

**NATURAL RESOURCES CONSERVATION SERVICE  
CONSERVATION PRACTICE STANDARD AND SPECIFICATIONS**

**CONSERVATION CROP ROTATION**

(Acre)  
CODE 328

**DEFINITION**

Growing crops in a recurring sequence on the same field.

occasionally only to facilitate renovation or re-establishment of perennial vegetation.

**CRITERIA****PURPOSES**

This practice may be applied as part of a conservation management system to support one or more of the following:

- Reduce sheet and rill erosion.
- Reduce soil erosion from wind.
- Maintain or improve soil organic matter content.
- Manage the balance of plant nutrients.
- Improve water use efficiency.
- Manage saline seeps.
- Manage plant pests (weeds, insects, and diseases).
- Provide feed for domestic livestock.
- Provide food and cover for wildlife.

**General Criteria Applicable to All Purposes**

Crops shall be grown in a planned, recurring sequence as outlined in Plans and Specifications.

Crops shall be adapted to the climatic region, the soil resource, and the goals of the producer. Adapted crops and varieties, listed in appropriate University of Missouri Outreach and Extension publications and agronomy guides, shall be selected.

A conservation crop rotation may include crops planted for cover or nutrient enhancement including grasses and legumes in rotation with crops.

Selected crops shall produce sufficient quantities of biomass at the appropriate time to reduce erosion by water or wind within acceptable soil loss levels. In those instances where crops selected do not produce sufficient biomass to meet this criteria, a cover crop (refer to the COVER AND GREEN MANURE CROP (340) conservation practice standard) or other appropriate conservation practices shall be used. The amount of biomass needed shall be determined using the current approved erosion prediction technology in Section I, Field Office Technical Guide. Soil loss estimates shall account for the effects of other practices in the conservation management system.

**CONDITIONS WHERE PRACTICE APPLIES**

This practice applies to all land where crops are grown.

This standard does not apply to pastureland, hayland, or other land uses where crops are grown

Conservation practice standards are reviewed periodically, and updated if needed. To obtain the current version, contact the Natural Resources Conservation Service.

### **Additional Criteria to Maintain or Improve Soil Organic Matter Content**

Crops shall be selected that produce the amount of plant biomass needed to maintain or improve soil organic matter content as determined using the current approved Soil Conditioning Index Procedure or determined by approved research.

When partial removal of crop residue biomass by means such as baling or grazing occurs, enough residue shall be maintained to achieve the desired soil organic matter content goal.

Cover and green manure crops planted specifically for soil improvement may be grazed as long as grazing is managed to retain adequate biomass.

### **Additional Criteria to Manage the Balance of Plant Nutrients**

Crop selection and sequence shall be determined using an approved nutrient balance procedure.

When crop rotations are designed to add nitrogen to the system, nitrogen-fixing crops shall be grown immediately prior to or interplanted with nitrogen-depleting crops. The proper inoculum will be added to the seed of a nitrogen-fixing crop as recommended by University of Missouri publications or when the crop is initially added to the rotation.

To reduce excess nutrients, crops or cover crops having rooting depths and nutrient requirements that utilize the excess nutrients shall be grown.

### **Additional Criteria to Improve Water Use Efficiency**

Selection of crops and varieties, crop sequence, or the annual decision to plant a crop or to fallow shall be determined using an approved water balance procedure.

### **Additional Criteria to Manage Saline Seeps**

Crops grown in the recharge area of saline seeps shall be selected for rooting depths and water requirements adequate to fully utilize all plant available soil water. Summer fallow will not be

used. Crop selection and sequence shall be determined using an approved water balance procedure.

If excess subsoil moisture exists below the rooting depth of crops commonly grown in the recharge area, deep-rooted perennial crops shall be established for the number of years needed to dry the soil profile.

Crops grown in the discharge area of saline seeps shall be selected for their tolerance to salinity levels in the discharge area.

### **Additional Criteria to Manage Plant Pests (Weeds, Insects, and Diseases)**

Crops shall be alternated to break the pest cycle and/or allow for the use of a variety of control methods. Affected crops and alternate host crops shall be successfully treated with available control methods or shall be removed from the rotation for the period of time needed to break the life cycle of the targeted pest.

Resistant varieties shall be selected where there is a history of a serious pest problem.

### **Additional Criteria to Provide Feed for Domestic Livestock**

Crops shall be selected to balance the feed supply with livestock numbers. The needed amount of selected crops shall be determined using an approved forage-livestock balance procedure such as job sheet JS-AGRON-27, Feed and Forage Inventory.

### **Additional Criteria to Provide Food and Cover for Wildlife**

Crop selection to provide food or cover will be grown, managed, or left unharvested as per the needs of the targeted wildlife species as determined by an approved habitat evaluation procedure such as a Wildlife Habitat Appraisal Guide.

## **CONSIDERATIONS**

When used in combination with conservation practices CROSS WIND STRIPCROPPING (589B) or CONTOUR STRIPCROPPING (585), the crop

sequence should be consistent with the stripcropping design.

When used in combination with Residue Management practices, selection of high residue producing crops and varieties, use of cover crops, and adjustment of plant population and row spacing can enhance production of the kind, amount, and distribution of desired residue.

Where soil contaminants that are plant nutrients are a concern, utilizing deep-rooted crops or cover crops in the rotation to help recover or remove the nutrient should be considered.

Where maintaining or improving soil organic matter content is an objective, the effects of this practice can be enhanced by managing crop residues and tillage practices, utilizing animal manure, or applying mulches to supplement the biomass produced by crops in the rotation.

Where improving water use efficiency on deep soils is a concern, rotating or combining deep-rooted crops with shallow-rooted crops can help utilize all available water in the soil profile.

Crop damage by wind erosion can be reduced with this practice by selecting crops that are tolerant to abrasion from wind blown soil or tolerant to high wind velocity. If crops sensitive to wind erosion damage are to be grown, the potential for plant damage can be reduced by crop residue management, field windbreaks, cross wind trap strips, herbaceous wind barriers, intercropping, or other methods of wind erosion control.

Where pesticides are used, consider application methods and the crop rotation in order to limit or avoid negative impacts on the following crop from residual herbicides in the soil or adverse affects on aquatic wildlife or habitat through runoff.

Soil compaction can be reduced by adjusting crop rotation to include deep-rooted crops that are able to extend to and penetrate the compacted soil layers, as well as avoiding crops that require field operations or grazing when the soils are wet.

Leaving several rows of unharvested crop around the edges of the field will provide protection and/or food for overwintering wildlife.

Crop plantings may be developed to benefit particular communities, species, or life stages of wildlife. Food plots or crops for wildlife could be provided as part of a habitat restoration project as an initial food and cover source for wildlife until food and cover producing vegetation becomes available.

Careful consideration should be given to pesticide use if applied to crops primarily raised for wildlife use.

This practice has the potential to have either a positive or negative effect on National Register listed or eligible cultural resources (archeological, historic, or traditional properties). Care should be taken, especially during site preparation and maintenance, to avoid adverse effects to these resources. Follow NRCS policy and consider cultural resources during planning and maintenance.

#### **PLANS AND SPECIFICATIONS**

Site specifications for establishment and operation of this practice shall be prepared for each field or treatment unit according to the Criteria, Considerations, and Operation and Maintenance described in this standard. Specifications shall include the sequence of crops to be grown, length of time each crop will be grown, and total length of the rotation.

Specifications shall be recorded using approved specification sheets, job sheets, narrative statements in the conservation plan, or other acceptable documentation.

#### **OPERATION AND MAINTENANCE**

Rotations shall provide for acceptable substitute crops in case of crop failure or shift in planting intentions for weather related or economic reasons. Acceptable substitutes are crops having similar properties that meet the criteria for all the resource concerns identified for the field or treatment unit.