchers at ERS found that simulation results were far more sensitive to changes in yields than fungicide costs. Because soybean yields are higher in the Midwest compared to Southern States, one would expect farmers in Southern States to be more adversely affected by soybean rust than farmers in the Midwest.

Effects on Exports

Aside from the direct production impacts, we do not expect soybean rust will have a detrimental impact on U.S. exports of soybeans or soybean products. Because soybean rust is spread primarily by windborne spores and no seed-born transmission of the disease has been documented there is little concern that the disease would be spread through exports. Brazil's

experience since soybean rust was discovered there suggests that exports would be largely unaffected.

Aggregate Effect on Soybean Market

In an effort to assess the possible economic impacts of soybean rust in the United States, in April 2004, USDA's Economic Research Service (ERS) published a report on the economic implications of soybean rust in the United States. The ERS study concluded that during the first year of soybean rust introduction in the United States, the expected value of the economic losses ranged from $640 million to $1.3 billion, depending on the geographic extent and severity of initial entry. As farmers adjusted to the presence of soybean rust, annual economic losses ranged from $240 million to $2 billion, again, depending on the severity and extent of subsequent outbreaks.

The wide range of estimates reflects the uncertainty regarding the biological and economic impacts of soybean rust on domestic soybean producers. The relatively smaller economic losses ($240 million) are based on the assumptions that the spread of soybean rust in the United States is limited to the Southeast (Alabama, Florida, Georgia, and South Carolina), Delta (Arkansas, Louisiana, and Mississippi), and Appalachia (Kentucky, North Carolina, Tennessee, Virginia, and West Virginia) regions and fungicides used to treat soybean rust increase yields by 0.9 percent. The relatively larger economic losses ($2 billion) are based on the assumptions that the spread of soybean rust extends to all soybean regions in the United States and yields fall by 9.5 percent even with the use of fungicides to treat soybean rust.

Farmers Responses

Each year USDA's National Agricultural Statistics Service (NASS) conducts the March Agricultural Survey in every producing State. Randomly selected farmers across the United States were asked what they intend to plant during the upcoming growing season for a number of crops, including soybeans. For the Nation as a whole, soybean producers intend to plant 73.9 million acres in soybeans in 2005, down about 2 percent or 1.3 million acres from last year's record high levels. This decline was less than the 2 million acre decline many individuals expected and reflects changes in both economic conditions as well as the threat of soybean rust. For example, almost 40 percent of the decline was caused by a 500,000 acres decline in expected soybean plantings in North Dakota; a state which, compared to other parts of the country, has a relative low soybean rust suitability index. In other states, the threat of soybean rust may have played a more important role in farmers expected plantings. In Louisiana, where soybean rust was first discovered in the contiguous United States, expected soybean plantings fell by 250,000 acres in 2005. The largest percentage declines from 2004 levels was in States where soybean rust had been detected in 2004: Florida (down 42%), Louisiana (down 23%), Alabama (down 24%), Georgia (down 21 percent) and South Carolina (down 19%).

Due to the discovery of soybean rust, NASS included questions on Asian soybean rust in the March Agricultural Survey to measure farmer awareness of soybean rust and how its discovery affected planting decisions for the 2005 crop. Farmers in the 31 soybean-producing states were also asked:

- Have you seen, read, or heard any information about Asian soybean rust? If a farmer responded "yes," they were then asked:

• Was Asian soybean rust a decision making factor in your soybean planting intentions for 2005? If a farmer responded "yes," they were asked two additional questions:

• Did Asian soybean rust result in an increase, decrease, or no change in your soybean planting intentions?

• By how many acres did your soybean intentions change due to the Asian soybean rust?

Results of the March Agricultural Survey, published in the USDA's Prospective Plantings report, revealed that 89 percent of soybean producers in the 31 soybean-producing States were aware of soybean rust and have seen, read, or heard information about the disease.

While most soybean producers were aware of soybean rust, only 11 percent reported that it was a factor in their planting intentions. Of those 11 percent, 49 percent decreased their intended soybean acreage due to the threat of soybean rust, while 9 percent increased their intentions. The remaining 42 percent of soybean producers who reported that soybean rust factored into their planting decisions had not changed their intentions as of March 1, 2005.

As expected, the greatest percent of soybean producers that reported soybean rust was a decision making factor in their soybean planting intentions for 2005 were located in regions of the country that are likely to be the most affected. Compared to 11 percent nationally, 29 percent of soybean producers in the Southeast region (Alabama, Florida, Georgia, and South Carolina) and 19 percent of soybean producers in the Delta States region (Arkansas, Louisiana, and Mississippi) reported that soybean rust was a decision making factor in their soybean planting intentions. Of those soybean producers in the Southeast and Delta States regions that reported soybean rust was a decision making factor, 63 percent decreased their soybean planting

intentions. The results from the 2005 March Survey on prospective planting for soybeans and responses to the questions on soybean rust are included at the end of my testimony.

Crop Insurance

Soybean rust is an insured peril under the Federal crop insurance program. However, as with all crop insurance policies and plans of insurance, farmers must use good farming practices to ensure that in the event of any naturally occurring disease outbreak, such as soybean rust, they will be eligible for an indemnity based on the full amount of loss. If good farming practices are not followed, production attributed to the failure to follow good farming practices is assessed, resulting in a reduction in the indemnity due the insured.

Therefore, USDA's Risk Management Agency (RMA) encourages insured producers concerned about the impact of soybean rust to use good farming practices by seeking and following recommendations of agricultural experts, such as extension agents and certified crop consultants, to control soybean rust. Appropriate treatment may vary from timing of application (pre- or post-discovery of the disease), frequency, and choice of chemical or other determining factors. Insured producers should follow developments as to the identification and spread of soybean rust disease and stay informed and updated concerning appropriate treatments that may apply to their situation. RMA also recommends that insured producers document the date of discovery of the disease, any recommendations received from agricultural experts, and actions taken regarding the application of appropriate control measures.

It is the approved insurance providers' responsibility to verify that losses are unavoidable due to naturally occurring events. That includes verifying producers followed good farming

practices or that chemicals or application equipment were not available or natural events (for example, excessive moisture) precluded access to the crop to timely apply the recommended treatments.

Conclusions

In conclusion, let me reiterate that USDA will continue to partner with soybean industry organizations, state departments of agriculture, and many in the research and scientific communities so that producers can find the latest information on the spread of soybean rust. This information can be accessed from the USDA website at http://www.usda.gov/soybeanrust. In addition, information about soybean rust control measures may be obtained from local chemical dealers, crop consultants, and plant pathologists in agriculture departments of State governments, and universities who are familiar with the risks of exposure to this disease.

Again, thank you for allowing me to testify before this subcommittee. I am happy to answer any questions you might have.

Statement by Neal Bredehoeft, President
American Soybean Association

Before a Joint Hearing of the
Subcommittee on General Farm Commodities and Risk Management
Subcommittee on Conservation, Credit, Rural Development and Research
Committee on Agriculture
U.S. House of Representatives

April 27, 2005

Good morning, Mr. Chairman and Members of the Subcommittees. I am Neal Bredehoeft, a soybean farmer from Alma, Missouri. I currently serve as President of the American Soybean Association, which represents 26,000 soybean producers on national issues of importance to all U.S. soybean farmers. ASA very much appreciates the opportunity to appear before you today.

Mr. Chairman and Members of the Subcommittees, let me first thank you for holding this hearing. Soybean rust is a top priority of the American Soybean Association. During the past two years, ASA has been the leader in soybean rust education. We have provided continuous information to our 26,000 members, and nearly 2,000 producers have participated in seminars hosted by ASA in cooperation with USDA and industry partners. Through print, radio and the Internet, ASA has reached more than 250,000 U.S. soybean producers over the last two years. We produced and distributed 60,000 copies of the 20-page ASA Soybean Rust Reference Guide.

The United States is the world's leading soybean producer and exporter. The farm value of soybean production last year was $18 billion, second only to corn among U.S. crops. Soybeans are planted on one-third of total U.S. row crop acreage. To prevent significant market disruptions to other U.S. crops, successfully combating soybean rust must be a priority for the U.S. Government.

ASA has worked cooperatively with the government and all sectors of the soybean industry in preparing for the arrival of soybean rust. I would like to express our appreciation to the many agencies of the federal government that we have worked with, including USDA's Animal and Plant Health Inspection Service (APHIS), Office of Pest Management Policy (OPMP), Agricultural Research Service (ARS), Cooperative State Research Education, and Extension Service (CSREES), Risk Management Agency (RMA), and Foreign Agricultural Service (FAS). We appreciate that earlier this month USDA provided funding for soybean rust surveillance and monitoring.

The Environmental Protection Agency (EPA) deserves recognition for their work to register fungicides, especially for their attention to soybean rust before it was confirmed in the United States. Finally, Congress provided just over $1 million for research on developing rust resistant varieties of soybeans in the FY2005 Consolidated

Appropriations Act. We appreciate that Congress is looking to the long-term solution to soybean rust, and ask that these efforts be expanded in this year's appropriations process.

The contributions of soybean farmers in preparing for soybean rust have been significant, and played a critical role in getting U.S. research off the ground. Through national and state checkoffs, soybean farmers have already contributed nearly $2.7 million of their own money to rust research and monitoring.

The confirmation of rust in the Southeastern United States last November gave farmers and industry the chance to focus on preparedness over the winter. I am pleased to say that we are better prepared to manage soybean rust as a result of all these efforts.

Still, there is much work ahead of us. When the Economic Research Service (ERS) published its report about the economic and policy implications of soybean rust one year ago, they assumed that an effective public surveillance and monitoring capability would be in place, that cost-effective fungicides would be available in the amounts needed by farmers, and that public programs would be able to provide farmers with the expertise needed to respond to a soybean rust infestation. Unfortunately, none of these assumptions had been realized when ERS published their report which, <u>even under those conditions,</u> projected first year losses of $640 million to $1.3 billion. We are closer to having those conditions in place today, but the extent of losses this year and in subsequent years will determine if our first steps toward preparedness have been adequate.

ASA continues to have grave concerns that, despite the time and effort put into preparing for soybean rust, we may still see the following outcomes on some farms or in some areas of the country:

- Detection and USDA confirmation will come too late for effective treatment to prevent significant yield losses
- Fungicide supplies will be inadequate or improperly distributed; and
- Shortages of application equipment or custom applicators will occur.

Another area of serious concern is federal crop insurance. I understand that the Committee will hold a separate hearing on crop insurance next week, and so I will not focus on that issue today. However, soybean farmers have real concerns that despite our best efforts to protect ourselves through the insurance program, our losses will not be covered and disaster assistance will be necessary. The criteria for paying indemnities due to soybean rust seem terribly subjective to farmers: There is no certainty with this disease as to when to spray, when it's too late to spray, what product to spray, how many times to spray, and the list goes on. In short, the possibility that a farmer will buy crop insurance and still not have his claim paid is very real. We know that first-year losses to rust were $1 billion in Brazil, and ERS has projected similar losses for the United States. It is imperative that soybean farmers have better and more clear information about the steps they must take in order to be confident that losses due to this disease will be fully covered.

I'd like to focus on two issues of paramount concern to ASA: fungicide availability and soybean rust research.

We have made great strides in making sure a variety of fungicides are registered to treat rust, which is critical since fungicides are the only management tool we have today. Thanks to diligent efforts from EPA, USDA, and the states, we now have 10 fungicides approved for use on rust, with eight of those approvals coming through the Section 18 process. Because some fungicides are manufactured by more than one company and because generics are available for some compounds, there now are 18 products available for farmers to buy.

However, we still do not know if there will be enough fungicides available, or if they will be in the places where farmers need them. Rumors abound in the countryside about shortages and hoarding. Farmers in the South question whether the supply will all go to the Midwest and vice versa. A new Section 18 application with an additional nine fungicides has recently been submitted to EPA, based at least partly on concerns about adequate supply.

Of course, private industry must make decisions about production and distribution based on their own projections, and no company is in the charity business. Yet we fear that if rust is widespread this year – meaning 30 or 40 million acres out of about 75 million planted soybean acres requiring one or more fungicide applications – we will be in an emergency situation with fungicide availability. Some and perhaps many farmers will not be able to buy them in time. Price gouging may occur. It is easy to envision how the system could be overwhelmed.

ASA continues to believe that only the federal government, in this case the Department of Agriculture, can undertake the task of coordinating with the private sector to ensure a sufficient supply of fungicides. We continue to see need for USDA to take the leadership role in coordinating with fungicide manufacturers and distributors to determine what supplies are available and make sure they are accessible to farmers across the country. Concerns have been expressed by farmers that limited supplies of fungicides will go to regions of the country where margins are highest on soybean production and that fungicides will be less available, if at all, in areas where yields are not as high. This is a market-driven business, after all, and marketing plans will move product to the places where farmers have the highest investment to protect.

ASA strongly encourages USDA to take these coordination steps so that farmers have confidence in availability of the products they need, when they need them, at a reasonable price. This is, after all, the scenario the Economic Research Service assumed would be in place a year ago.

Secondly, ASA asks that Congress and the Administration maintain a longer-term vision and increase funding for research efforts on soybean rust. ASA has asked Congress for an additional $2.1 million in soybean rust research for FY2006. This funding will locate and determine the function of genes involved in rust resistance, as well as translate genomics information from other legume crops like Phaseolus and model legumes to soybeans. To interpret, Asian soybean rust resistance has been reported in Phaseolus,

or common bean, which is a legume like soybeans. This research would identify and locate the genes that provide rust resistance in the common bean and transform those genes into soybeans. Developing rust-resistant soybean varieties is the long-term solution to economically and successfully conquering this disease. In the absence of the development of rust-resistant varieties, the application of costly fungicides is the only management tool available to farmers today. We strongly urge Congress to provide an additional $2.1 million in funding in the FY2006 appropriations process to help us defeat soybean rust and maintain soybeans as a viable cropping opportunity.

Mr. Chairman, on behalf of the American Soybean Association, thank you for convening this hearing and allowing me to share what we see as accomplishments and concerns as we head into our first year of soybean production with an undetermined but certainly dangerous threat. We appreciate your interest in our industry and look forward to a successful growing season.

STATEMENT OF
JIM JONES
DIRECTOR OF PESTICIDE PROGRAMS
OFFICE OF PREVENTION, PESTICIDES AND TOXIC SUBSTANCES
U.S. ENVIRONMENTAL PROTECTION AGENCY
BEFORE THE
SUBCOMMITTEE ON CONSERVATION, CREDIT, RURAL DEVELOPMENT AND RESEARCH; AND THE SUBCOMMITTEE ON GENERAL FARM COMMODITIES AND RISK MANAGEMENT
COMMITTEE ON AGRICULTURE
U.S. HOUSE OF REPRESENTATIVES

APRIL 27, 2005

INTRODUCTION

Good morning, Mr. Chairmen and members of both subcommittees. My name is Jim Jones and I serve as the Director of the Office of Pesticide Programs at the U.S. Environmental Protection Agency. I appreciate the opportunity to testify before your Committee to describe EPA's role in regulating pesticides. I will discuss our pesticide registration program, as well as our emergency exemption program, and how the effective implementation of those two programs have helped us prepare for, and minimize, the potential impacts of soybean rust. I am also pleased to be here with my colleagues from the U.S. Department of Agriculture.

The Office of Pesticide Programs (OPP) evaluates pesticide safety and makes regulatory decisions designed to protect human health, the environment, and the food supply. These registration, or licensing, decisions apply robust risk assessment methodologies and use current scientific information. OPP is charged with licensing

pesticides under two primary laws – the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA) and the Federal Food, Drug and Cosmetic Act (FFDCA).

AGENCY CORE RESPONSIBILITIEIS

Under FIFRA, EPA is responsible for evaluating and registering pesticides so that effective means for pest control are available which meet the FIFRA safety standard. Section 3 of FIFRA requires that a person (or company) obtain a registration from EPA before selling or distributing a pesticide in the U.S. Upon receiving an application for a new pesticide registration or a new use for a previously registered pesticide, EPA must ensure that the pesticide, when used according to label directions, will not pose an unreasonable risk of harm to human health or the environment. In making these determinations, EPA requires more than 100 different scientific studies and tests from applicants. Where pesticides are to be used on food or feed crops, FFDCA required that EPA set tolerances (maximum pesticide residue levels) for the amount of the pesticide that can legally remain in or on foods.

The Pesticide Registration Improvement Act of 2004 created an enhanced registration service fee program for registration-related actions, and provides a more predictable evaluation schedule for affected pesticide decisions, coupling the collection of individual fees with specific decision review periods. The legislation also promotes shorter decision review periods for applications for reduced-risk pesticides than would apply to other similar applications. It is worth noting that we make decisions based on

the applications that are submitted by potential registrants and EPA has not solicited registrations for particular pest control problems.

Under an emergency exemption process, outlined in Section 18 of FIFRA, other federal agencies or an authorized state official may request that EPA allow growers the use of an unregistered active ingredient or an additional use for a registered pesticide to respond to emergency conditions. The emergency exemption process is designed to ameliorate pest emergencies brought on by unpredictable and severe environmental circumstances such as extreme weather or the development of resistance to available pesticides. In addition, as with soybean rust, emergency exemptions may be granted to respond to the identification of new and significant pests and invasive species that could threaten the food supply. In recent years, we have taken steps to improve the emergency exemption process and are seeing the fruits of those efforts. For example, we've consistently improved our processing time for responding to emergency exemption applications.

Underpinning both full registrations and emergency exemptions is our rigorous assessment of the potential risks posed by using pesticide products. Before an emergency exemption can be granted, EPA must conduct risk assessments for dietary exposure (where food or feed uses are involved), occupational exposure, and ecological and environmental impacts. These assessments are based on the best available science and data and we consider new information as it arises. If the emergency meets the conditions

outlined under FIFRA Section 18 and the risk assessments yield acceptable risks, the Agency approves the emergency exemption request.

To cover pesticide residues in food or feed crops, such as soybeans, EPA must establish tolerances (maximum allowable residue levels). This ensures that treated soybeans are safe to be consumed and can be legally marketed in national and international commerce, including residues resulting from emergency uses of pesticide products allowed under Section 18.

RESPONDING TO THE THREAT OF SOYBEAN RUST

Since soybean rust is transmitted by a wind-borne plant pathogen, it was predicted years ago that the disease could be carried to the northern hemisphere. Because soybean rust is a significant disease which can threatened the food supply, our goal has been to assure that growers have the necessary tools in hand before there was an outbreak and we have met that goal. In 2002, we proactively engaged in planning for the disease through establishing solid lines of communication and relationships with the major stakeholders – namely USDA, State departments of agriculture, industry, and soybean grower trade association. These lines of communication and relationships have been facilitated though our contribution in countless conference calls, workshops, and meetings. Further, they allowed us to build our expertise in soybean rust well in advance of an impending outbreak.

As predicted, soybean rust was identified in the U.S. By the time soybean rust appeared in November 2004, we had already approved Section 18 exemptions for 25 states that included three active ingredients for six end-use pesticide products. Additionally, we approved registration actions for four pesticide active ingredients.

In total, there have been over 130 exemptions granted related to soybean rust control. This represents nine active ingredients in 19 different end-use pesticide products available to growers in 32 states.

In order to ensure a diverse supply of end-use products this growing season, there are nine pesticide manufacturers producing the 19 end-use products. The Agency's preparedness and planning efforts are also driven to minimize any concern that insufficient product inventory may be available. EPA is keeping growers and others informed of its decisions by posting them on our web page in a special section devoted to soybean rust issues.

NEXT STEPS

EPA expects to receive additional requests for emergency exemptions covering non-soybean legume crops later this month. There are also some microbial pesticides and, potentially, some bio-pesticides being tested for effectiveness in controlling soybean rust. If successful, these products will provide organic soybean growers with tools to

control the rust fungus. The Agency will continue to review pesticides with the potential to control soybean rust.

OPP continues to collaborate with USDA, state lead agencies, registrants, and the nation's soybean growers in responding to the discovery of soybean rust. USDA is concerned that many other commercially important legume crops, including peas and beans, will be susceptible to the soybean rust pathogen. USDA and lead agencies in states involved in the production of specialty legumes are working with OPP to evaluate the available fungicide tools, and this review is expected to lead to the submission of additional section 18 emergency exemption programs.

EPA met with the National Association of State Departments of Agriculture (NASDA), USDA, American Farm Bureau, and the American Soybean Association (ASA) in December 2004 to discuss the registration status and anticipated supplies of products for growers. We are committed to keeping these lines of communication open as we work to address this issue.

CONCLUSION

We have worked hard over the past few years to ensure there are an adequate variety and supply of pesticide products for growers to use to control soybean rust. We are driven to provide these registrations in a timely manner because we understand that it is important to have safe and effective pesticide products available, as well as the anxiety

that the soybeans growers face in light of this potentially devastating pest. In summary, we currently have registered or granted emergency exemptions for nine pesticide active ingredients for 19 different pesticide products to be used in 32 states.

We look forward to continued collaboration with Congress, our Federal, state, and private partners to ensure the impact of soybean rust is minimized for the food supply, the economy, and human health and the environment. I welcome any questions that you might have now or in the future. Again, thank you for the opportunity to appear before the committee.

The Fertilizer Institute

Nourish, Replenish, Grow

Statement of

The Fertilizer Institute

and the

Potash and Phosphate Institute

before the

House Conservation, Credit, Rural Development and Research Subcommittee

and the

House General Farm Commodities and Risk Management Subcommittee

regarding

Asian Soybean Rust

DESCRIPTION OF TESTIMONY

A description of the role mineral nutrition plays in the severity of disease development with particular emphasis on the specific effects of fertilizer nutrients on Asian rust in soybeans.

April 27, 2005

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Introduction

The Fertilizer Institute (TFI) and the Potash & Phosphate Institute (PPI) submit the following statement regarding Asian rust in soybeans. Although fungicides are the primary tool in managing Asian rust in soybeans, nutrients in general play a significant role in the development of many diseases. The following paper, published by the Potash & Phosphate Institute/Potash & Phosphate Institute of Canada (PPIC) and the Foundation for Agronomic Research (FAR), illustrates that intensive nutrient management may be part of a comprehensive approach to the production of soybeans with the potential for rust development. As such, TFI and PPI request research funding to work with crop advisers and university researchers to identify the specific effects of nutrients on Asian rust in soybeans and how nutrient management might be altered to optimize the effectiveness of conventional rust control practices.

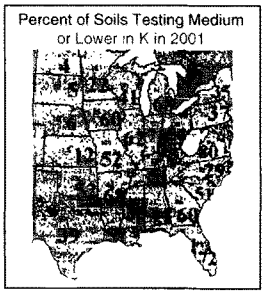
Nutrient Management of Soybeans with the Potential for Asian Rust Infection

Paul E. Fixen, Cliff S. Snyder, Harold F. Reetz, Jr., T. Yamada and T. Scott Murrell*
Potash & Phosphate Institute (PPI)/Potash & Phosphate Institute of Canada (PPIC)
Foundation for Agronomic Research (FAR)

The focus of research and management for controlling Asian rust in soybeans has been on fungicides and genetic development. This approach is clearly justified considering the aggressive nature of the pathogen involved and what is known about managing fungal diseases. However, much is also known about the influence of plant nutrition on susceptibility and tolerance of crops to diseases. It seems reasonable to study the influence of nutrients in managing Asian soybean rust as part of overall management to control the disease. Some examples follow of situations where mineral nutrition plays a significant role in the severity of disease development.

Potassium (K)

Potassium deficiency symptoms such as thin cell walls, weakened stalks and stems, smaller and shorter roots, sugar accumulation in the leaves, and accumulation of unused nitrogen (N) encourage disease infection (PPI, 1998). Each of these reduces the ability of the plant to resist entry and infection by fungal, bacterial, and viral disease organisms. For example, the incidence of leaf spot disease caused by *Cercospora, Stemphylium*, and *Alternaria* in cotton has been related to K fertility. Soybean stem canker infection has been associated with low soil K levels and K fertilization has reduced occurrence of leaf spot disease resulting from *Helminthosporium* in Coastal bermudagrass. These observations are of particular importance when the current soil K status of major soybean growing areas is considered (Fixen, 2002; see figure). Where



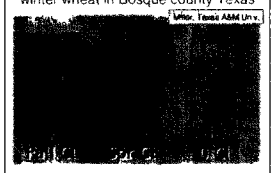
*Sr. Vice President PPI, Southeast Director PPI, President FAR, Brazil Director POTAFOS and Northcentral Director PPI, respectively.

K nutrition is inadequate, there is potential for crops to be more susceptible to disease.

Chloride (Cl)

Application of Cl, usually in the form of KCl (muriate of potash), has been shown to reduce the severity of numerous fungal diseases (Fixen, 1993). These include take-all, common root rot, tan spot, Septoria, leaf rust, and stripe rust in wheat; common root rot, spot blotch, Fusarium, and root rot in barley; stalk rot in corn; stem rot and sheath blight in rice; hollow heart and brown center in potatoes; Fusarium yellows in celery; downy mildew in pearl millet; gray leaf spot in coconut palm and sudden death syndrome in soybean (Sanogo and Yang, 2001). Several studies have demonstrated that cereal varieties may differ in response to Cl and the associated disease effect.

Leaf rust suppression on flag leaves of winter wheat in Bosque county Texas



Pioneer 2158 at anthesis. NH_4Cl applied at 40 lbs Cl/A

Manganese (Mn)

Although studies have shown that several micronutrients can be involved in development of resistance in plants to both root and foliar diseases, Mn is thought to be the most important (Graham and Webb, 1991). Manganese is usually lower in tissues susceptible to fungal, viral, and bacterial pathogens than in resistant tissues (Huber and Wilhelm, 1988). Effects of Mn on plant disease severity have been reported for numerous crops and diseases including root rot, take-all, powdery mildew, leaf rust, and stem rust in cereals; damping off and wilt in cotton; late blight, stem canker and scab in potato and blight in soybean. As with Cl, studies have shown differences among varieties in response and some have observed that many newer glyphosate resistant soybean varieties have a reduced capacity to either take up or translocate Mn (Huber et al., 2004).

Phosphorus (P)

The likelihood of stem and leaf disease problems increases with crop stress and nutrient shortages and imbalances. Leaf rust in winter wheat has been reduced and yields increased by providing adequate P and K nutrition to the crop (PPI, 1999). A study on the effect of NPK fertilization on rust infected soybeans in the Philippines showed some rust suppression when either P (superphosphate) or K (KCl) was applied, but showed the greatest suppression when both nutrients were used.

Fertilizer effects on rust severity and soybean yield in the Philippines (Piccio and Franje, 1980).

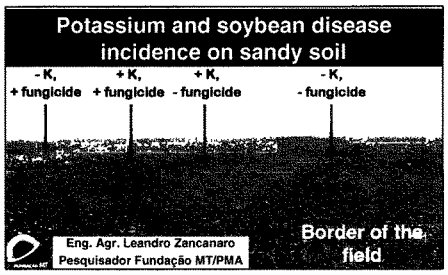
$N+P_2O_5$ $+K_2O$, lb/A	Rust reaction	IWGSR score	Grams/ 100 seeds	Yield, bu/A
0+0+0	S	343	9.12	15.5
27+0+0	S	343	9.58	18.9
0+60+0	MS	333	9.46	18.6
0+0+32	MS	333	9.58	19.3
27+60+32	MR	232	10.46	22.1

S=susceptible, MS=moderately susceptible, MR= moderately resistant; IWGSR=International Working Group system for soybean rust (late pod filling)

Questions

The obvious challenge is that little is known about the specific effects of these nutrients on Asian rust in soybeans. Fungicides are clearly the major management tool in managing the disease, but it is possible that within the context of fungicide application timing or frequency and soybean production economics, there is a role for more intensive management of nutrients needed by the soybean crop. This photo from a rust infected soybean field in Brazil where application misses

resulted in "checks" for KCl and fungicide application appears to show effects of both on the disease. Anecdotal evidence such as this, along with a history of verified disease-nutrition interactions, lead to numerous questions. Some follow.



- Does potash (KCl) application influence rust development in soybeans similar to its effects on cereal crops?
    - If it does, is the effect due to K or Cl?
    - Do soybean varieties differ in reaction as do wheat varieties?
    - What is the effect of fungicide application on K or Cl response?
    - Is there a combination of KCl and fungicide use that offers a more profitable management strategy under certain conditions?
    - Is there reason to apply at least a portion of the crop rotation's K need as KCl prior to soybean establishment to capitalize on positive disease effects (if Cl is involved in rust suppression and considering that it is highly leachable, earlier application may not be effective)?
- Does the Mn status of soybean plants influence disease development or response to fungicide application?
    - Do glyphosate resistant (RR) varieties differ from conventional varieties?
    - Does glyphosate application influence Mn levels and disease development?
    - Does foliar Mn application to low Mn plants influence disease development or yield?
- How important is P nutrition in reducing the impact of rust on soybeans?
    - Are optimum soil test P levels and plant tissue levels the same for soybeans under pressure from rust?
    - Is there any benefit from applying P fertilizer directly to soybeans that will likely be under rust pressure?

Research and On-farm Trials

An immediate need exists to develop answers to these questions. Both on-farm strip trials conducted with field-scale equipment and more complex small plot experiments designed to assess interactions could be conducted. Examples follow.

Small Plot Study

- Factors (3x3x3 factorial = 27 treatments; minimum of 4 reps)
    - Main plot – Fungicide/Mn (3): Check, fungicide, foliar Mn
    - First split - Variety (3): Two RR, one non RR
    - Second split - K vs Cl (3): Check, KCl, $CaCl_2$ (rate of 50 lb Cl/A)
- Measurements
    - Soil – standard soil tests and Mn (0-6 inch); K, nitrate and Cl incrementally to 2 feet
    - Plant – progressive rust severity, tissue K, Cl and Mn, grain yield, seed size

Field Scale Strip Trials

- Many different options; suggest multiple sets per field

- Four treatment option: Check, fungicide, KCl, fungicide + KCl
- Monitor daily during rust season
- Select a set of similar fields planted to different soybean varieties
- Take photos and grain yield

Sentinel plots

- Create plots that will have high probability of being the first to develop rust if innoculum is present.

Management in 2005

So, we have theories and lots of researchable questions concerning holistic management of soybeans under pressure from Asian rust. What should soybean growers do in 2005? The science of nutrient management of soybeans and soybean rotations has not changed. In many respects, there's just one more reason to correctly manage nutrients for the soybean crop. Suggestions follow.

- Be sure soil tests are up to date on fields going into soybeans and that samples have been taken using a sound sampling protocol that captures the manageable variability of the field.
- Follow the recommendations resulting from the soil tests.
- If potash (KCl) and P have not been applied prior to soybeans in the rotation, now might be a good time to make a shift to applying a portion of the rotation needs at that time. On soils with poor internal drainage where salts accumulate in the root zone, such as the flatwood soils of the southeastern U.S., soil Cl levels will likely be very high and high rates of KCl may contribute to Cl toxicity for Cl sensitive soybean varieties (Parker et al.,1986). Generally, Cl toxicity on soybeans appears to be limited to soils naturally high in salts and those being irrigated with high Cl (>100 ppm) water (Snyder et al., 1995). Local agronomists or advisers should be consulted on appropriate KCl rates for local conditions.
- As fields are being scouted for rust, take the opportunity to collect plant tissue samples for nutrient analysis. This is an excellent time to verify that the nutrient management program in place is indeed providing balanced nutrition to the crop and giving it the greatest opportunity to do battle with whatever stress it encounters … be it disease, drought, compaction, or some other challenge of Mother Nature or of man. Be sure to include Mn in the elements tested.
- Learn as much as you can. Read. Leave check strips. Observe. Record.

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