Integrated Biological Systems Conference 2003

Conference Co-Chairpersons

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Presentation Formats

- *Oral Presentations*
- *Poster Presentations*
- *Software Demonstrations*

Presentation Categories

- *Soil/Weather Data Acquisition, Synthesis, and Delivery*
- *Plant/Crop Systems: Biological Processes*
- *Plant/Crop Systems: Integration*
- *Management and Decision Support Systems*
- *Landscape and Watershed Level Systems*
- *Building and Maintaining the Bridge: From Research to Technology Transfer*
- *Synthesis and Recommendations*

PROGRAM

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SUNDAY – APRIL 13, 2003

3:00-5:00 PM	On-Site Registration Holiday Inn Downtown/Market Square, 318 W. Durango Boulevard, San Antonio, TX 78204 (Telephone: 1-800-445-8475, Fax 210- 225-1125)

MONDAY – APRIL 14, 2003

8:00-9:30 AM	On-Site Registration Holiday Inn Downtown/Market Square, 318 W. Durango Boulevard, San Antonio, TX 78204 (Telephone: 1-800-445-8475, Fax 210- 225-1125)
10:00-10:10 AM	Welcome by **Ted Wilson**, Professor and Center Director, Texas A&M University System, Agricultural Research & Extension Center, Beaumont, TX
10:10-10:30 AM	Opening Remarks - *Developing And Delivering A Concept For Integrated Cropping Systems.* **Frank Gilstrap**, Associate Director, Texas A&M University System, Texas Agricultural Experiment Station, College Station, TX
Session I	**Program Chair: Robert Lascano** ***Soil/Weather Data Acquisition, Synthesis, and Delivery***
10:30-11:00 AM	(**Keynote Speaker**) *Soil and Weather Data Acquisition, Synthesis, and Delivery.* **Joyce Fox Strand**. Statewide IPM Program, University of California, Davis, CA
11:00-11:30 AM	*Mapping It Out: A New Approach in Collecting, Managing, and Analyzing Site-Specific Data.* **David Waits**. SST, Inc., Stillwater, OK
11:30-11:50 AM	*Historical Weather Patterns and Aeration Management in Stored Corn.* **Frank H. Arthur**[1], James E. Throne[1], and Dirk. E. Maier[2]. [1]Biological Research Unit, USDA-ARS-GMPRC, Manhattan, KS; [2]Agricultural Engineering Department, Purdue University, West Lafayette, IN
11:50-12:10 AM	*Architecture of an Internet-Based System to Provide Access to Weather Data and Crop-Weather Simulation Tools.* **Carlos J. Fernandez** and Neal T. Trolinger. Texas Agricultural Experiment Station, Texas A&M University System, Corpus Christi, TX
12:10-1:30 PM	Catered Lunch

Session II **Program Chair: Jeff Baker**
Plant/Crop Systems: Biological Processes

1:30-2:00 PM (**Keynote Speaker**) *Plant/Crop Systems: Biological Processes.* **Thomas R. Sinclair.** USDA- ARS, Agronomy Department, University of Florida, Gainesville, FL

2:00-2:30 PM *Impacts of Drought, High Temperature and Carbon Dioxide on Rice Physiological Processes.* **J.T. Baker**[1], L.H. Allen, Jr[2]. and K.J. Boote[3]. [1]USDA-ARS, Big Spring, TX; [2]USDA-ARS, Gainesville, FL; [3]University of Florida, Gainesville, FL

2:30-2:50 PM *Assessing the Impact of Management Practices on the Production of Pest Populations of the Mexican Rice Borer.* **F.P.F. Reay-Jones**[1], T.E. Reagan[1], and M.O. Way[2]. [1] Department of Entomology, Louisiana Agricultural Experiment Station, Louisiana State University Agricultural Center, Baton Rouge, LA; [2] Texas A&M University, Agricultural Research and Extension Center, Beaumont, TX

2:50-3:10 PM *Optimal Sampling Design: Catching the Tail of Dispersal Kernels.* **A. Pielaat**, M.A. Lewis, S.R. Lele, and T. de-Camino-Beck. Centre for Mathematical Biology, University of Alberta, Alberta, Canada

3:10-3:25 PM Break

Session III **Program Chair: L.T. Wilson**
Plant/Crop Systems: Integration

3:25-3:55 PM (**Keynote Speaker**) *Integrating Biological and Environmental Factors in Crop Systems Models.* **Andrew Paul Gutierrez**. Department of Environmental Science, Policy & Management, Division of Ecosystem Science, University of California, Berkeley, CA

3:55-4:25 PM *Integrated Systems Research in the Texas High Plains: Corn, Grain Sorghum and Cotton.* **R.J. Lascano**[1], L.T. Wilson[2], T.A. Archer[3], and B.A. Onken[3]. [1]Cropping Systems Research Lab, Texas A&M University System/USDA-ARS, Lubbock, TX; [2]Texas A&M University System, Agricultural Research & Extension Center, Beaumont, TX; [3]Texas A&M University System, Agricultural Research & Extension Center, Lubbock, TX

4:25-4:45 PM *Evaluating the CROPGRO-Soybean Model for Predicting Photosynthesis, Growth, and Yield Response to Carbon Dioxide Levels.* G. Alagarswamy[1], **K.J. Boote**[1], J.W. Jones[2], and L.H. Allen, Jr.[3] [1] Dept. of Agronomy, Univ. of Florida, Gainesville, FL; [2] Dept. of Agric. and Biol. Engineering, Univ. of Florida, Gainesville, FL; [3] USDA-ARS, Univ. of Florida, Gainesville, FL

4:45-5:05 PM *Comparison and Hybridization of Two Approaches for Maize Simulation.* **H.S. Yang,** K.G. Cassman, A. Dobermann, D. Walters, J. Lindquist, and T. Arkebauer**.** Department of Agronomy and Horticulture, University of Nebraska at Lincoln, Lincoln, NE

5:05-6:00 PM **Software Demonstration**

The Crop-Weather Program for South Texas: an Internet-Based System to Provide Access to Weather data and Crop-Weather Simulation Tools. **Carlos J. Fernandez** and Neal T. Trolinger. Texas Agricultural Experiment Station, The Texas A&M University System, Corpus Christi, TX

Comparison and Hybridization of Two Approaches for Maize Simulation. **H.S. Yang,** K.G. Cassman, A. Dobermann, D. Walters, J. Lindquist, and T. Arkebauer**.** Department of Agronomy and Horticulture, University of Nebraska at Lincoln, Lincoln, NE

A User Friendly Finite Element Grid Generator for 2DSPUD and Other 2DSOIL Based Models. **D.J. Timlin[1],** Geetha Reddy[1], and Yakov Pachepsky[2]. [1]USDA-ARS Alternate Crops and Systems Laboratory, Beltsville, MD; [2]USDA-ARS Animal Waste Pathogen Laboratory, Beltsville, MD

6:00 PM END OF THE DAY

TUESDAY – APRIL 15, 2003

Session I — **Program Chair: Michael Bange**
Management and Decision Support Systems

8:00-8:30 AM — (**Keynote Speaker**) *Building and Maintaining the Bridge: From Research to Technology Transfer*. **Michael P. Bange.** CSIRO Plant Industry, Australian Cotton Cooperative Research Center, Narrabri, Australia

8:30-9:00 AM — (**Keynote Speaker**) *Decision Support Systems Based on Crop Models and Crop Sensors*. **Leo Marcelis**, R. Booij, A. Elings, and P. de Visser Cluster Cropping Systems, Plant Research International, Wageningen, The Netherlands

9:00-9:20 AM — *Site-Specific Approaches For Cotton Integrated Pest Management.* **Jeffrey Willers**[1], Johnie Jenkins[1], James McKinion[1], Kenneth Hood[2], John Freeman[2], Doug Cauthen[2], and John Bassie, Sr.[2], Andy Zusmanis[3], Phillip McKibben[4], Paul Good[5], and Dale Weaver[5]. [1]USDA, ARS, Genetics and Precision Agriculture Research Unit, Mississippi State, MS; [2]Perthshire Farms, Gunnison, MS; [3]Leica Geosystems (ERDAS Support Services), Atlanta, GA; [4]McKibben Ag Services, LLC, Mathiston, MS; [5]Good's Longview Farm, Macon, MS

9:20-9:40 AM — *Web-Based Yield Prediction Information Delivery System*. **Steve Maas.** Department of Plant and Soil Science, Texas Tech University, Lubbock, TX

9:40-10:00 AM — *A Decision Support Tool Based on Reference Conditions and Empirical Distributions.* **David E. Legg** and Scott W. Miller. Department of Renewable Resources, University of Wyoming, Laramie, WY

10:00-10:15 AM — Break

Session II — **Program Chair: Jeff Willers**
Landscape and Watershed Level Systems

10:15-10:45 AM — (**Keynote Speaker**) *Impacts of Environmental Change on Aphids throughout Europe.* **Richard Harrington**, et al. Division of Plant and Invertebrate Ecology, Rothamsted Research, Harpenden, UK

10:45-11:15 AM — (**Keynote Speaker**) *Knowledge Engineering in a Landscape Ecological Context: An Approach to Integration*. **Robert N. Coulson**. Knowledge Engineering Laboratory, Department of Entomology, Texas A&M University, College Station, TX

11:15-11:35 AM — *PL-566 Riparian Zone Water Dynamics from Hydrometric and Isotope Measurements.* **Ranjan S. Muttiah**[1], Joseph D. White[2], and Jacquelyn Duke[2]. [1]Texas A&M University System, Agricultural Experiment Station, Temple, TX; [2]Dept. Biology, Baylor University, TX

11:35-11:55 AM — *The $\delta^{13}C_R$ Respiration Signature and Carbon Exchange Dynamics in Central Texas Rangelands from Tall Tower Measurement.* **Ranjan S. Muttiah**[1], Peter S. Bakwin[2], and Steve R. Potter[1]. [1] Texas A&M University System, Agricultural Experiment Station, Temple, TX; [2]NOAA/CMDL, Boulder, CO

11:55-1:30 PM — Catered Lunch

Session III **Discussion Leaders: Andy Gutierrez, Tom Sinclair, Leo Marcelis**

1:30-3:15 PM Informal Discussion on Biological Systems Models

3:15-3:30 PM Break

3:30-5:00 PM **Poster Presentations**

P.1 *Enzyme Activities in Semiarid Agricultural Soils.* **V. Acosta-Martínez**[1], T.M. Zobeck[1], T.E. Gill, and A.C. Kennedy. [1]USDA-ARS, Plant Stress and Water Conservation Laboratory, Lubbock, TX

P.2 *Soil Enzyme Activities in Semiarid Systems: Conservation Reserve Program, Native Rangeland and Cropland.* **V. Acosta-Martínez1**[1], Susanne Klose, and Ted M. Zobeck. [1]USDA-ARS, Plant Stress and Water Conservation Laboratory, Lubbock, TX

P.3 *Estimating Carbon Dioxide Leakage Rates in Controlled Environment Chambers Using Nitrous Oxide.* **J.T. Baker**[1], S.H. Kim[2], D.C. Gitz[2], D.J. Timlin[2], and V.R. Reddy[2]. [1]USDA-ARS, Cropping Systems Research Lab, Big Spring, TX; [2]USDA-ARS, Alternate Crops and Systems Laboratory, Beltsville, MD

P.4 *Simulating Water Use of Irrigated Corn on the Texas High Plains.* **T.J. Gerik**, T.A. Howell, J.R. Williams, W.L. Harman, and E. M. Steglich. Blackland Research Center, Texas Agricultural Experiment Station, Texas A&M University System, Temple, TX

P.5 *Simulation of Brush Removal Within an Urban Watershed in Texas.* **W. Rosenthal**[1], W.Dugas[1], R.Muttiah[1], S.Bednarz[2], T.Dybala[2], and C. Amonett[2]. [1]Blackland Research Center, Texas Agricultural Experiment Station, Temple, TX. [2]Natural Resource Conservation Service, Temple, TX

P.6 *A Simulation Model of Competitive Interactions among Polygyne Fire Ant Colonies for Foraging Space and Resources*. **Ronald D. Weeks[1], Jr.**, L.T. Wilson, S.B. Vinson, and M.J. Yoder. Department of Entomology, Texas A&M University, College Station, TX

P.7 *Stability of Radiation Use Efficiency of Peanuts for a Diverse Set of Sites.* **J.R. Kiniry**[1], C.E. Simpson[2], A.M. Schubert[3], and J.D. Reed[3]. [1]USDA-ARS, Temple, TX; [2]Texas A&M University System, Agricultural Research & Extension Center, Stephenville, TX; [3] Texas A&M University System, Agricultural Research & Extension Center, Lubbock, TX

P.8 *Soil Water Dynamics, Surface Energy Balance, and Canopy Microclimate in Dryland Cropping Systems: The USDA-ARS Facility in Big Spring, Texas.* **R. Scott Van Pelt**. USDA-ARS Cropping System Research Laboratory, 302 W. I-20, Big Spring, TX

6:30 PM **Conference Dinner**

WEDNESDAY – APRIL 16, 2003

Session I — **Program Chair: Jeff Baker**
Plant/Crop Systems: Biological Processes

8:00-8:20 AM — *Simulation of Leaf and Canopy Photosynthesis of Maize under Elevated CO_2 and Various Temperatures.* **S.H. Kim**, D.C. Gitz III, R.C. Sicher, D.J. Timlin, J.T. Baker, and V.R. Reddy. Alternate Crops and Systems Lab., USDA-ARS, Beltsville, MD

8:20-8:40 AM — *Delayed Senescence and Reduced Disease Severity in Cover Crop Mulch-Cultivated Tomato Plants is Linked to Accumulation of Specific Gene Products*. **Vinod Kumar**, Douglas J. Mills, James D. Anderson and Autar K. Mattoo. USDA-ARS, Plant Sciences Institute, Beltsville, MD

8:40-9:00 AM — *Soil Physical Properties, Crop Water Availability, Canopy Temperature, and Incidence of Green Bugs and Maize Dwarf Mosaic Virus in a Heterogeneous Dryland Sorghum Field.* W. Payne, **A. Fernando**, J. Michels and C. Rush. Texas Agriculture Experiment Station, Bushland, TX

Session II — **Program Chair: Ken Boote**
Plant/Crop Systems: Integration

9:00-9:30 AM — *Rice Systems Research: From Cultivar Development to Integrated Systems Management.* **L.T. Wilson** and Yubin Yang. Texas A&M University System, Agricultural Research & Extension Center, Beaumont, TX

9:30-9:50 AM — *An Individual-Based Rice Cropping System Model*. **Yubin Yang** and L.T. Wilson. Texas A&M University System, Agricultural Research & Extension Center, Beaumont, TX

9:50-10:10 AM — *2DSPUD, a Two-Dimensional Model of Potato Growth and Development.* **D.J. Timlin[1],** S. H. Kim[1], Y. Pachepsky[2], V. R. Reddy[1], C. Fraisse[3], A. Alva[4], and J. T. Baker[1]. [1]USDA-ARS Alternate Crops and Systems Laboratory, Beltsville, MD; [2]USDA-ARS Animal Waste Pathogen Laboratory, Beltsville, MD; [3]Washington State Univ., Pullman, WA, [4]USDA-ARS Vegetable and Forage Crop Research Unit, Prosser, WA

10:10-10:25 AM — Break

Session III — **Discussion Leaders: Jeff Willers, Robert Lascano, Bob Coulson, Ted Wilson**

10:25-12:00 PM — Informal Discussion on Spatial and Landscape Analysis

12:00-1:30 PM — Catered Lunch

Session IV	**Program Chair: Ted Wilson** ***Synthesis and Recommendations***
1:30-1:35 PM	**Joyce Fox Strand** (*Soil/Weather Data Acquisition, Synthesis, and Delivery*)
1:35-1:40 PM	**Thomas R. Sinclair** (*Plant/Crop Systems: Biological Processes*)
1:40-1:45 PM	**Andrew Paul Gutierrez** (*Plant/Crop Systems: Integration)*
1:45-1:50 PM	**Michael Bange** (*Management and Decision Support Systems*)
1:50-1:55 PM	**Leo Marcelis** (*Management and Decision Support Systems*)
1:55-2:00 PM	**Richard Harrington** (*Landscape and Watershed Level Systems*)
2:00-2:05 PM	**Bob Coulson** (*Landscape and Watershed Level Systems*)
2:05-2:15 PM	**Ted Wilson** (*Concluding Remarks*)
Session V	**Business Meeting**
2:15-3:30 PM	**Biological Systems Simulation Group (BSSG)**
3:30 PM	END OF THE CONFERENCE