

Clyde Munster

Drs. Munster and Mohanty of the Biological and Agricultural Engineering Department and Drs. Wilcox and Owens of the Rangeland Ecology Management Department received a 1-year Water Conservation and Soil Management grant from the Texas Water Resources Institute titled, "Development of a Rainfall Simulator for the Assessment of Basic Hydrological Processes Affected by Brush Control" that starts in the Fall of 2001. The rationale of the project is as follows. In the last several years, the issue of brush control in semi-arid rangeland in Texas has generated intense interest from water supply agencies, regulatory authorities and legislators throughout the state. To date, some \$7 million has been spent on state-supported brush control in the hope of augmenting water yields, and an additional \$24 million has been allocated for FY 2002 (Kevin Wagner, TSSWCB, personal communication). If these and future funds are to be spent efficiently, cost-effective strategies must be developed that are based on sound research. Even where field studies indicate that shrub control may increase water yields, considerable uncertainty remains concerning the magnitude of those increases, the scale(s) at which they may be expressed, and which shrub control strategies would result in the most efficient treatment. Part of the problem is that both surface and subsurface flow processes in these range landscapes are poorly understood, as is the role that shrubs play in altering these processes. Detailed, process-oriented field studies will be required if these uncertainties are to be sorted out.

It is expected that the result of this project will be a portable rainfall simulator that will be used to, 1. conduct controlled field experiments to provide a scientific basis for the use of brush control to increase water availability, 2. foster inter-disciplinary research and teaching collaboration between the AGEN and RLEM Departments, 3. produce a preliminary data set from the Uvalde pilot applications for future grant applications, 4. use the data collected at the Uvalde site for a peer-reviewed publication, 5. use as "matching" equipment that is already available to help secure external grants, and, 6. develop a field laboratory site for student instruction.