

Irrigation water management is an integral 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**

All irrigated cropland must have, at a minimum, the following essential practices as part of their conservation management system: Irrigation Water Management, Nutrient Management, Pest Management, and Conservation Crop Rotation. For nutrient management, in addition to a soil test to be taken, in order to evaluate risks due to nutrients, the phosphorus index (Section NM-9) and nitrogen index (this section), also located at <http://www.nm.nrcs.usda.gov/technical/tech-notes/agro.html>, need to be run. These help in evaluating the type of risk to surface and groundwater and choosing an alternative conservation practice or management practice to reduce the risk, such as leaching and runoff reduction practices. Nutrient management plans are developed to specify the source, amount, timing and method of application of nutrients on each field to achieve realistic yield goals, while minimizing movement of nutrients out of the root zone or off the field.

Nutrient applications associated with irrigation systems need to be applied according to Irrigation Water Management practice standard and Nutrient Management standards, <http://www.nm.nrcs.usda.gov/technical/fotg/section-4/std-specs.html>. The application rate (in/hr) for material applied through irrigation shall not exceed the water holding capacity of the soil root zone. Application amounts must be adjusted to match the soil intake rate.

When applying manure with irrigation equipment, modifying the equipment can reduce the potential for volatilization of nitrogen from the time the manure leaves the application equipment until it reaches the surface of the soil (e.g. reduced pressure, drop down tubes for center pivots). Nitrogen volatilization from manure in a surface irrigation system will be reduced when applied under a crop canopy. Schedule salt leaching events to coincide with lower residual soil nutrients and pesticides.

Nitrogen Index – Page 1 of 2

Index Items	Factor Weight	None (0)	Low (1)	Medium (2)	High (4)	Very High (8)	Surface Loss Rating (Col* factor weight)	Leaching Loss Rating (Col* factor weight)
Runoff Class	1.0	Negligible & Very Low (0)	Low (1)	Medium (2)	High (4)	Very High (8)		
Permeability Class	1.0	Impermeable to Very Slow (<0.0015 to 0.06 in/hr) (0)	Slow to Moderately Slow (0.06 to 0.6 in/hr) (1)	Moderate (0.6 to 2 in/hr) (2)	Moderately Rapid to Rapid (2-20 in/hr) (4)	Very Rapid (>20 in/hr) (8)		
Annual Precipitation	1.0	<8" (0)	8-15" (1)	16-22" (2)	23-30" (4)	>30" (8)		
Irrigation water Management	1.0	None (0)	Insignificant runoff and/or deep percolation – total amount applied = consumptive use; follows 449 standard (1)	Little runoff and/or deep percolation – total amount applied does not exceed 110% of consumptive use (2)	Some runoff and/or deep percolation – total amount applied does not exceed 125% of consumptive use (4)	Significant runoff and/or deep percolation – total amount applied exceeds 125% of consumptive use (8)		
Water runoff management	1.0	Grasses, perennial vegetation CRP (0)	No-till and/or strips/ Terraces plus buffers, filter strips or tailwater recovery (1)	Residue management (>30% at planting) and/or strips/terraces (2)	Conventional Tillage, some residue (4)	Fallow condition, no residue (8)		
Irrigation Erosion ¹	1.0	Not Irrigated or No Furrow Irrigation (0)	Tailwater recovery or QS>6 for very erodible soils or QS<10 for other soils (1)	QS>10 for erosion resistant soils (2)	QS>10 for erodible soils (4)	QS>6 for very erodible soils (8)		
Distance ² to surface Waterbody	1.0	>1000' (0)	500 to 1000' (1)	200' to 500' (2)	30' to 200' (4)	<30' (8)		
Distance ² to aquifer	1.0	>150' (0)	99' to 150' (1)	20' to 99' (2)	10' to 19' (4)	<10' (8)		

¹QS Note: Q = flow rate of water introduced into the furrow (in gallons per min). S = furrow slope (in ft/100 ft, percent). Q is multiplied by S. For example, 5 gpm x 2% = 10.

²Distance measured from edge of field to surface waterbody or bottom of root zone to an aquifer (usable water supply not to a seasonal high water table)

Nitrogen Index – Page 2 of 2

Index Items	Factor Weight	None (0)	Low (1)	Medium (2)	High (4)	Very High (8)	Surface Loss Rating (Col* factor weight)	Leaching Loss Rating (Col*factor weight)
Source Factors								
Application Rate	1.5	None applied	Nitrogen applied at agronomic rates with soil test; follows 590 standard	Nitrogen applied at rates greater than 100 to 150% of agronomic rates; with soil test	Nitrogen applied at rates over 150% of agronomic rates; with soil test	No soil test		
Application Form	1.0	(0) None applied	(1.5) Commercial fertilizer w/calibrated application equipment	(3) Commercial fertilizer but w/o calibration of application equipment Or Organic w/ manure test & calibrated application	(6) Organic w/manure Test but w/o calibrated application equipment	(12) Organic w/o manure test or calibration of application equipment		
Commercial Fertilizer Timing (and/or)	1.0	(0) None applied	(1) Grid or zone sampling; precision application	(2) Spring Applic. and/or top dressed during growing season	(4) Split applications on fall seeded crops (starter in fall/top dressed spring/summer)	(8) Application more than 1 month ahead of planting		
Organic Fertilizer Timing	1.0	(0) None applied	(1) Incremental application applied as crop uses N throughout year	(2) All manure applied less than 1 month before planting	(4) Application more than 1 month ahead of planting	(8) Application in winter months (December and January)		
Application Method	1.0	(0) None applied	(1) Banded/ injected or precision applied	(2) Broadcast/ surface applied, incorporated within 5 days	(4) Broadcast/surface applied, incorporated more than 5 days	(8) Surface applied, not incorporated		
		(0)	(1)	(2)	(4)	(8)		

Total Weighted Rating (Sum of Columns)

Rating	Surface Water	Ground Water
Low Potential	<17	<14
Medium Potential	17 to 34	14 to 28
High Potential	34 to 68	28 to 58
Very High Potential	>68	>58

