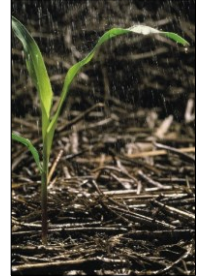


# Minnesota Ecological Science Job Approval Authority Fact Sheet

## Residue and Tillage Management-No Till (329)

**DEFINITION:**

Limiting soil disturbance to manage the amount, orientation and distribution of crop and plant residue on the soil surface year around.



**ESJAA INFORMATION:**

Job Classes	Control Factors
	Crop Type
Job Class I	Standard Row/Forage Crops
Job Class II	Organic/Specialty/Vegetable Crops
Job Classes III	All

**CONTROL FACTORS:**

The controlling factor is based on Crop Type. The units for the Residue and Tillage Management, No Till (329) practice is Crop Type.

**KNOWLEDGE, SKILLS, AND ABILITIES (KSA):**

1. Knowledge of State's Crops and Cropping Systems
2. Knowledge of Soil Health and Management
3. Ability to use current Wind and Water Erosion Prediction Tools
4. Knowledge of Tillage Systems used in the State
5. Knowledge of No-Till Planters and Drills
6. Knowledge of Crop Residue Management
7. Knowledge of Soils and Soil Management for No Till

**ADDITIONAL KSAs:**

- Knowledge using current Wind and Water Erosion Prediction tools to be able to calculate Soil Tillage Intensity Rating (STIR) for intervals of 10 and 20 STIR
- Knowledge using current Wind and Water Erosion Prediction tools on Soil Conditioning Index (SCI) for maintaining positive SCI factors and Organic Matter (OM) subfactors

**Minnesota KNOWLEDGE, SKILLS, AND ABILITIES (KSA) needed:**

**-Job Class I-**

- Read & understand the standard, job sheet, & SOW
- Understand the benefits to a long term no-till system.
- Understand the difficulties of implementing no-till for different crops.
- Be able to recognize a no-tilled planted crop in the field for inventory and checkout. Have an awareness of strip till and vertical tillage tools that can leave lots of residue.
- Understand the benefits of each piece of equipment and the different disturbance levels to the soil.  
Resource: Equipment dealers.
- Be able to recognize planter attachments, understand their purpose, and the disturbance levels to the soil (row cleaners, coulters, closing wheels).

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- Be able to recognize fertilizer applicators and their disturbance levels (i.e. anhydrous bars, minimal disturbance anhydrous bars, liquid N applicators, high disturbance & low disturbance manure applicators, etc.) Resources: Tillage Equipment Pocket Identification Guide & equipment dealers.
- Ability to measure crop residue in the field. Resource: Agronomy Manual Part 503.51 - Estimating crop residue cover
- Successfully fill out the job sheet

### **-Job Class II-III**

- Demonstrate the knowledge of weed control methods available in a no-till organic cropping system, vegetable systems, and specialty cropping systems.
- An understanding of no-till in organic cropping systems.

### **COMMON ASSOCIATED PRACTICES:**

Residue and Tillage Management, No Till Practice (329) is commonly applied with practices such as Conservation Crop Rotation (328), Cover Crops (340), Nutrient Management (590), Integrated Pest Management (595), and Irrigation Water Management (449).

### **ADDITIONAL MATERIALS:**

- Reicosky, D.C., M.J. Lindstrom, T.E. Schumacher, D.E. Lobb and D.D. Malo. 2005. [Tillage-induced CO2 loss across an eroded landscape](#). Soil Tillage Res. 81:183-194
- Reicosky, D.C. 2004. [Tillage-induced Soil Properties and Chamber Mixing Effects on Gas Exchange](#). Proc. 16th Triennial Conf., Int. Soil Till. Org. (ISTRO)
- Skidmore, E.L. and N.P. Woodruff. 1968. [Wind Erosion Forces In The United States And Their Use In Predicting Soil Loss](#). U.S. Department of Agriculture. Agriculture Handbook No. 346
- [Minnesota Cooperative Extension Service](#). Upper Midwest Tillage Guide. Sections I-IV