

Section 20 of 22 (20c - Purpose Integrated Cropping System Guide)

Irrigation water management is an integral part of a complete farm management program of soil, water, air, plant, and animal resources. The New Mexico Integrated Water Management Handbook is intended to be user friendly for use by planners with producers. It provides guidance on “how-to” evaluate and understand site-specific field conditions. This will enable an increased understanding needed to evaluate and implement alternative best management practices for irrigation water management. Considering how the farm fits into broader watershed management is also essential to problem-posing and solving resource management success.

The Natural Resources Conservation Service provides technical assistance for producers in all aspects of cropland conservation, including irrigation water management (e.g. installation of irrigation water management practices, water measuring, irrigation scheduling, irrigation system design, reduced cultivation), and nutrient management (e.g. soil, water, and plant nutrient analysis, developing basic nutrient budgets, and determining appropriate fertilizer and manure applications). Other technical assistance areas have included agronomic-related practices and management such as reduced tillage, crop rotations, green manure crops, salinity and pest management, and wildlife conservation.

Irrigation water management is the process of determining and controlling the volume, frequency, and application rate of irrigation water in a planned, efficient manner. The enclosed technical material is designed to provide guidance on “how-to” evaluate and understand site specific field conditions (e.g. based on soil, plant tissue, water and animal waste sampling and analysis, irrigation water management evaluations). The primary purpose of this assessment is to provide an increased understanding needed to evaluate and implement alternative best management practices for irrigation water management within an integrated system, with the end result being a more economical, sustainable, and producer-acceptable farming enterprise.

The New Mexico Integrated Water Management Handbook is intended to be user friendly for use by planners with producers. Therefore, individual producers are strongly advised to work closely with their local chemical consultants, crop consultants, extension specialists, and the Natural Resources Conservation Service on any subject covered in the Handbook. We hope that the Handbook will assist water users in reducing water quantities used, energy use and costs for crop production, and the opportunity for ground and surface water contamination. The greater the understanding we have of our soil, water, and plant resources, the better will be our ability to manage all of our natural resources.

Agronomy Tech Note 76 (<http://www.nm.nrcs.usda.gov/technical/handbooks/iwm/nmiwm.html>)

Linda Scheffe, 2008

Potential Benefits of Irrigation Water Management

Water resource:

- Conserves surface and ground water supplies
- Protects surface and ground water quality
- Substantial reduction in irrigation labor costs
- Significant increase in irrigation application efficiencies (higher yields)
- Reduced pumping costs
- Potential detrimental effects of water quality (pH, salinity & sodium) on plants and soils are properly assessed and managed for
- Irrigation water losses through evaporation, runoff and deep percolation are minimized

Soil resource:

- Improved soil quality is possible because of increased biomass production (more crop residues are produced)

- Reduced soil erosion from both water and wind
- Proper assessment, management and prevention of Saline, Saline-Sodic and Sodic soils is attained
- Reduced use of soil amendments
- Reduction in water-logged soils
- Reduced leaching results in higher nitrogen-use efficiency

Plant resource:

- Cost for crop production is reduced due to integration of IWM with nutrient management practices
- Significant increases in yield and crop quality
- Reduced incidences of diseases and pests
- Available water quantity and quality meet the specific requirements of the crop (consumptive use, leaching)

Other:

- Increased beneficial use of fertilizer and soil amendment inputs
- Reduction in over all on-farm energy use
- Protects the environment by the planned judicious use of water, fertilizers and other inputs
- Record keeping is used as an invaluable planning tool in the decision and management of current and future water resources
- All the major aspects involved in the farm operation are integrated in this IWM Handbook
- Analysis of soil, plant/petiole tissue and water samples allows the producer to make informed decisions on all inputs and their relationship to IWM principles
- An effective IWM Plan should be updated to reflect mgmt. changes, learning, etc.

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