

IMPACT

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Extension

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Irrigation Management for Minor Crops

The Situation

Improved irrigation efficiency through use of soil moisture monitoring has been demonstrated for crops such as sugar beets, onions, and small grains in Washington County. The benefits of moisture monitoring through soil sensors have been presented to growers in grower meetings, demonstration projects, and publications. Many growers who have used this technology have reported water and cost savings, improved yield, reduced crop disease, or combinations of these results.

Growers of minor crops have also become interested in use of this soil moisture technology. Often, there is little information on irrigation management of these minor crops, especially on a local level. Growers of minor crops requested assistance with soil moisture monitoring technology for the improvement of irrigation efficiently.

Our Response

At the request of growers, the Washington County Extension office installed soil moisture sensors and recording monitors in minor crops such as pear and cherry orchards, asparagus, wildlife habitat, and poplar tree plantings. Extension personnel instructed growers on how to operate the monitors and how to interpret the readings for improved irrigation efficiency.

Periodically, Extension personnel would retrieve the accumulated soil moisture data from the monitors and print soil moisture graphs. The graphs were given to the growers as a record of irrigation activity for the season. Extension and growers would discuss

the graphs in search of opportunities for efficiency improvement.

In addition to advising individual growers on improved irrigation management, the data were presented to the agricultural community through grower meetings and County Extension newsletters.



Washington County asparagus field with soil moisture sensors and monitor installed.

Program Outcomes

Soil sensors were installed at 1, 2, and 3 foot depths in a newly planted pear orchard where they recorded soil moisture continuously for two years. The grower was concerned that he was not supplying sufficient moisture for tree establishment and rapid growth. The data revealed, however, that he was over watering the trees throughout much of the season. The grower used the information to stretch out his irrigation intervals in the second year,

thereby saving water and reducing the loss of nutrients below the root zone. The results from this field demonstration were presented to fruit growers at a joint Payette and Washington County Horticulture Tour.

Soil sensors were installed in a newly planted asparagus field for a grower requesting irrigation management assistance. Installation of the sensors revealed variability in soil texture from clay loam, near the surface, to sand at the two foot depth. The grower was advised to keep the sprouting asparagus crowns continuously moist through the spring and summer months. The grower used the sensor information to schedule irrigations so the available soil moisture content was kept between 75%-85% as advised. The grower is also using the sensors to schedule irrigation cutoff in the fall to help induce winter dormancy in the asparagus.

Soil moisture sensors and monitors were installed in a new poplar tree plantation for a grower requesting irrigation assistance. The grower was applying sprinkler irrigation to recently rooted poplar tree cuttings. The soil sensors revealed great differences in the moisture content of the field from the soil surface down to a depth of three feet. After investigation, the grower and Extension personnel found that the sprinkler nozzle placement was not providing uniform application. The grower has made efforts to improve irrigation application through line relocation, nozzle size changes, and scheduling modification. The grower was advised to use the soil sensors to keep the available soil moisture near 85%-90% during this first year establishment period.

Soil sensors were also installed for a landowner who had a field designated as wildlife habitat for endangered ground squirrels and pheasant. The grower replanted the field to native species and needed assistance with supplemental irrigation. Extension personnel found, however, that soil moisture sensors were not a reliable management tool in this situation due to the very dry conditions characteristic of a revegetation project.

The Future

The Washington County Extension Office will continue to install soil moisture monitoring equipment for growers at their request. The goal is to demonstrate the technology and prove the value of

improved irrigation management to growers. A secondary goal is to reduce leaching of soil nutrients to groundwater through over irrigation.

Soil moisture graphs and irrigation schedules for minor crops will be archived and will be presented to the agricultural community through presentations, grower meetings, and newsletters.

For More Information

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