THE
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Examining the Atmosphere and Atmospheric Resource Management

North Dakota Agricultural Weather Network

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Since it's inception in 1989, the North Dakota Agricultural Weather Network (NDAWN) has helped many North Dakotans make weather-critical decisions concerning their crops, livestock, and livelihood.

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NDAWN was founded by the Department of Soil Science at NDSU and the High Plains Climate Center (HPCC) based in Lincoln, NE. HPCC has provided funding through grants and operational support to NDAWN and has been an essential part of the networks' implementation. What began as six weather stations has grown to 70 NDAWN stations statewide including a few of those in neighboring states. The photo here depicts a typical NDAWN station. Each station provides archived weather data including the maximum and minimum air temperature, average air and soil temperature, wind speed, wind direction, wind chill, rainfall, solar radiation, relative humidity, dew point, and potential evapotranspiration. Each stations' weather data includes new data from the previous day and archived data going back to the stations' origin.

NDAWN data is provided free of charge online at http://ndawn.ndsu.nodak.edu/. Specialized data can also be requested directly from the NDAWN staff at NDSU by e-mailing ND State Climatologist Dr. F. Adnan Akyüz at adnan.akyuz@ndsu.edu.

One direct benefit of NDAWN data was that it helped save the 1993-94 North Dakota potato crop. In fact, the first private NDAWN funding was contributed by the Red River Valley Potato Growers Association beginning in 1991. Seven stations in the northern Red River Valley were established as a result of these grants. The stations provide weather data, which was instrumental in developing an agricultural model called the late blight model. This model predicts when leaf disease can occur in potato plants. Late blight doesn't occur in North Dakota every year and is prevalent during cool and moist periods of weather. In 1993-94, this model predicted that late blight would occur and growers were able to use fungicide applications to prevent the disease.

Another direct benefit of NDAWN data is that it provides universities and the National Weather Service with an additional database for research and forecasting applications. During North Dakota's growing season, parameters such as potential evapotranspiration are used to forecast thunderstorm potential. In simple terms, if there is soil moisture available for evaporation, then developing thunderstorms have potential "fuel" to sustain themselves.

The most recent addition to the NDAWN application list is the site-specific Irrigation Scheduling application. "Irrigation scheduling is based on estimating the soil water balance in irrigated fields on a daily basis," said Dr. Akyüz. "Yet," he added, "our most popular feature is the voice modem on each station. People love to call the station telephone number and get the latest weather conditions for their community."

According to the NDAWN website, "Most state and local government agencies, and all federal agencies in North Dakota use these data to document weather conditions related to storm damage, accidents, crimes, and regulatory violations." In addition to agricultural uses, the website states that its "data are used for weather forecasting/research, government policy decisions, natural resource management, landfill operation, utility planning and operation, claims adjusting, resolution of legal questions, environmental research, hydrologic forecasting and management, water quality management, structure site selection, and wind and solar power potential."

The future for NDAWN looks bright and promising. Agriculture remains the number one industry in North Dakota and its success will always be dependent on the weather.

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