

**NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE STANDARD**

IRRIGATION WATER MANAGEMENT

(Acre)

CODE 449

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 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 microclimate.

CONDITIONS WHERE PRACTICE APPLIES

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 water to meet the intended purpose(s).

CRITERIA

All work shall comply with Federal, State, and local laws and regulations. Water shall not be applied in excess of the needs to meet the intended purpose.

The following principles shall be applied for

various crop growth stages:

- The **volume of water** needed for each irrigation shall be based on plant available water holding capacity of the soil for the crop rooting depth, management allowed soil water depletion, irrigation efficiency, and water table contribution.
- The **irrigation frequency** shall be based on the volume of irrigation water needed and/or available, the rate of crop evapotranspiration, and effective precipitation.
- The **application rate** shall be based on the volume of water to be applied, the frequency of irrigation applications, soil infiltration and permeability characteristics, and the capacity of the irrigation system.

Limited irrigation water supplies shall be managed to meet critical crop growth stages such as described in the New Mexico Irrigation Guide.

Water application shall be at rates that minimize transport of sediment, nutrients, and chemicals to surface waters and that minimize transport of nutrients and chemicals to groundwater while maintaining long term productivity of the soil.

The irrigation application volume shall be increased by the amount required to maintain an appropriate salt balance in the soil profile. The requirement shall be based on the leaching procedure contained in the National Engineering Handbook (NEH) Part 623, Chapter 2 or as shown in Agronomy Technical Note 61 located on the NRCS New Mexico website.

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Quality of irrigation water shall be considered relative to its potential effect on the soil's physical and chemical properties, such as soil crusting, pH, permeability, salinity, and structure.

If micro-climate modification is a consideration, the irrigation system shall have the capacity to apply the required rate of water for cold or heat protection as determined by the methodology contained in NEH Part 623, Chapter 2.

Direct application of liquid or solid manure shall adhere to all Federal and State Laws as well as local ordinances. Also refer to NRCS Conservation Practice Standard, Nutrient Management, (590).

CONSIDERATIONS

The following items should be considered when planning irrigation water management:

- Consideration should be given to managing precipitation effectiveness, crop residues, and reducing system losses.
- Modify plant populations, crop and variety selection, and irrigated acres to match available or anticipated water supplies.
- Consider potential for spray drift and odors when applying agricultural and municipal wastewater.
- Equipment modifications and/or soil amendments such as polyacrylamides and mulches should be considered to decrease erosion.
- Consider the quality of water and the potential impact to crop quality and plant development.
- Avoid traffic on wet soils to minimize soil compaction.
- Consider the effects that irrigation water may have on wetlands, water related wildlife habitats, riparian areas, cultural resources, and recreation opportunities.
- Management of nutrients and pesticides.

- Schedule salt leaching events to coincide with lower residual soil nutrients and pesticides.
- With sprinkler irrigation, water should be managed in such a manner as to not drift or come in direct contact with surrounding electrical lines, supplies, devices, controls, or components that could cause an electrical safety hazard to humans or animals.
- Consider improving the irrigation system to increase distribution uniformity of irrigation water application.
- In cases of direct application of manure, consider applying no more than 3 inches of water per irrigation.
- Consider scheduling irrigation using various soil moisture monitoring techniques to include, feel-and-appearance and tensiometers

PLANS AND SPECIFICATIONS

All IWM shall follow the format outlined in forms, NM-ENG-123 A, B, or C. IWM may be reported only when the procedures in NEM Supplement NM523.00 are followed.

Additional guidance may be obtained from NEH Part 623, Chapter 2, NEH part 652, Chapter 2, Irrigation, NEH Section 15, and the New Mexico Irrigation Guide.

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 companions to this standard.