

**NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE STANDARD**

CONSERVATION CROP ROTATION

(Acre)

CODE 328

DEFINITION

Growing crops in a recurring sequence on the same field.

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.
- Manage plant pests (weeds, insects, and diseases).

CONDITIONS WHERE PRACTICE APPLIES

This practice applies to all land where crops are grown, except:

This standard does not apply to pastureland, hayland, or other land uses where crops are grown occasionally only to facilitate renovation or re-establishment of perennial vegetation.

CRITERIA

General Criteria Applicable to All Purposes

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

Crops shall be adapted to the climatic region, the soil resource, and the goals of the producer.

A conservation crop rotation may include crops planted for cover, livestock forage, or nutrient enhancement.

Crops shall be selected that produce sufficient quantities of biomass at the appropriate time to

reduce erosion by water or wind to within acceptable soil loss levels. In those instances where crops selected do not produce sufficient biomass to meet this criteria, a cover crop (see Cover Crop, 340) or other appropriate practices shall be used. The amount of biomass needed shall be determined using current approved erosion prediction technology. Soil loss estimates shall account for the effects of other practices in the conservation management system.

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

Crop types (cool and warm season, and broadleaf and grass) shall be alternated to break pest cycles and/or allow for the use of a variety of control methods. Affected crops and alternate host crops shall be removed from the rotation for the period of time needed to break the life cycle of the targeted pests.

Resistant varieties, listed in appropriate university publications or other approved sources, shall be selected where there is a history of a pest problem.

CONSIDERATIONS

When used in combination with CROSS WIND STRIPCROPPING (589B) or STRIPCROPPING CONTOUR (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 residue needed.

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 wastes, or applying mulches to supplement the biomass produced by crops in the rotation.

Consideration shall be given to any tillage practice that accelerates the consumption and respiration of soil organic matter and crop residues.

The North Dakota Crop Rotation Intensity and Diversity Worksheet can be utilized to develop crop rotations with the proper water use intensity and greatest diversity when providing alternatives to land use decision-makers during the planning process.

Where excess plant nutrients or soil contaminants are a concern, utilizing deep-rooted crops or cover crops in the rotation can help recover or remove the nutrient or contaminant from the soil profile.

Where precipitation is limited, seasonal or erratic moisture can be conserved for crop use by maintaining crop residues on the soil surface to increase infiltration and to reduce runoff and evaporation. Additional moisture can be obtained for crop use by trapping snow with standing residue, windbreaks, or other barriers.

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 grown, the potential for plant damage can be reduced by crop residue management, field windbreaks, herbaceous wind barriers, intercropping, or other methods of wind erosion control.

Where pesticides are used, consider application methods and the crop rotation to avoid negative impacts of spray drift on nearby crops or on the following crop due to residual herbicides in the soil, and adverse effects on aquatic wildlife or habitat through runoff.

Soil compaction can be reduced by adjusting crop rotations to include deep-rooted crops that are able to penetrate the compacted soil layers,

as well as avoiding crops that require field operations when the soils are wet.

Leaving an area of unharvested crop may provide protection and/or food for wildlife.

Crop plantings may be developed to benefit particular communities, species or life stages of wildlife. Food plots or crops for wildlife can 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 established.

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

PLANS AND SPECIFICATIONS

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 and total length of 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.

If moisture supply at planting time is adequate but limited, short-season shallow-rooted crops shall be selected and grown. Deep-rooted crops shall follow shallow-rooted crops in subsequent years, if needed, to utilize all plant-available water in the root zone.