USDA United States Department of Agriculture

Minnesota Ecological Science Job Approval Authority Fact Sheet

Residue and Tillage Management, Reduced Till (345)

DEFINITION:

Managing the amount, orientation and distribution of crop and other plant residue on the soil surface year-round while limiting the soil-disturbing activities used to grow and harvest crops in systems where the field surface is tilled prior to planting.

PURPOSE:

This practice is applied as a part of a conservation management system to support one or more of the following purposes:

- Reduce sheet, rill and wind erosion – Resource Concern (SOIL EROSION - Sheet, rill, & wind erosion)
- Reduce tillage-induced particulate emissions – Resource Concern (AIR QUALITY IMPACTS - Emissions of Particulate Matter - PM - and PM Precursors)
- Maintain or increase soil quality and organic matter content – Resource Concern (SOIL QUALITY DEGRADATION – Organic matter depletion)
- Reduce energy use – Resource Concern (INEFFICIENT ENERGY USE – farming/ranching practices and field operations)
- Increase plant-available moisture – Resource Concern (INSUFFICIENT WATER –Inefficient moisture management)

ESJAA INFORMATION:

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

CONTROL FACTORS:

The controlling factor is based on Crop Type. The units for the Residue and Tillage Management, Reduced Till (345) practice is Type.

KNOWLEDGE, SKILLS, AND ABILITIES (KSA):

1. Knowledge of the 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 Equipment and Systems used in the State
5. Knowledge of Planters and Drills Used in the State
6. Knowledge of Crop Residue Management

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ADDITIONAL KSAs:

- Knowledge using current Wind and Water Erosion Prediction tools to be able to calculate Soil Tillage Intensity Rating (STIR) for intervals of 40 and 80 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

COMMON ASSOCIATED PRACTICES:

Residue Management, Reduced Till (345) is commonly applied with practices such as Conservation Crop Rotation (328), Nutrient Management (590), Integrated Pest Management (595), and Irrigation Water Management (449).

ADDITIONAL MATERIALS:

- Kuepper, George, 2001. Pursuing conservation tillage systems for organic crop production. ATTRA
- https://attra.ncat.org/attra-pub/summaries/summary.php?pub=107
- 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)
- Renard, K.G., G.R. Foster, G.A. Weesies, D.K. McCool and D.C. Yoder, coordinators. 1997. Predicting Soil Erosion by Water: A Guide to Conservation Planning With the Revised Universal Soil Loss Equation (RUSLE). USDA, Agricultural Handbook 703
- USDA-ARS. Skidmore, E.L. and N.P. Woodruff. 1968. Wind Erosion Forces in the United States and Their Use in Predicting Soil Loss. USDA, Agriculture Handbook 346
- USDA, NRCS. 2011. National Agronomy Manual. 190-V. 4th Ed.