

## *Project Update*

We had a set of small weighing lysimeters built; we will fill them with compacted soil and feedlot manure to simulate a feedyard surface, then monitor evaporation rates by weighing the lysimeters daily using the A-frame shown in image 641. Thomas Marek, Don Dusek and Gary Marek worked with me Thursday 6/6/02 to calibrate the load cell we're using to weigh the lysimeters; image 650 shows Tom and Don keeping an eye on the instrumentation, and image 653 shows us getting ready to calibrate the cell with 2,000 lbs worth of tractor axle weights. The load cell is the nickel-plated, S-shaped device suspended below the middle of the huge I-beam, just above the suspension sling assemblies.

Our instrumentation can reliably detect changes as small as 67 grams in 2,000 lbs, which is roughly equivalent to 0.003 inches of evaporation from the 1-square-meter lysimeter pans. We will be installing the six lysimeters next week in a linear array (image 40), and the A-frame "cherry picker" load cell suspension will roll along a track and anchor over each lysimeter for weighing every morning (image 151). We will then compute the previous day's evaporation and replace that amount of water in each lysimeter.

We have used the grant in part to hire some summer help to collect the data for us. (We also used it to build the instrumentation, purchase materials etc.) We have compiled the GPS coordinates of all TCFA member feedyards in the Texas High Plains, and I have devised a finite element method of interpolating daily evapotranspiration at each feedyard from the array of NPET network weather stations.

The lysimeter data will be used to generate a feedyard evaporation coefficient which, when multiplied by crop reference ET as measured by the NPET network, will predict daily feedyard evaporation and therefore daily water needs for dust control via sprinkler system or water truck.

We have leveraged the TWRI grant funds against our new Federal agricultural air quality initiative to enhance and extend the scope and reach of the TWRI project.