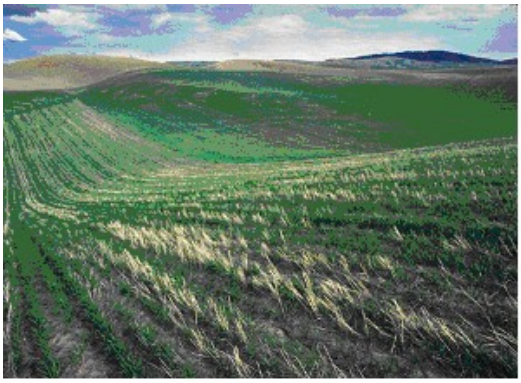
NRCS Natural Resources Conservation Service

Residue and Tillage Management
No-Till/ Strip-Till/ Direct Seed
Conservation Practice Job Sheet 329

Client Name: _____



What is No-till/ Strip-till/ Direct Seed?

No-till, Direct seed and Strip till are similar systems that manage the amount, orientation, and distribution of crop and other residue on the soil surface year-round, while growing crops in narrow slots or residue free strips in soil previously untilled by full-width implements. More specifically the systems are:

No-till: The residue is left undisturbed from harvest through planting except for narrow strips that cause minimal soil disturbance, such as injecting anhydrous ammonia. No-till may also be referred to as zero-till, slot-till, direct seeding, or slot plant.

Direct Seed: The residue is left undisturbed from harvest through planting except for narrow strips that cause minimal soil disturbance, such as injecting anhydrous ammonia. Disturbance caused by seedbed planting, fertilizer placement and other operations have a combined STIR rating no greater than 30.

Strip-till: The residue is often left undisturbed from harvest through planting except for strips up to a third of the row width. These strips are cleared of residue or tilled for warming and drying purposes either before or during the planting operation. This practice is also referred to as row-till, zone-till, strip-till, or fall strip-till.

Purposes

This practice standard (329) can be designed to accomplish one or more of the following purposes:

- Reduce sheet & rill erosion
- Reduce wind erosion
- Improve soil organic matter content
- Reduce CO2 losses from the soil
- Reduce soil particulate emissions
- Increase plant-available moisture.
- Provide food and escape cover for wildlife

Resource Management Systems

No-till, Direct Seed and Strip-till residue management are established as a component of a Resource Management System. Crop rotation, pest management, nutrient management, various structures, and buffers are examples of companion practices to address natural resource concerns that are identified during the planning process.

Practice Criteria

Practice criteria are provided to ensure that the residue management system will meet the resource needs and producer's objectives. The following criteria for residue management (329) apply to all practice purposes.

- Residue shall be uniformly distributed over the entire field and residue shall not be burned.
- There will be no full width tillage performed during the crop rotation, regardless of the depth of the tillage operation. Full width tillage operations are defined by RUSLE2 as implements with 100% disturbance.
- The Soil Tillage Intensity Rating (STIR) for all soil disturbing operations shall be no greater than 30 for the crop interval between harvest of the previous crop and harvest or termination of the current crop (includes fallow periods).

Additional Criteria: *Applicable to purposes identified during the planning process.*

Reduce Erosion Due to Water and Wind

Maintain the amount of surface residue and the amount of soil disturbance operations needed for the average annual soil loss to be at or below the planned soil loss objective identified in the plan for the rotation.

Current wind and water erosion prediction technology shall be used to calculate the predicted soil loss for the planned crop rotation. Effects of other practices in the management system will be included in the calculations made by these models.

Improve Soil Organic Matter Content

The impact of the planned cropping system on soil organic matter content shall be measured using the current approved soil conditioning index (SCI). The SCI for the planned crop rotation system on specific field locations shall result in a positive trend.

Increase Plant Available Moisture

Residue shall be evenly distributed and maintained on the soil surface to retain soil moisture for crop use by enhancing infiltration, catching snow and reducing evaporation. The annual STIR value for all soil disturbing operations for each crop shall be no greater than 20.

Crop stubble height on fields during critical evaporation periods or significant snowfall periods:

Crops with less than 15” row spacing shall have a minimum stubble height of 10”.

Crops with 15” or greater row spacing shall have a minimum stubble height of 15”.

Stubble heights shall be present over at least 60% of the field to reduce evaporation.

For trapping snow, stubble heights shall be present over at least 50% of the field and residue disturbing activities shall be perpendicular to the prevailing wind direction that occurs when significant snowfall is expected to occur.

Reduce CO_2 Losses

The annual Soil Tillage Intensity Rating (STIR) for all soil disturbing activities shall be no greater than 20 for each crop or fallow period.

The impact of the planned cropping system on soil organic matter content shall be measured using the current approved soil conditioning index (SCI). The SCI for the planned crop rotation system on specific field locations shall result in a positive trend.

Reduce Soil Particulate Emissions

The current, approved wind erosion prediction model will be used to estimate soil loss due to wind for the crop system. Maintain the amount and orientation of surface residue and the amount of soil disturbance operations needed to reduce wind erosion to the Tolerable soil loss value (T) or lower. Effects of other practices in the management system will be included in the erosion estimates.

Provide Food and Cover For Wildlife

The amount of residue, height of stubble, and time requirements to meet the minimum needs of the target wildlife species. The approved habitat evaluation procedure in Oregon is Biology Technical Note No. 27 Wildlife Habitat Evaluation Guide.

Plans and Specifications

The considerations section in Residue and Tillage Management: No-Till/Strip-Till/Direct Seed practice standard (329) provides detailed discussion of additional activities and descriptions of their effects for successful implementation of the practice.

Tables 1, 2, and 3 included in this Job sheet are to be used to record specifications used during establishment and operation of this practice. Specifications are to be recorded for each field or treatment unit according to the purposes associated criteria and considerations described in this standard.

Client: _____ Farm/Tract: _____

Location: _____ County/SWCD: _____

Prepared By: _____ Date: _____

DESIGN APPROVAL:

Practice Code No.	PRACTICE	LEAD DISCIPLINE	CONTROLLING FACTOR	UNITS	JOB CLASS				
					I	II	III	IV	V
329	Residue Management, No-Till/Strip-Till/Direct Seed	*BCSD-Agron*	Precipitation	Inches	Irr	>17	12-17	<12	All

This practice is classified as Job Class _____

Design Approved By: /s/_____ Date: _____

Job Title: _____

CLIENTS ACKNOWLEDGEMENT STATEMENT:

The Client acknowledges that:

a. They have received a copy of the specification and understand the contents and requirements.

b. The following information must be provided to NRCS by the client before this practice can be certified as applied:
   - Documentation of crops planted and year in rotation by field.
   - Documentation of timing and description of field operations performed for each crop in the rotation.

c. It shall be the responsibility of the client to obtain all necessary permits and/or rights, and to comply with all ordinances and laws pertaining to the application of this practice.

Accepted By: /s/_____ Date: _____

CERTIFICATION:

I have completed a review of the information provided by the client and certify this practice has been applied.

Certification By: /s/_____ Date: _____

Job Title: _____

Producer:						
Planner/Field Office:	**No-till**		**Direct Seed**		**Strip-till**	
CRITICAL SEASONS	**Evaporation:**		**Snowfall:**			
Date:		**Crop Year:**				

Practice Purpose (check one or more that apply)

	1	Reduce sheet & rill erosion		**5**	Reduce soil particulate emissions
	2	Reduce wind erosion		**6**	Increase plant available water
	3	Improve soil organic matter content		**7**	Improve wildlife habitat (food and cover)
	4	Reduce CO_2 losses from the soil		**8**	Other

Table 1: Specifications of Plan

Tract and Field	Crop to be planted	Yield Goal	Crop Interval STIR	Soil Conditioning Index	Planned Soil Loss	Soil Map Unit and Soil Loss Tolerance "T"	

Table 2: Specifications of Plan (Continued)						
Tract and Field	Crop to be planted	Wildlife Habitat Evaluation Score	Wind Erosion Estimate	Planned Row Width	Planned Stubble Height	Other

Attach copies of soil erosion prediction results (Sheet and Rill and Wind) for the planned rotation and management method for each field.

Attach copies of calculations for STIR and SCI values as required by criteria.

Attach documentation of projected yield goals, list of operations and timing of operations included in the plan.

Attach Oregon Technical Note 27, Wildlife Habitat Evaluation Guide.

Attach drawing, sketch or map of each field where practice application is planned. Relevant spatial information includes but is not limited to: locations of complementary practices, adjacent field or tract conditions, and areas of sensitive resource concerns such as surface water, wetlands, critical wildlife habitat, wells. Sensitive resource concern areas, such as surface waters, wetlands, critical fisheries and wildlife habitat may also be shown in the sketch if needed.

Additional Specification Notes:

Date of Planned Operation	Table 3: List of Dates/Operations Planned Tillage/Operation Description

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