USDA-ARS Cropping Systems Research Laboratory Field Day

August 7, 2018

USDA-ARS Research Farm

3810 4th Street

Lubbock, TX

Schedule

8:15 – 8:45 Registration and Coffee

8:45 – 9:00 Opening remarks and introductions

Paxton Payton, RL PSGD

9:00–12:00 Tour of 2018 Field Experiments

12:00–1:30 Lunch by Jeana's Feedbag

1:30–3:30 Afternoon presentations (CSRL Auditorium)

Opening remarks and introductions

Robert Lascano, RL WEWC

Cotton Production & Processing Research Unit: More than just cotton. **Matthew Pelletier**, CPPRU

Livestock Issues Research Unit: Who we are and what we do. **Jeff Carroll**, RL LIRU

High Plains agro-climate: a focus on sorghum and cotton production. **Steve Mauget**, WEWC

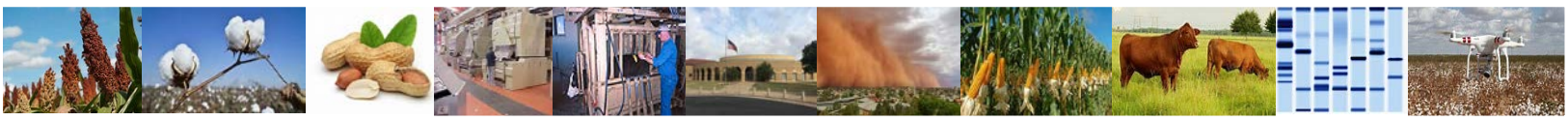
Dust trends on the Llano Estacado.

John Stout, WEWC

How soil health can improve production on the Southern High Plains. **Veronica Acosta**, WEWC

Food Safety: From pasture to plate.

Rand Broadway, LIRU



Paxton Payton

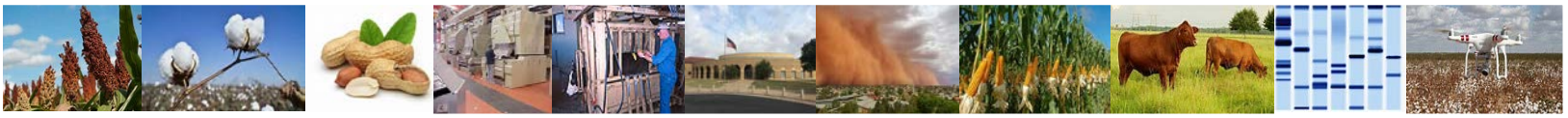
Dr. Payton's research focuses on understanding the physiological and genetic mechanisms of crop responses to environmental stress, specifically drought and high temperatures. His primary research is on stabilizing yield and quality in rainfed cotton production systems and irrigation scheduling and improved peanut germplasm for low input systems.

Gloria Burow

The Sorghum Genetics & Translational Genomics (GTG) group is led by Dr. Gloria Burow, a research geneticist with a focus on translational genomics & applications of sorghum genetics to improve overall sorghum productivity and to understand the mechanisms of tolerance to abiotic stresses. Their various research activities address the enhancement of sorghum cold tolerance & the applications of DNA markers in sorghum breeding programs. Dr. Burow received her Ph. D. from Louisiana State University.

Mauricio Ulloa

Dr. Ulloa is developing/integrating approaches to develop and accelerate the selection of superior or improved cotton lines through conventional breeding and genomics with better stress/drought tolerance and disease resistance (such as Fusarium wilt race 4 – FOV4), and yield and fiber quality. His M.S. (1990) & PhD. (1993) Degrees are from New Mexico State University.



Naveen Puppala

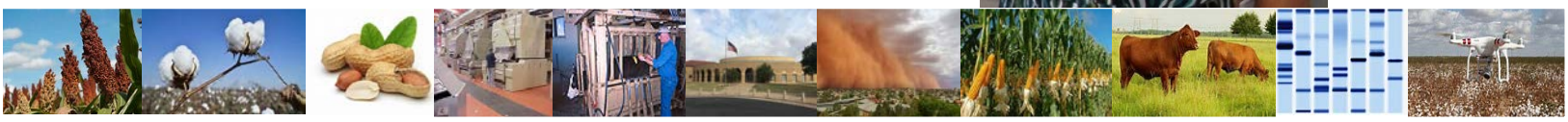
Dr. Puppala's research focuses on Valencia peanut breeding with emphasis on variety development for high yield, high oleic acid content, four seeds per pod, superior taste, drought tolerance, & disease resistance using molecular techniques & conventional breeding approaches.

Yves Emendack

Dr. Emendack is a research crop physiologist. His field of expertise is on agro-morphological & physiological characterization of traits for the enhancement of abiotic stress tolerance in crops. He received his Ph.D. & MS degrees from the Humboldt University of Berlin, Germany. Dr. Emendack is originally from Cameroon where he obtained his bachelor degree in Biochemistry with minor in medical laboratory technologies.

Junping Chen

Dr. Chen received a B.S. (1982) from Hebei Ag. Univ. China, M.S. & Ph.D. (1996) From Univ. of Minnesota. Her research program focuses on characterizing abiotic tolerance traits of major crops (maize, sorghum and cotton) for heat and drought stresses, ranges from field-based physiology, metabolism to genetic & genomic studies.



Chad Hayes

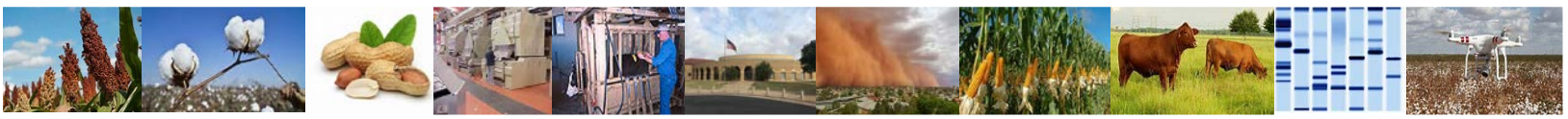
Dr. Hayes is a research geneticist with interest in the development of cold & drought tolerant sorghum germplasm, the development of high yielding grain sorghum hybrids adapted to TX and KS, & the utilization of diverse & exotic germplasm in a breeding program. Chad has distributed over 100 breeding lines to the sorghum industry, with many lines performing well with multiple seed companies. Most recently, Chad has a B.S from TTU & his M.S. & Ph.D. from Texas A&M University.

Hong Zang

Dr. Zhang's research is focused on genetic engineering approaches to abiotic stress tolerance in cotton. His ultimate goal in studying plant biology is to improve the crop's productivity by manipulating the expression level of certain genes in transgenic crops. In particular, we want to improve the yield and quality of cotton and peanut grown in water limited Southwest in the United States of America.

Zhanguo Xin

Dr. Xin graduated with his B.S. from the Beijing Agricultural University and obtained his Ph.D. from the University of Minnesota. His research focuses on mutational analysis of agronomic traits in sorghum to understand the mechanisms of development, adaptation to abiotic stresses, and grain yield formation.



Jeffery T. Baker

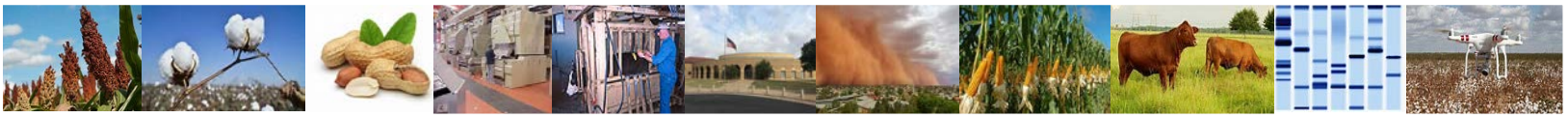
Dr. Baker is a Plant Physiologist in Big Spring, evaluating deficit irrigation strategies by quantifying the degree of crop drought stress in terms of individual leaf and whole canopy gas exchanges. Efficient use of limited water resources in semi-arid regions is hindered by a lack of basic, canopy-scale, real-time knowledge of crop responses to water deficit.

James Mahon

Dr. Mahan is a research plant physiologist with a B.S. in biology from Southwestern Oklahoma State Univ. and M.S. & Ph.D. in plant physiology from Texas A&M Univ. During his 30+ year research career with the ARS, his research has been focused on the relationship between the thermal dependence of metabolism and the plant's environment. Plant temperature, environmental parameters and plant water status are particular areas of interest.

Mark Burow

Dr. Burow is a peanut breeder at AgriLife research focused on developing new cultivars for Texas growers, incorporating: high yield; improved edible seed quality -early maturity, high oleic oil; resistance to water deficit, heat, and salt stress as well as resistance to disease and pests, especially leafspot, nematodes, and Sclerotinia blight.



Robert Lascano

Dr. Lascano is a Soil Scientist and Research Leader of the (WEWC) Research Unit at Lubbock. Dr. Lascano has evaluated conservation measures to make better use of rain by reducing runoff and investigated irrigation scheduling techniques under deficit conditions using a landscape-scale model that simulates the water, energy and carbon balance of irrigated fields.

Matthew Pelletier

Dr. Pelletier specialized in Instrumentation & Signal Processing at the University of California (1998).

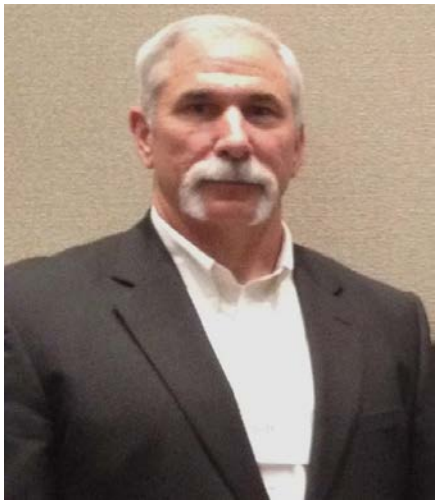
His current research activities include:

plastic contamination mitigation in cotton processing

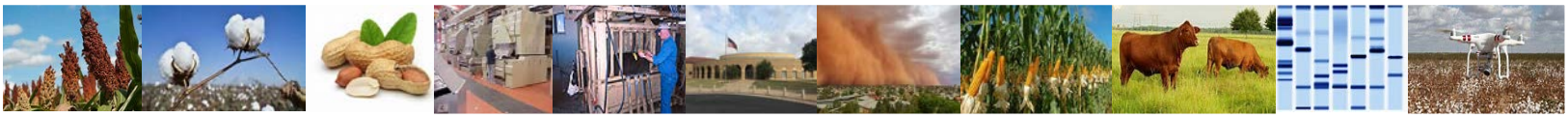
instrumentation & sensor development for determination of cotton quality parameters to preserve & protect cotton fiber quality

Robotics, machine-vision & automation for cotton harvest & pre/post-harvest operations.

Jeff Carroll



Dr. Carroll completed his B.S. (1991), M.S. (1993), and Ph.D. (1996) from Texas A&M Univ. In 2004, he moved to Lubbock, TX from Columbia, MO & serves as the Research Leader for Livestock Issues Research Unit. As a Research Physiologist, he focuses on improving livestock performance & well-being through elucidating the interactions associated with growth, stress, nutrition, & immune regulation.

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1. **Sorghum Breeding for Sugar Cane Aphid Resistance** (Chad Hayes)

2. **Screening Sorghum Germplasm for Temperature and Drought Tolerance** (Zanguo Xin, Gloria Burow, Yves Emendack)

3. **Managing Yield and Fiber Quality in Rainfed Cotton Production Systems** (James Mahan, Paxton Payton)

4. **Cotton Breeding for Drought and High Temperature Stress Tolerance** (Mauricio Ulloa)

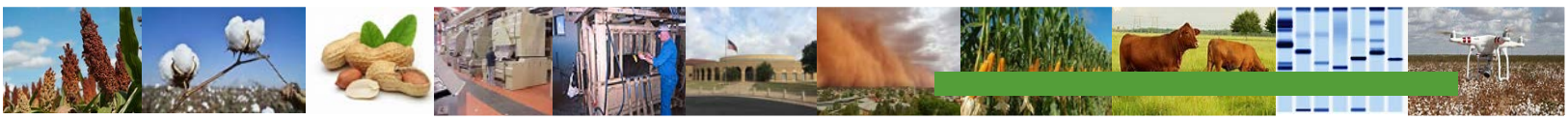
5. **Update on Disease Tolerance in Upland Cotton** (Mauricio Ulloa)

6. **Genetically Engineered Stress Tolerance in Cotton** (Hong Zang, Paxton Payton, Dennis Gitz)

7. **Identification of Corn Heat and Drought Tolerance Phenotypes** (Junping Chen)

8. **Selection of Drought Tolerant Peanut Varieties for the Southern High Plains** (Mark Burow-TAMU, Naveen Puppata-NMSU, Paxton Payton)

9. **Development of Low-cost Sensors for Crop Management** (James Mahan)

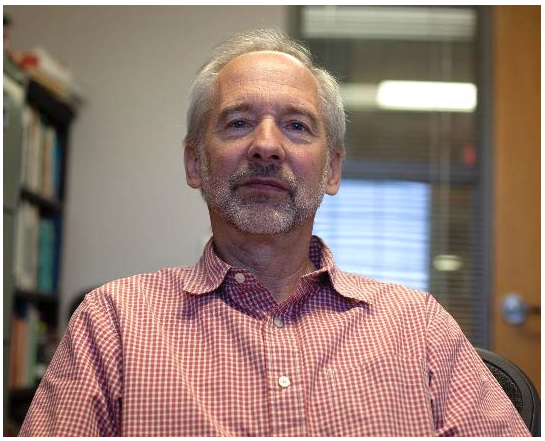


Steve Mauget

Dr Mauget has worked for the ARS since 1997. His major areas of research include the analysis of historical temperature, precipitation, and streamflow data, crop modelling, the development of web-based decision support tools, and exploring how weather and climate information can be useful in agricultural risk management. B.S. U.C. Santa Cruz 1986) M.S., Ph.D atmospheric Science (U.C Davis 1992,1996)

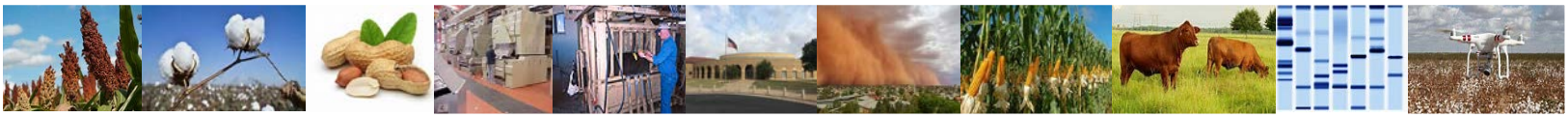
John E. Stout

Dr. Stout is a Physical Scientist in the WEWC Research Unit. Present research is directed toward an improved understanding of wind erosion, air quality, and groundwater quality with an emphasis on basic physical processes. As the region's economy becomes increasingly dependent on rainfall, knowledge of various aspects of precipitation, in its many forms, becomes increasingly important.



Dennis Gitz

Dr. Gitz is a whole plant physiologist with a background in phytochemical approaches to ecological plant stress physiology. Currently he identifies and investigates the functional role of plant physiological processes in conferring drought stress tolerance with the goal of exploiting these mechanisms in agronomic systems development. His B.S., M.S., and Ph.D. are from Miami University.

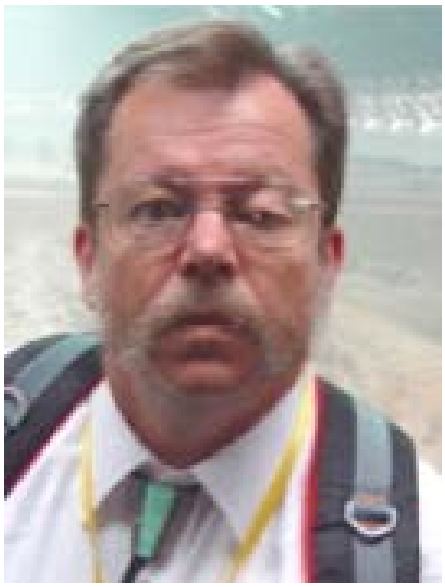


Veronica Acosta-Martinez

Dr. Acosta-Martinez has been at CSRL for the past 17 years. Her research is focused on obtaining a better understanding of the soil microbial component as affected by the complex interactions of management selections & climate extremes as indicators of soil health & functions related to biogeochemical cycling, organic matter dynamics & productivity in semi-arid climates.

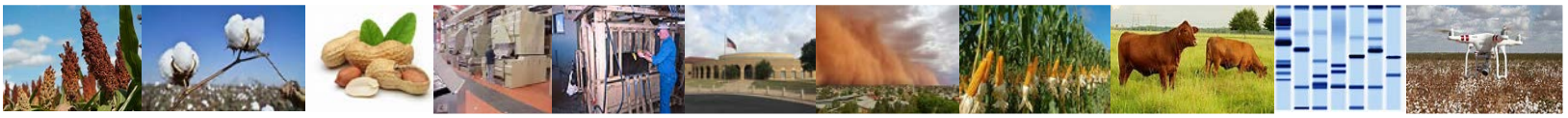
Rand Broadway

Dr. Broadway was born & raised in the Mississippi Delta with a B.S. & M.S. from Mississippi State Univ. & Ph.D. from TTU. His current program focuses on non-pharmaceutical supplements to mitigate the negative effects of diseases such as salmonellosis and Bovine Respiratory Disease. Simultaneously his research aims to identify pathogen colonization, migration, & translocation patterns to enhance food safety, growth, & carcass performance.



Scott Van Pelt

Dr. Van Pelt is a soil scientist in Big Spring actively involved in the current USDA-ARS effort to investigate and develop models of rangeland wind erosion. Dr. Van Pelt is collaborating with investigators from the Univ. of Pennsylvania and the Desert Research Institute to study the use of legged robots as mobile instrument platforms during sandstorms.



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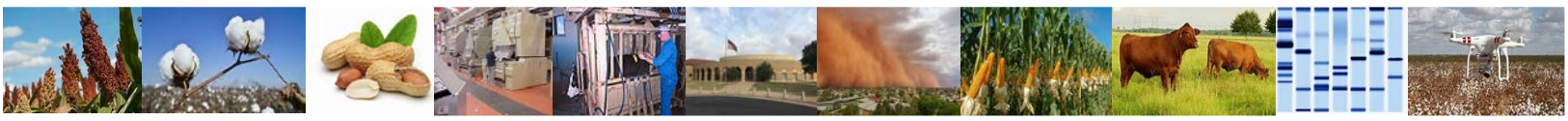

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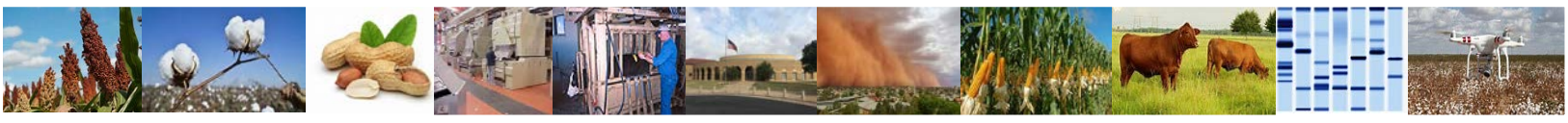

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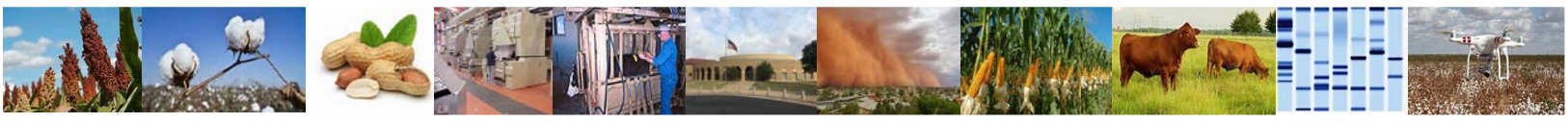

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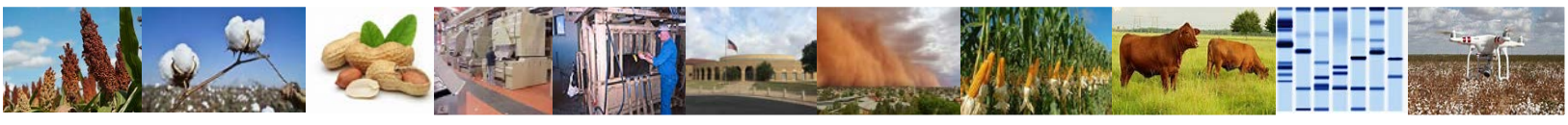

THANKS TO OUR COOPERATORS

Texas A&M AgriLife Extension Service

Texas Tech University

New Mexico State University Ag. Science Center at Clovis

National Sorghum Producers

Cotton Incorporated

Texas Corn Producers

Texas Peanut Producers' Board