



CONSERVATION ENHANCEMENT ACTIVITY

E328109Z-Colorado

**CONSERVATION
STEWARDSHIP
PROGRAM**

Conservation crop rotation to reduce the concentration of salts

Conservation Practice 328: Conservation Crop Rotation

APPLICABLE LAND USE: Crop (Annual & Mixed)

RESOURCE CONCERN ADDRESSED: Soil Quality Degradation

ENHANCEMENT LIFE SPAN: 1 Year

Enhancement Description

Implement a crop rotation to reduce the concentration of salts and other chemicals from saline seeps. The rotation should include at least 3 crops and/or cover crops grown in a sequence in the recharge areas of saline seeps that have rooting depths and water requirements adequate to fully utilize all available soil water. Do not use summer fallow. Use an approved water balance procedure to determine crop selection and sequence. Select crops with a tolerance to salinity levels that match the salinity of the discharge area.

Criteria

- Crops shall be grown in a planned sequence as outlined in plan. The crop rotation must include a minimum of three different crops. For purposes of these criteria a cover crop is considered a different crop.
- Where applicable, plan suitable crop substitutions when the planned crop cannot be planted due to weather, soil conditions, or other local situations.
- Select crops to be grown in the recharge area of saline seeps that have rooting depths and water requirements adequate to fully utilize all available soil water.
- Do not use summer fallow.



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- Use an approved water balance procedure to determine crop selection and sequence.
- If excess subsoil moisture exists below the rooting depth of crops commonly grown in the recharge area, establish deep-rooted perennial crops for the number of years needed to dry the soil profile.
- Select crops with a tolerance to salinity levels that match the salinity of the discharge area. (See State List)

Colorado Documentation Requirements:

Conservation Crop Rotation, 328, Implementation Requirements document must be completed per the Plans and Specifications for the planned purpose of reducing the concentration of salts and other chemicals from saline seeps.

The adjacent table is printed in Colorado State University, Extension Fact Sheet, #0.503, Management of Saline Soils. For additional information on diagnosing salt problems see, Fact Sheet #0.521- Diagnosing Saline and Sodic Problems

Potential yield reduction from saline soils for selected crops.				
	Relative yield decrease %			
	0	10	25	50
Field crops	(EC)			
Barley	8.0	10.0	13.0	18.0
Sugarbeets*	7.0	8.7	11.0	15.0
Wheat	6.0	7.4	9.5	13.0
Sorghum	4.0	5.1	7.2	11.0
Soybean	5.0	5.5	6.2	7.5
Corn	1.7	2.5	3.8	5.9
Bean	1.0	1.5	2.3	3.6
Forages				
Tall wheatgrass	7.5	9.9	13.3	19.4
Wheatgrass	7.5	9.0	11.0	15.0
Crested wheatgrass	3.5	6.0	9.8	16.0
Tall fescue	3.9	5.8	8.6	13.3
Orchardgrass	1.5	3.1	5.5	9.6
Alfalfa	2.0	3.4	5.4	8.8
Meadowfoxtail	1.5	2.5	4.1	6.7
Cloverlike, red, ladino, strawberry	1.5	2.3	3.6	5.7
Bluegrass and other turf**				
Vegetables				
Broccoli	2.8	3.9	5.5	8.2
Cucumber	2.5	3.3	4.4	6.3
Cantaloupe	2.2	3.6	5.7	9.1
Spinach	2.0	3.3	5.3	8.6
Cabbage	1.8	2.8	4.4	7.0
Potato	1.7	2.5	3.8	5.9
Sweet corn	1.7	2.5	3.8	5.9
Lettuce	1.3	2.1	3.2	5.2
Onion	1.2	1.8	2.8	4.3
Carrot	1.0	1.7	2.8	4.6

*Sensitive during germination and emergence, ECe should not exceed 3ds/m at this time.
 Excerpted from R. S. Ayers and D.W. Westcot, 1976, Water Quality for Agriculture, Irrigation and Drainage Paper 29, FAO, Rome. Crops salt tolerance data in the table were developed, almost entirely, by the U.S. Salinity Laboratory, Riverside, CA.



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Documentation and Implementation Requirements

Participant will:

- Prior to implementation, complete the following table and use an approved water balance procedure to determine crop selection and sequence.

Planned Management Rotation (Do not use summer fallow):

Field	Planned Crops (in sequence)	Planting Date	Harvest or Termination Date	Crop Rooting Depth (inches)	Crop Water Requirements

- During implementation, notify NRCS of any planned changes in crops, crop rotation, or field operations to verify the planned system meets the enhancement criteria.
- After implementation, if changes to the rotation were made, complete the table above to document the applied crop rotation for the contract period and provide to NRCS.

NRCS will:

- As needed, provide technical assistance using an approved water balance procedure in selecting crop rotations or substitute crops that would meet the criteria of the enhancement.
- Prior to implementation, verify that the crop rotation includes at least three different crops in rotation.
- Prior to implementation, verify the crop rotation has a water balance to verify crops selected and sequence is adequate.
- During implementation, evaluate planned changes to verify the planned system meets the enhancement criteria.
- After implementation, if the applied crop rotation is different than the planned crop rotation verify the implemented rotation meets the enhancement criteria.



NRCS Documentation Review:

I have reviewed all required participant documentation and have determined the participant has implemented the enhancement and met all criteria and requirements.

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Participant Name _____ Contract Number _____

Total Amount Applied _____ Fiscal Year Completed _____

NRCS Technical Adequacy Signature

Date

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