NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE STANDARD

RESIDUE MANAGEMENT, SEASONAL
(Acre)
CODE 344

DEFINITION

Managing the amount, orientation, and distribution of crop and other plant residues on the soil surface during part of the year, while growing crops in a clean tilled seedbed.

PURPOSE

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

- Reduce soil erosion.
- Improve or maintain water quality.
- Improve or maintain water infiltration.
- Maintain or improve soil organic matter content and tilth.
- Manage snow to increase plant available moisture.
- Provide food and escape cover for wildlife.

CONDITIONS WHERE PRACTICE APPLIES

This practice applies to all cropland and other land where crops are grown with the exception of cropland where winter grain/fallow rotations are followed.

This standard includes residue management methods practiced during that part of the year from harvest to residue incorporation for seedbed preparation of the next crop.

CRITERIA

A nutrient and/or pest management plan shall be prepared if required by the Quality Criteria for Water.

Burning crop residues for the purposes of pest management shall be part of a complete Resource Management System which includes a pest management plan, and as prescribed by Conservation Crop Rotation Standard. Residue removal by burning should not be performed without full evaluation of impacts on soil, water, animal, plants, and air. Reference ID-ECS-001.

Residue shall not be burned unless the field(s) is to be immediately reseeded to a sod crop.

Residue can be burned without a Pest Management Plan only if the field(s) to be burned is to be immediately reseeded to a sod or cover crop.

Loose residue to be retained on the field shall be uniformly distributed on the soil surface to reduce variations in nutrient release, immobilization and soil and water characteristics.

The number, sequence, and timing of tillage and planting operations and selection of implements shall be designed and managed to achieve the planned amount, distribution, and orientation of residue after planting,

through critical erosion periods, or other time periods (i.e., seasonal high intensity storms).

Current erosion, sediment, and/or residue prediction such as the 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 evaluated practices or systems.

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

A Soil Condition Indices Rating of 0 or greater as determined using the Soil Conditioning Indices. Crops within the rotation shall be grown in a planned, recurring sequence. Note exceptions as outlined in the Operations and Maintenance Section.

The amount and orientation of residue needed to reduce erosion within the soil loss tolerance (T) or other planned soil loss objective shall be determined using current approved erosion prediction technology cited above.

On furrow irrigated cropland, 20% residue or an appropriate erosion technology, (PAM, surge irrigation, Irrigation Water Management, etc.), shall be a component of the planed system.

Residue evaluation shall be documented using approved specification sheets, job sheets, worksheets, or other acceptable documentation. Adjustments to the planned tillage scenario shall be made as needed based on field measurement of remaining residue.

Where soil moisture conservation is a concern, manage stubble to trap snow or winter precipitation by leaving stubble standing at least 6 inches high following harvest. Stubble shall be maintained in a standing orientation over winter to trap and retain snow. Any tillage that occurs during this period shall be limited to undercutting tools such as blades, sweeps, or deep tillage implements such as rippers or subsoilers.

Increased residue levels may affect soil water holding characteristics. Residue shall be evenly distributed and maintained on the soil surface until seedbed preparation begins. Partial removal of residue by means such as baling or grazing shall be limited to retain the amount needed.

The amount and height of residue needed to provide food and escape cover for wildlife shall be determined using an approved habitat evaluation procedure. Residues shall not be removed unless it is determined by the Wildlife Habitat Evaluation Guide procedure that removal would not adversely affect habitat values. Stubble shall be maintained standing over winter. Tillage shall be delayed until spring, in order to maintain waste grain on the soil surface during winter.

CONSIDERATIONS

Individual conservation practices should be planned as part of a comprehensive conservation plan which addresses all resource concerns on the unit and reaches a Resource Management System 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.

Production of adequate amounts of crop residue necessary for the proper functioning of this practice can be enhanced by selection of high residue producing crops and crop varieties in the rotation, use of cover crops, and adjustment of plant populations and row spacings.

When planting on a clean seedbed, exposure to erosion can be minimized by completing tillage and planting in a single operation, or in a timely manner.

The effectiveness of stubble to trap snow increases with stubble height. Variable height stubble patterns may be created to further increase snow storage.

The value of residue for wildlife habitat can be enhanced by leaving rows of unharvested crop standing at intervals across the field.

Increased crop residues on or near the soil surface may result in reduced nutrient availability to plants. Effectiveness of surface applied pesticides may also be reduced in some cases. For these reasons, consideration should be given to the development of nutrient and pesticide management plans. Residues trap sediment and reduce the amount carried to surface water. Crop residues promote soil aggregation and improve soil tilth.

Where surface water quality concerns remain after application of this practice, consideration should be given to the addition of other sediment retention practices.

Where surface water quality concerns remain after application of this practice, consideration should be given to the addition of other sediment retention practices.

Application of animal waste which includes bedding or waste feed can be considered part of the minimum residue requirements. Manure application rates should be balanced with fertilizer applications as a part of a nutrient management plan.

PLANS AND SPECIFICATIONS

Site specific specifications are developed by the planner for each land unit being planned. Site specific specifications are developed using current prediction and/or prediction tools, i.e.: RUSLE, WEQ, Soil Condition Index Rating, etc.

OPERATION AND MAINTENANCE

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

REFERENCES

Section 1, Erosion Prediction, Idaho Field Office Technical Guide.

Wildlife Habitat Appraisal Guides for Idaho, Biology Technical Note No. 19

Quality Criteria Section III, Field Office Technical Guide.

Soil Conditioning Index Rating, National Agronomy Manual, Part 508