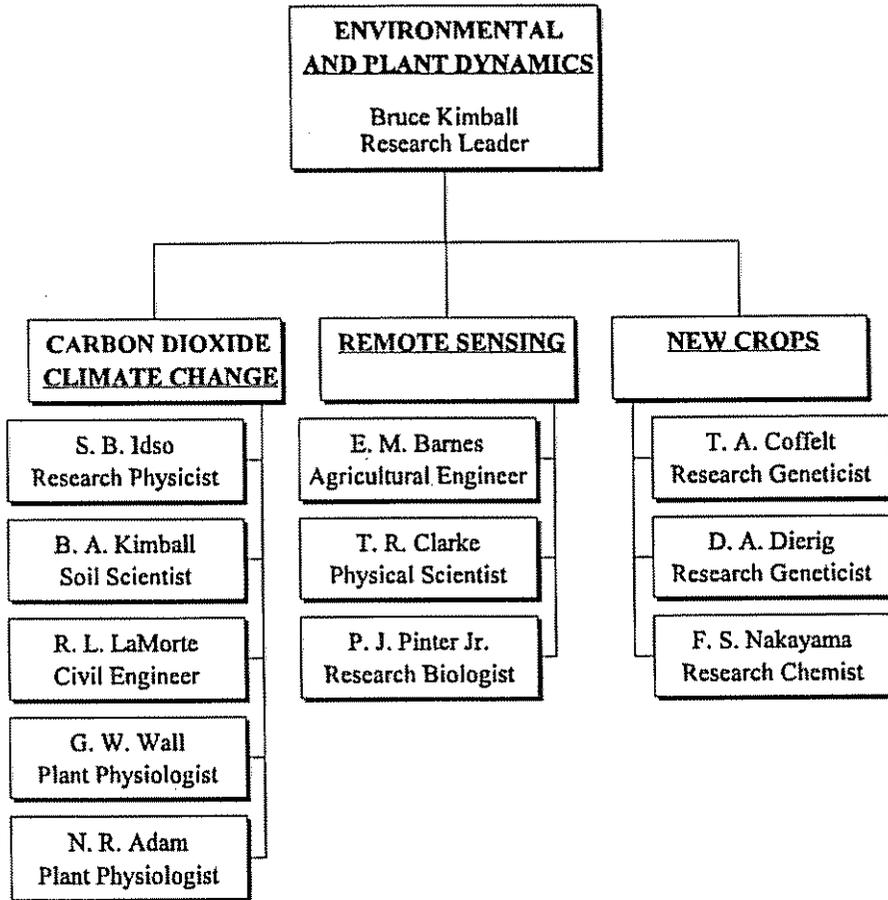


## **E&PD Management Unit**

# E&PD Organization



## Mission

The Environmental and Plant Dynamics Research Group seeks to develop optimum resource management strategies for meeting national agricultural product requirements within the context of possible changes in the global environment. There are three main research thrusts: The first is predicting the effects of the increasing atmospheric CO<sub>2</sub> concentration and climate change on the yield and water use of crops in the future. The second thrust seeks to develop remote sensing approaches for observing plant conditions and biophysical processes which are amenable to large scale resource monitoring using aircraft- and satellite-based sensor systems. The third research thrust is to develop new industrial crops with unique high value products and lower water requirements for commercial production within the context of changing environments.

## E&PD RESEARCH STAFF



**NEAL R. ADAM, B.S., M.S., Ph.D., Plant Physiologist**

Research regarding physiological, biochemical and molecular responses of wheat to CO<sub>2</sub> enrichment in FACE crop canopy experiment. Establish protocol for enzyme activity assays, SDS-PAGE and other biochemical procedures on leaf samples. Design and implement data collection and processing tools.

**EDWARD M. BARNES, B.S., M.S., Ph.D., Agricultural Engineer**

Remote sensing applications for farm management; consideration of approaches that integrate remotely-sensed measurements with crop growth models and decision support systems.



**THOMAS R. CLARKE, B.A., Physical Scientist**

Remote sensing for farm management, thermal and optical radiometry, and instrument calibration.

**TERRY A. COFFELT, B.S., M.S., Ph.D., Research Geneticist-Plants**

Breeding, genetics, and germplasm evaluation of new crops--guayule, lesquerella, and vernonia; development of acceptable production practices.



**DAVID A. DIERIG, B.S., M.S., Ph.D., Research Geneticist-Plants**

Breeding, genetics, germplasm collection and evaluation of new industrial crops with unique, high-value products, including lesquerella, vernonia, and guayule.

**SHERWOOD B. IDSO, B.S., M.S., Ph.D., Research Physicist**

Effects of atmospheric CO<sub>2</sub> enrichment on biospheric and climatic processes.





**BRUCE A. KIMBALL, B.S., M.S., Ph.D., Research Leader for E&PD and Supervisory Soil Scientist**

Effects of increasing atmospheric CO<sub>2</sub> and changing climate variables on crop growth and water use; free-air CO<sub>2</sub> enrichment (FACE), and CO<sub>2</sub> open-top chambers and greenhouses; micrometeorology and energy balance; plant growth modeling.

**ROBERT L. LaMORTE, B.S.E., Civil Engineer**

Instrumentation, operation and data collection for the control of atmospheric CO<sub>2</sub> in global change experiments on agricultural crops.



**FRANCIS S. NAKAYAMA, B.S., M.S., Ph.D., Research Chemist**

New crops such as guayule (for latex rubber and resin), lesquerella (hydroxy fatty acid) and vernonia (epoxy fatty acid); including extraction and analytical techniques and by-product uses for the various components; Editor-in-Chief of Industrial Crops and Products, an International Journal.

**PAUL J. PINTER, JR., B.S., M.S., Ph.D., Research Biologist**

Applications of remote sensing technology to management of agricultural resources and research in plant sciences; effects of elevated CO<sub>2</sub> on biophysical properties of plants.



**GERARD W. WALL, B.S., M.S., Ph.D., Plant Physiologist**

Derivation of experimental databases to quantify growth, development, and physiological response of agronomic crops to full-season CO<sub>2</sub> enrichment; development of deterministic and stochastic digital simulation models of the soil-plant-atmosphere continuum in response to a CO<sub>2</sub> enriched environment.