

IMPACT



University of Idaho
Cooperative
Extension System

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Soil Moisture Monitoring Equipment Used to Advise Canal Company District When to Release Irrigation Water

The Situation

Hot, dry weather conditions in the summer and fall of 2000 prompted Magic Reservoir irrigation users to demand irrigation water delivery late into October 2000. This late water use resulted in a short supply of carryover water; carryover water is needed to help fill the reservoir in years of light snowfall and drought conditions. Magic Reservoir has a holding capacity of 191,000 acre-feet of water that irrigates approximately forty thousand acres of land.

The Conditions Found

It was discovered that light 2000-01 winter snowfall and lack of moisture in the fallen snow produced only 70,900 acre feet of storage water in Magic Reservoir, which is located in Lincoln County north of Shoshone. This was less than half of full reservoir capacity. Many area farmers were concerned early in the spring about the amount of irrigation water that would be available to those receiving water from the Magic Reservoir Irrigation District.

Incoming runoff and river flow water would not meet the draw-down demands and storage water would be used immediately upon irrigation water release. This dilemma would result in an extremely short irrigation season.

Our Response

Watermark sensors and Hanson meters were placed in numerous area fields on April 2nd, 2001. These units were used to measure the amount of water available for plant uptake, and the demand being placed on soil moisture supplies. Soil samples were taken on April 30th at one foot, two foot, and three foot levels, at various locations in Lincoln County. Soil samples, soil water data, and evapo-transpiration (ET) data were used as educational tools at local irrigation district meetings. Available soil moisture content calculations were presented to the Irrigation District Board of Directors along with the ET data. Information presented indicated that irrigation water release could be delayed because of adequate soil moisture levels compared to ET demand.

Achievements

Irrigation water was released to producers for use on May 6th. This release was approximately fifteen days later than normal irrigation season releases. Because soil moisture monitoring allowed delayed release of irrigation water, farmers were able to irrigate until July 15th, instead of having water cut-off on June 30th. By having water available until June 15th, growers produced two high quality cuttings of alfalfa, instead of one, and were able to harvest feed barley and wheat, rather than having to



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green chop their cereal crops. One producer reported barley yielding 117 bushels per acre plus straw at \$46.00 per ton. This combination returned \$569.00 per acre gross income, with a net return above operating costs of \$328.37. However, if the same crop had been green chopped for silage it would have yielded about 9 tons per acre. At \$18.00 per ton for silage, the barley crop would have returned \$162.00 per acre gross income, with a net **loss** of \$257.13 when operating costs were considered. The local irrigation board of directors, county commissioners, and producers acknowledged an increased awareness of the benefits of monitoring available soil moisture each spring. Accurate soil moisture and crop evapo-transpiration data will be used in future years for determining the time of irrigation water release.

For More Information

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