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Arizona Meteorological Network (AZMET)

Statewide system assists growers and agricultural industry

By Susan McGinley and Paul Brown



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WATER USE

AZMET information has been used extensively in irrigation management, particularly in urban areas. AZMET generates daily turf water use reports for the Phoenix area and distributes this information to the public via a turf water management web page, email and automated fax transfer system. Sixteen large turf facilities (with more than 10 acres in turf; mostly golf courses and parks) receive this information via email or fax daily. The turf web page was accessed in excess of 1600 times in 2000. AZMET also generates a lawn watering guide which is published daily in major newspapers in the Phoenix metropolitan area.

CONSULTING

AZMET data are widely used by the consulting community for production agriculture; environmental impact assessments including air quality; insurance claims; legal disputes and water rights adjudication.

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Looking for heat unit readings for predicting crop and insect development, or evapotranspiration data for irrigation management? Arizona agricultural producers and other professionals have relied on AZMET (the Arizona Meteorological Network) for 15 years to obtain the kind of data that will assist them with management decisions. AZMET was developed through the University of Arizona in 1987 to provide weather data and information in near real time to the state's producers of agricultural and horticultural crops. Paul Brown, an extension specialist and research scientist in the Department of Soil, Water and Environmental Science, founded the program and still oversees its operation.

"Properly tailored weather information can assist with important management decisions related to variety selection, planting dates, crop assessment, pest control, irrigation and harvest," Brown says.

Twenty-three automated weather stations installed across southern and central Arizona supply meteorological data from important agricultural production areas and selected urban locations. Data collection includes temperature (air and soil), humidity, solar radiation, wind (speed and direction), and precipitation. AZMET also provides a variety of computed variables: heat units (degree-days), chill hours, and reference crop evapotranspiration (ET_o).

Each night, meteorological data obtained by the stations are transferred to a Tucson-based data processing center where the data are processed into a variety of informational formats, including several ready-to-use summaries. AZMET also produces special reports, such as the Turf Water Use Reports, Weekly Cotton Advisories, Cotton Heat Stress Updates, and Frost Data Summaries. AZMET data and reports are made available to the public free of charge via two Internet web pages (*see urls at end of story*).

Past and present sponsors for the AZMET program include the Arizona Cotton Research and Protection Council, the Arizona Citrus Research Council, the Arizona Municipal Water Users Association, the Arizona Department of Water Resources, and the City of Phoenix. In addition, all non-experiment station

weather stations are required to have a local sponsor that pays for non-labor operating costs of the station. Local sponsors can include irrigation districts, natural resource conservation districts, power districts, commodity organizations, and others.

AZMET is now widely accepted as an important—and often the only—source of meteorological information pertaining to the production of agricultural and horticultural crops in Arizona. So far, the system has not expanded to northern Arizona, although Brown would like to see it expand to cover other important production areas and several rapidly growing urban areas in the state. "We'd like to add more stations, budget permitting, and do some weather monitoring in the high country," Brown says.

Use of AZMET information continues to grow; the AZMET web page recorded in excess of 13,000 hits in 2000, an increase of about 20 percent over 1999. Hits for 2001 will be expected to exceed those figures by about 10 percent.

Perhaps the most important impact of AZMET in production agriculture has been its ability to provide reliable information on heat units which are used to 1) time planting and harvest dates of horticultural crops such as melons and sweet corn; 2) predict pest development; and 3) monitor general crop development. The UA's Cotton Monitoring Program depends heavily on heat unit information from AZMET and the Arizona Cotton Advisory Program, which supplies weekly production updates to growers that include heat unit and other weather information derived from AZMET.

In a recent survey, 80 percent of the growers participating reported that they alter their management of cotton either occasionally or frequently as a result of information in the advisories; 96 percent of the growers would like the program to continue. The availability of AZMET information has also made it possible to quantify the impact of heat stress on cotton reproductive development, and the UA is now generating in-season heat stress assessments to help growers evaluate the condition of their crop. w

ag.arizona.edu/azmet
ag.arizona.edu/azmet/phxturf.html