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Using the Internet for site-specific irrigation scheduling

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Abstract:

Getting a farmer to use scientific methods for scheduling irrigation has always been difficult. Irrigation water management, of which irrigation scheduling is a part, has commonly been referred to as 50% science and 50% art. The most frequent complaints by irrigators about using science based irrigation scheduling is that it has a steep learning curve, it takes too much time to gather all the information and they just don't have the time during the growing season. To address these concerns a site-specific irrigation-scheduling program that runs on the North Dakota Agricultural Weather Network (NDAWN) web server has been developed. The user selects their field from aerial photos using a GIS interface and then field specific soil parameters are accessed from the NRCS's digitized soil survey database. The user then selects the crop, year, planting date and emergence date. The program automatically selects the three nearest weather stations and creates a checkbook for the three major soils in the field. Once created, the checkbooks are updated automatically each day using crop water use values generated by daily weather data from the selected weather station for the crop selected. All the user has to do is log into the website, select the field and enter irrigation or rainfall amounts. This takes about 30 seconds per field. The 2008 growing season was the first year that the website was available for use. Over 100 individuals used the website to schedule irrigation on over 250 center pivots (about 32,000 acres).

Impact Statement:

Funding for development of this irrigation scheduling program was provided by the Natural Resource Conservation Service, the Bureau of Reclamation and NDSU. It fulfills a need that each agency has struggled with - that is better irrigation water management. This program has been accepted by the NRCS for the irrigation water management portion of EQIP cost-share with irrigators. The Bureau of Reclamation recommends it to irrigation districts in their water conservation programs. The 2008 growing season is the first year that the website was available for use. Over 100 individuals used the website to schedule irrigation on over 250 center pivots (about 32,000 acres). The NRCS has expressed the desire to use concepts developed for this program in their national irrigation water management effort.

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