

## **Appendix B.28**

### **PEST INFORMATION PLATFORM FOR EXTENSION & EDUCATION (PIPE)**

Corvallis, OR

10 November 2005

**Meeting Objective:** to explore what the infrastructure of a national IPM information system should look like, how it would work, who would manage it, and how it would be sustained. This meeting was intended to build upon the consensus and ideas that evolved at a meeting held at Bellefonte, PA on 16 June 2005.

#### **Agenda**

- 8:30-9:00 Convene, introductions, coffee
- 9:00-10:00 Defining a vision for IPM decision support – PIPE  
Kitty Cardwell (CSREES), Scott Isard (Penn State), Coanne O’Hern (APHIS), and Heyward Baker (RMA)
- 10:00-10:30 Discussion, coffee and snacks
- 10:30-12:00 Panel I presentations and discussion that address weather data acquisition and analysis  
Western IPM Center Weather Workgroup  
Session moderator, Paul Jepson (OSU)
- 12:00-13:00 Lunch  
Opportunity for review of posters and other materials
- 13:00-14:00 Panel II presentations and discussion that address IPM applications  
Western IPM Center Weather Workgroup  
Session moderator, Paul Jepson
- 14:00-15:30 Breakout sessions to flesh out possible structure for PIPE
- 15:30-16:30 Discussion and review of next steps  
Kitty Cardwell

#### **Participants**

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### **Introduction – Kitty Cardwell**

Reviewed agenda

Discussed outcomes of Bellefonte meeting on PIPE and the support of the USDA Risk Management Agency for PIPE in 2006. Outlined how the current system would be expanded into “The Legume Pipe” by including other legume crops and other pests of soybean in the system. Reviewed the Bellefonte meeting accomplishments, highlighting the list of qualities desired for an ideal PIPE configuration: utility, credibility, flexibility, sustainability, consistency, and familiarity. Stated that the purpose of the Corvallis meeting is to build on the ideas of the Bellefonte meeting to reach a consensus on directions for PIPE in the future.

Participants introduced themselves and explained why they were present.

Cardwell rules for discussion: 1) No wrong ideas, 2) Focus on the future of PIPE, and 3) Put aside competition.

### **PIPE – Scott Isard**

Reviewed the PIPE concept and how it evolved from the USDA Soybean Rust Information System. Emphasized that PIPE is people and computers distributed throughout the nation networked and facilitated by “state-of-the-art” Information Technologies. Described the three components of the platform: 1) monitoring, 2) databasing/modeling and 3) outreach/user interface. Emphasized that PIPE is a national IPM platform composed of specific but inter-related modules that were like interchangeable parts. That biological expertise and modeling needed to develop and operate the modules should be supplied by experts in appropriate institutions throughout the nation. Discussion focused on importance, cost, and availability of monitoring for pests in specialty crops.

### **History and Handoff of USDA Soybean Rust Information System – Coanne O'Hern**

Provided an account of APHIS's leadership role in developing the USDA Soybean Rust Information System in 2004 and 2005, emphasizing the unprecedented cooperation between APHIS, ARS, CSREES, State Departments of Agriculture, LGUs, industry and others. Explained that it is now time to hand the system over to CSREES because soybean rust is an established pest and consequently beyond the mission of APHIS.

Promised that APHIS would divest its self slowly and smoothly and that for 2006, they would work hand-in-hand with the Southern IPM Center leadership to make sure that the transition provided U.S. growers with the SBR management support they needed for 2006 and beyond.

### **RMA Support for the expanded Legume PIPE – Heyward Baker**

Provided an overview of the roles and responsibilities of the Risk Management Agency and the usefulness of the USDA Soybean Rust Information System in helping growers document their good management practices in 2005. Explained that the RMA will partner with other stakeholders in 2006 to increase the functionality of the Legume PIPE for growers.

### **Panel I presentations and discussion on weather data acquisition and analysis:**

**“Complexity of Weather and Climate in the Western U.S.” by George Taylor**

**“Spatial Weather Analyses & Forecasts: A Western Perspective” by Chris Daly**

**“Weather Data Collection – Acquisition” by Carla Thomas**

**Session moderator, Paul Jepson**

#### **Conclusions of Panel I**

- Physiography leaves a major climatic imprint on the western U.S.
- Climatic patterns exert a controlling influence on agriculture.
- The SCAS/IPPC/Fox Weather system enables transition from climate pattern to local weather analysis to forecast on a local scale.
- The scale of resolution of these systems matches the scaling of some of the most valuable agriculture in the country.
- Growers throughout the west have been exploiting weather-based models, derived from local and regional weather networks in IPM decision making for decades.
- These systems exemplify the value of public-private partnerships, diverse membership and benefit from constant innovation: all organizing features of the WIPMC Weather Workgroup.

The discussion that followed focused on a number of issues including: 1) how to mount PIPE modules composed of forecasting systems for specialty crops that depend on site specific environmental monitoring, 2) how to blend public and private interests that currently work hand-in-hand in the West into the PIPE, and 3) how continuing communications should lead to sustainability for PIPE.

### **Panel II presentations and discussion that address IPM applications:**

**“Disease and Pest Model Inputs” by Bill Pfender**

**“IPM in the West: People, Places, and Things” by Gary Grove**

**“Codling Moth Degree-Day Model” by Len Coop**

**“Infection Risk models for powdery mildews” by Doug Gubler and Walt Mahaffee**

**Session moderator, Paul Jepson**

## Conclusions of Panel II

- Models explore the outcomes of interactions between diverse pests, complex climate and weather patterns.
- IPM systems are advancing in response to multiple drivers, requiring constant innovation and flexible responses.
- Pest and disease models and decision support tools are undergoing a period of rapid evolution in parallel with advances in climatology and forecasting.
- We have a unique opportunity to develop a nation-wide system that builds upon these advances.
- Collaborative, public-private working groups, supported by IPM Centers, provide a powerful platform for progress, and they set standards that can be applied regionally and nationally.

Breakout groups were constituted to discuss the following “topics”:

PIPE technical interface – George Taylor (rapporteur)

Roles and responsibilities for PIPE – Linda Herbst (rapporteur)

PIPE Futurology – Paul Jepson (rapporteur)

The groups were charged with answering three questions:

1. What are two ideas on how it could be done?
2. What is the very next thing to do?
3. What is the timeline or sequence of activities?

The groups met for about an hour and then reported on their deliberations. The notes submitted by session rapporteurs summarizing the breakout discussions follow.

### **Technical Interface Breakout Session Summary** **Rapporteur: George Taylor**

The group discussed collection of input data (including but not limited to weather data), quality assurance, and use of plant pest and disease models.

#### **1. *What are two ideas on how it could be done?***

**a. single national system.** A centralized site would be set up to collect weather data, perform QA/QC, run models, and deliver to end users. Various groups, including university groups, state IPM offices, extension, and state/federal offices, would contribute. This would allow “one-stop shopping” for all users, but creation of a single agency might present formidable challenges and may run the risk of serving individual users in the optimal way.

**b. regional systems.** Expand of what is being done now. For example, the Western Weather Systems Group might form the basis for a west-wide effort to coordinate IPM activities. A group such as Penn State’s might fulfill a similar role in the east. There may be additional groups as well. A corollary example may be in regional climate services: there are six “regional climate centers” in the U.S. assigned to provide user information for their separate regions.

#### **2. *What is the very next thing to do?***

Recommend an ad-hoc committee and two subcommittees. The committee would oversee activities and the subcommittees would study (1) input data for modeling; and (2) inventory of models and model inputs.

### 3. *What is the timeline or sequence of activities?*

The group recommended an ad-hoc committee and two subcommittees charged with the following tasks:

- a) Inventory of models and model inputs.
- b) Inventory of meteorological and other data, and specification of existing and ideal quality assurance/quality control measures.
- c) Development of partnerships (for example, IPM modelers from separate land-grant universities).
- d) Creation of a schematic model for the full system.
- e) Seeking funding for maintaining existing activities and adding new ones.
- f) Implementation.

The group had a wide-ranging discussion of issues. Some of the highlights included:

IPM centers may be the best focal points for information about models, data, end users, and so on. They may represent the best way to coordinate these on a statewide or regional basis.

The greatest redundancy may be in meteorological data. There are many networks, some public and some private. However, differences in hardware, software, and philosophy cause wide-ranging differences in data quality. This creates a strong need for effective quality assurance/quality control (QA/QC) to insure accuracy and consistency in modeling.

The current system and capabilities could be nationalized fairly easily, and probably meet 70% of existing IPM needs. However, “transport issues” involving introduction or spread of pests or pathogens, would not be included, and these are very important issues in IPM.

Partnerships are very important. Combinations of land grant universities/private sector /government agencies appear to be necessary to satisfy regulatory issues and user needs.

A single user interface is probably not practicable. There are significant regional and scientific differences in IPM approaches that will probably require different “look and feel” situations.

The capability of incorporating “emergent diseases” must be included in the final system in an effective and timely manner.

## **Roles and Responsibilities Breakout Session Summary** **Rapporteur: Linda Herbst**

General Notes:

Need to recognize in this National effort that the data should be presented in a way that the end-user can get receive information that he/she needs to know vs nice to know. This group disagreed with the concept that only one-interface is needed. There are major

variations on what data is needed (dependent on crop) which would not be served under the one interface scenario.

Need to foster entrepreneurship but not put people out of business. This is a tightrope, but we need to be careful. The system would need to be able to incorporate different data sources.

From here we defined the Roles & Responsibilities by answering the following questions:

What kind of people would develop the system?

The participants would include both public and private.

Scientist as informed by the end-users.

Technology people as informed by users.

Incentives to buy-in: Once developed it can be a repository for existing data and be maintained and updated by the National site. A new model could be developed from an existing example with less base research necessary

Who would generate the data?

Public/private scientist, private consultants, growers, extension.

Incentive: If we provide the tool to make it easily assessable with a PDA. If we can guarantee privacy of the data they enter.

Who would deliver the PIPE?

IPM Center could receive the raw data and provide local identity to those who are using it. (local farm advisors, crop consultants, etc.) The Centers could provide web services.

Incentive: Job security. The raw data could be used by the Centers for evaluation of IPM.

Who would interpret the data?

Extension specialists, state experts

If current system depends on extension specialist, etc. it still will be but if not than who ever is now making recommendations would continue.

Incentives: Recommendations could be made more science based and less of an art.

Opportunity to reach more people. Justification for the existence of extension programs.

General Notes:

Comments: Usefulness of a national system:

There is the current issue of how existing IPM programs within individual crops can be updated and maintained. If the information was housed in a national database then there would be security for the commodity groups that the information would always be there regardless of changes in extension personnel or priorities. Also with this national

database there would be better access to existing data and the opportunity for expansion of existing IPM programs into minor crop production. You would be able to review existing data and tweak it to be useful for minor crops with minimal effort.

The group was not supportive of just one user interface for the national system. It was felt there could be some consistent variables but since every crop is different and may have different criteria to develop a management plan, there needs to be flexibility in the user interface. Also along this line there are different levels of information one person may want to access such as “Need to know” vs “Nice to know”.

### **Futurology Breakout Session Summary** **Rapporteur: Paul Jepson**

What drives engagement in the process?

SBR: fear or alarm about the possible hazard posed by the disease drove the development of the management system, supported by concerted pressure by industry.

In the early years of adopting a national system, what might be the characteristics of candidate commodities/pests/diseases?

- Organized commodity group
- Pest or disease posing a serious threat
- High commodity value, or potentially large invasion area
- Methods for rapid diagnostic confirmation
- Regional scale/definable risk zone
- Anticipated entry (known threat), but could be applied to an emergency surprise arrival
- Existing support infrastructure (extension, commodity groups, researchers etc)
- Knowledge of the pest, although this may be limited initially
- Available control tactics, triggered by alerts
- A need for near real time response
- Potential for return on short-term investment
- Preparedness of growers and commodity groups to be open (e.g. limited threats to exports if pest distributions are published in the web).

Does the system address invasive or established species?

Systems may be in place for established species. Initial emphasis may be best directed to invaders, where the benefits of a generic infrastructure are clearer in the short term. It may also be easier to coordinate a response where national concerns outweigh local concerns. Ultimately, the benefits of the uniform interface will drive down to established endemics and a wider range of examples.

Is there 'low hanging fruit' that can be exploited to develop the national system?

Could be widespread commodities e.g. Solanaceae, or landscape/urban problems, a

significant concern, such as Pierces disease or high value commodities, such as small fruit. It helps if there is a high probability of infestation. We should probably select a set of candidates that are emerging invasives as well as species that attack every year.

Other considerations.

System must be open access, distributed or shared such that groups can add value to it and improve upon it. IPM Centers constitute an ideal administrative infrastructure.

Important to engage independent crop consultants.

### **Wrap-up – Kitty Cardwell**

PIPE represents a new paradigm in pest management and will expand in 2006. There was consensus among participants that PIPE was a worthwhile concept that should be broadened to include other crops and pests in the future. It was decided that a simple PIPE mission statement was needed and that Paul Jepson and Scott Isard would draft it and pass it among participants. Many participants volunteered to serve on a follow-up steering committee to develop a structure and an operations plan for PIPE. They included: Paul Jepson, George Taylor, Heyward Baker, Carla Thomas, Sue Ratcliffe, Rick Melnicoe, David Hannaway, Scott Isard, John Ayers, Ron Stinner, Rick Melnicoe, Jim VanKirk, and Coanne O'Hern. There was clear consensus that there is a compelling case for development of a national platform for IPM delivery. There was also abundant evidence of multiple systems that each have useful elements to offer a prototype national platform. For the technical specialists present, it was clear that the time has come to get in the sandbox and share our toys! There is also a strong case to be made for inter-agency and public-private sector collaboration which will be needed at unprecedented levels if this visionary concept is to be brought to fruition.