WESTERN REGION IPM CENTER
PROGRESS REPORT

Western IPM Center Workgroup on Weather Systems
Walter Mahaffee, Len Coop, and Paul Jepsen

Collaborative research that was a direct result of work group meetings has resulted in the implementation of interpolated weather forecasts (e.g. http://pnwpest.org/cgi-bin/risk_model/risk_models), including an initial prototype "virtual weather station" (VWS) system which uses interpolated data. The VWS system, with resolution of 2km, was developed by Fox Weather, LLC and IPPC and is being ground-truthed. Improvements to Fox Weather weather analysis and forecast models as a result of workgroup activities now allow direct down-scaling of coastal effects to 800m resolution. The improved models are being delivered operationally in California, and were used to develop fire weather forecasts in 2008. A PRISM-based climate informed forecast system with a resolution of 800m has been developed and is being evaluated on an experimental basis. Uncertainty analyses are underway with the various weather analysis and forecasting systems. The use of PRISM climatological aided interpolation was demonstrated to reduce errors compared to temporal interpolation of missing data. Threshold-based pest models appear to be more susceptible to errors in interpolation of weather data than simulation type models.

Current membership consists of Primary members: Len Coop (Oregon State University), Chris Daly (Oregon State University), David Gent (USDA-ARS), Gary Grove (Washington State University), Doug Gubler (University of California, Davis), Alan Fox (FoxWeather, LLC), Paul Jepsen (Oregon State University), Dennis Johnson (Washington State University), Walt Mahaffee (USDA-ARS), Bill Pfender (USDA-ARS), Joyce Strand (University of California, IPM) and Carla Thomas (University of Californria, Davis & National Plant Disease Network); Associate members include Jim Adaskaveg (University of California, Riverside), David Hannaway (Oregon State University Extension), Jeff Stone (Oregon State University). The group is currently pursuing the inclusion of Rob Stoll at the University of Utah, a mechanical engineer specializing in computational and experimental fluid mechanics and mass transport in the environment with interest in interested in studying the effect of canopy microclimates on the onset and spreading of diseases in fruit tree orchards.

In the past year, the group was invited to organize and present a symposium (3 hours of presentations) at the Pacific Division of the American Phytopathological society on the methods and their utility for disease forecasting. The Western IPM Weather Workgroup helped others from the North Central Region Weather Working Group and was invited to participate in their inaugural meeting. Two group members (George Taylor, Rick Graw) retired and added new members (Jim Adaskaveg, Jeff Stone). The Western IPM Weather Workgroup developed and submitted 4 research proposals, received over $130,000 (>$1,000,000 since the grouped formed) in funding for research and implementation activities. The group held numerous conference calls (>70% participation) and two face to face meetings (80% attendance). We restructured membership into two groups, principle and associate members, to be able to involve more people in the group while accommodating with a limited budget. Several members have acquired funding for part or all of their travel expenses to workgroup meetings and all conference calling expenses are covered by USDA-ARS. Thus the Western IPM Center funds are being supplemented with >$5000 from other sources for group meetings.

The NPDN is hiring an epidemiologist to use these tools while exploring the usefulness of the NDPN data in the National Repository. This information has already yielded useful information concerning soybean rust, using the degree day maps and 8 generic disease models.

The Western IPM Weather Workgroup has become recognized as a leader in the interpolation and delivery of weather, forecast, and pest model data. The reputation is evident by invitations to individual members and the group to present at scientific conferences and grower meetings, and by the request from researchers in the North Central US for assistance and future collaboration in developing a similar workgroup in their region.