ARIZONA GRAIN RESEARCH AND PROMOTION COUNCIL
PROJECT PLAN/RESEARCH GRANT PROPOSAL

Project No.

Calendar Year: 2003 Anticipated Duration: 11/03 to 11/04

This Project is: Ongoing

Project Leader: Mike Ottman

Location: Maricopa and Yuma Valley Agricultural Centers

Project Title: Crop Coefficients for Estimating Small Grain Water Use (Revised 10/03)

I. Problem and its Significance: Crop coefficients are used to calculate water use from weather data. The crop coefficient increases as the crop develops, reaches a peak, and then decreases as the crop senesces. Crop coefficients are most accurate if locally developed using current cropping practices. Crop coefficients have not been developed for Arizona, and we currently rely on values from California or values estimated indirectly from water use work done on outdated varieties by the Water Conservation Research Laboratory in Phoenix in the 1950's and 1960's. We intend to use the crop coefficients developed in Arizona to provide water use estimates for the Small Grain Advisory and for AZSCHED, irrigation scheduling software for Arizona.

II. Objectives: Develop crop coefficients for wheat and barley in Arizona.

III. Project's Benefit to the Industry: Prediction of wheat and barley water use from weather data.

IV. Research Collaboration: Paul Brown, Ed Martin, and Charles Sanchez

V. Plans and Procedures: Four durum varieties (Kronos, WPB 881, Orita, and Duraking) and four barley varieties (Barcott, Baretta, Mucho, and Max) will be planted at two dates (early December and early January) at the Maricopa Agricultural Center. The plots will be about 50 ft by 50 ft in size and replicated twice. Irrigation will be applied at 50% depletion of plant available water and about 250 pounds of N will be applied per acre. At the Yuma Valley Agricultural Center, a single durum variety will be planted at two dates in bulk fields. Water use will be estimated in 1 ft depth increments to 4 ft from weekly neutron probe readings at both locations. Crop coefficients will be calculated by dividing water use by reference evapotranspiration from AZMET. A mathematical relationship will be developed between crop coefficient and heat units after planting for barley and wheat.

VI. Technology and Information Transfer to Industry: Via water use estimates in Small Grain Advisory and AZSCHED

VII. Budget: $7000

Operations	$6000
Travel	1000
Total	$7000