

**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 should be applied as part of a conservation management system to support one or more of the following:

- Reduce soil erosion.
- Reduce irrigation-induced erosion.
- Improve or maintain water quality.
- Improve or maintain water infiltration.
- Maintain or improve soil organic matter.
- Manage deficient or excess plant nutrients.
- Improve efficient use of available water.
- Manage plant pests (weeds, insects, diseases).
- Provide food for domestic livestock.
- Provide food and cover for wildlife.
- Maintain or improve agronomic yields.

**CONDITIONS WHERE PRACTICE APPLIES**

This practice applies to all cropland and other land where crops are grown, including grasses and legumes in rotation. Grass grown for seed is considered crop production for application of this standard.

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

vegetation. It does not apply to land devoted to orchards, vineyards, nurseries, or turf.

**CRITERIA**

An acceptable Conservation Crop Rotation shall be determined as follows:

Current erosion, sediment, and/or residue prediction technology such as Revised Universal Soil Loss Equation (RUSLE), Wind Erosion Equation (WEQ), Surface Irrigation Soil Loss Model, (SISL), will be used to evaluate acceptable crop rotations, tillage sequences, residue orientation and erosion rates of the evaluated practices or systems.

Evaluations will include appropriate support practices to achieve the desired level of treatment or for a Resource Management System (RMS).

When included in a complete conservation plan, a RMS level of planning shall be reached. When other programs are involved, planned practices or systems will meet the required erosion rates for that program. Selection of crops for use on irrigated cropland shall be consistent with the Idaho Irrigation Guide.

**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.

If partial removal of residue 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 Plant Pests (Weeds, Insects, Diseases)**

IPM principles shall be used to control pest's populations on agricultural lands. IPM principles include alternating crops in the 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 removed from the rotation for the period of time needed to break the life cycle of the targeted pest.

Resistant varieties, identified by the University of Idaho or other approved sources, shall be selected where there is a history of a pest problem.

Crop residue shall not be burned for purposes of pest control except as defined in the Pest Management Standard (595).

Burning of any crop residues shall be consistent with Idaho Crop Residue Disposal Rules.

Burning of crop residues as part of pest management strategies shall meet the Prescribed Burning practice standard (338).

Residue can be burned when pest populations are less than the defined threshold only if the field(s) to be burned is to be immediately reseeded to a sod or cover crop.

Residue removal activities will not be performed without full evaluation of impacts on soil, water, animal, plants, and air. Reference ID-ECS-001.

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

Annual decisions for crop selection, varieties, or whether to plant a crop or fallow will be based moisture availability and/or availability of irrigation water.

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

Crop selection and sequence shall be determined using the Nutrient Management Practice standard 590.

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.

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 Provide Food 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.

#### **Additional Criteria To Provide Food And Cover For Wildlife**

Crop selection to provide either food or cover for the targeted wildlife species will be grown, managed, or left unharvested as per the needs of the targeted wildlife as determined by an approved habitat evaluation procedure.

## CONSIDERATIONS

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

Cover and green manure crops planted specifically for soil improvement may be grazed, as long as grazing is managed to limit soil compaction.

When crop rotations are designed to add nitrogen to the system, nitrogen-fixing crops should be grown immediately prior to or with nitrogen-depleting crops.

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

Individual conservation practices should be planned as part of a comprehensive conservation plan which addresses all resource concerns on the unit and reaches a RMS level of treatment.

Where water quality is a concern, a buffer or filter strip should be placed between where the practice is applied and the water resource. The undesired effects of burning crop residues on soil, air, water, plant, and animal resources, and human considerations, should be evaluated when developing a Conservation Management System.

Use of this standard should be consistent with other practices planned as part of a comprehensive conservation plan.

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.

Crops should be alternated to break the pest cycle and/or allow for the use of a variety of other control methods. Affected crops and alternate host crops should be removed from the rotation for the period of time needed to break the life cycle of the targeted pest. Resistant varieties, listed in appropriate University of Idaho Cooperative Extension Service publications or other approved sources, should be selected where there is a history of a pest problem.

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

Crop selection should consider the movement of sediment, soluble and sediment attached substances (i.e., nutrients, pesticides), and pathogens, and their effect on surface and ground water quality.

Soil compaction can be reduced by this practice when rotations include perennial or deep-rooted crops.

Where excess plant nutrients or soil contaminants are a concern, rotating deep-rooted crops or cover crops with shallow rooted crops can help recover the nutrient or contaminant from the soil profile.

Where precipitation or irrigation supplies are limited, seasonal or erratic, selection of drought tolerant or short season crops should be considered.

## **PLANS AND SPECIFICATIONS**

Site-specific specifications are developed by the planner for each unit being planned.

Site-specific specifications are developed using current prediction and/or evaluation tools, i.e.: RUSLE, WEQ, SISL, Soil Conditioning Index Rating, etc.

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

## **OPERATION AND MAINTENANCE**

Annual maintenance of this practice may be required by certain program or contractual agreements.

Rotations shall provide for acceptable substitute crops 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.

Fields should be fallowed only when soil moisture is not adequate to produce a crop.