

Irrigation Water Management

WA-449

Washington Conservation Practice - Producer Acknowledgment Form
June 2013


Definition

Irrigation water management (IWM) is the process of determining and controlling the volume, frequency, and application rate of irrigation water in a planned, efficient manner.

Purpose

IWM is applied as part of a conservation management system to support one or more of the following:

- Manage soil moisture to promote desired crop response.
- Optimize use of available water supplies.
- Minimize irrigation induced soil erosion.
- Decrease non-point source pollution of surface and groundwater resources.
- Manage salts in the crop root zone.
- Manage air, soil, or plant micro-climate.
- Proper and safe chemigation or fertigation.
- Improve air quality by managing soil moisture to reduce particulate matter movement.

Where used

This practice is applicable to all irrigated lands. An irrigation system adapted for site conditions (soil, slope, crop grown, climate, water quantity and quality, etc.) must be available and capable

of applying irrigation water to meet the intended purpose(s).

Resource Management Systems (RMS)

A RMS is a combination of structural, vegetative and management practices that meet a set of objectives and solve resource problems. On irrigated land, IWM is one of several components of a RMS used to manage water supplied to a crop through an irrigation system. The RMS for IWM includes the supply system to the field, the method used to apply the water, how to schedule and manage irrigations, plus how to manage nutrient and pesticide applications.

Plans and Specifications

IWM requires knowledge, skills, and desire to determine when irrigation water should be applied. The main variables influencing IWM are:

- *irrigation interval* (time between irrigations).
- *irrigation set time* (time water is applied)
- *application rate* (rate at which water is applied).



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Four main factors influence when to irrigate, how long to irrigate, and the rate of water application:

- Capability and limitations of the irrigation system.
- How crop water use varies throughout the season.
- Amount of water in the soil profile and the ability of the soil to hold water
- Upcoming weather conditions.

IWM is most effective when used in conjunction with other conservation practices such as irrigation system design, cover crop, residue management, conservation buffers, nutrient management, pest management, and conservation crop rotation. System design and maintenance are also important factors influencing IWM.

Site-specific requirements for IWM should be included in an IWM plan. Specifications are prepared in accordance with the NRCS Field Office Technical Guide. See NRCS practice standard, Irrigation Water Management, Code 449. Use a *Soil Survey* and NRCS National Engineering Handbook, Part 652 – *WA Irrigation Guide* or locally accepted references for procedures to calculate values such as application rates for various irrigation systems, and to estimate water holding capacities of soils.

Monitoring

Decisions of where and how many soil moisture monitoring sites used in a field can be based on a number of different conditions, including but not limited to:

- Soils
- Field size and shape
- Crop
- Slope

A minimum of one moisture monitoring station (2 depths monitored min.) located in each field may be adequate where soils are uniform and all irrigation decisions are on a field wide basis. Where other factors affect the need for more stations, locate them in areas where the monitoring stations will best measure the factors controlling irrigation timing.

Depth of soil moisture devices will be dependent on the factors above but generally a shallow probe (8"-12") will be installed for irrigation scheduling decisions and a deeper probe (24"-36") for deep percolation monitoring.

Approved Methods of Irrigation Water Management

Advanced Methods will include one or more:

- **Telemetry type system** – for access from a remote site, continuous data monitoring. Minimum of 1 station installed for the season per field, data recorded minimum of once per day.
- **Data Logger** – automated moisture sensor probes. Minimum of 2 probe installed for the season per field, data recorded minimum of once per day.
- **Irrigation Service** – using a neutron probe in each field, readings will be taken a minimum of once per week.
- **On Line** – Daily Advisory Management Program that is web based such as IWMO (Irrigation Water Management ~OnLine) developed by NRCS and Oregon State University.

Timing

- All methods and probes will be started by the first irrigation and continue through the last irrigation of that field's crop.



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Records

- All records will be maintained for the season and submitted to NRCS after the crop growing season.

IWM is a required practice in your EQIP contract. NRCS is responsible for ensuring that adequate documentation has been completed to validate monitoring of your irrigation system and certify completion for payment

IWM may be done by you or a vendor and contractors with rented or purchased equipment. If you decide to monitor your system, NRCS can help you set up this process.

Regardless of the method you choose, we will inventory your system and discuss appropriate options with you. NRCS hopes to provide information that will save water, decrease potential soil erosion, save pumping costs and increase yield.

Please contact your local NRCS office with questions or request assistance before, after and during the irrigation season.

Operation and Maintenance

There are no operation and maintenance (O&M) aspects applicable to this standard. Necessary O&M items are addressed in the physical component standards considered as companions to this standard.

CLIENTS ACKNOWLEDGEMENT

By signing below, I acknowledge that I:

- have reviewed and understand the above information on IWM;
- will work with NRCS on how many and where to located moisture monitoring sites for the contracted area;
- will work with NRCS on development of an IWM plan for the planned acres;
- at the end of the each growing season supply NRCS with IWM records from each sensor installed showing twice weekly readings; and
- will continue sensor readings for contract period that IWM is scheduled.

Client's signature: _____ Date: _____

Contract No. _____ CIN _____