



No-Till and Strip-Till Residue Management

Conservation Practice Job Sheet

329A

Natural Resources Conservation Service (NRCS)

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Landowner _____



What is No-till and Strip-till?

No-till and strip-till are similar systems that can be described as managing the amount, orientation, and distribution of crop and other plant residue on the soil surface year round, while growing crops in narrow slots or tilled strips in previously undisturbed residue. 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 is also referred to as zero-till, slot-till, direct seeding, or slot plant.

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

Residue management systems can be designed to accomplish one or more of the following:

- Reduce water erosion
- Reduce wind erosion
- Maintain or increase soil organic matter content
- Conserve soil moisture
- Manage snow to increase plant available moisture or reduce plant damage from freezing or desiccation
- Provide food and escape cover for wildlife

Secondary Benefits

- Water quality improves both onsite and offsite.
- Air quality improves both onsite and offsite.
- Sedimentation is reduced.

Conservation Management Systems

Residue management systems, such as no-till and strip-till, are established as a component of a resource management system. Crop rotation, pest management, nutrient management, various structures, and buffer practices are used in resource management planning to address the natural resource concerns identified during the planning process.

Practice Specifications

Practice specifications are provided to assure the residue management system meets the resource needs and producer's objectives. The specifications are based on the amount, timing, and orientation of crop residue left on the soil surface. These planned requirements are recorded in table 1. Supporting information is included in tables 2 and 3 along with figures 1 and 2.

General Specifications

applicable to all practice purposes

- Residue to be retained on the field shall be uniformly distributed. Combines or other harvesting machines shall be equipped with spreaders capable of distributing residue over at least 80 percent of the combine header width.
- Secondary removal of crop residue by baling or grazing shall be limited to retain the amount of residue needed to achieve the intended purpose(s).
- Residue shall not be burned or disturbed by full width tillage operations except for occasional row cultivation for spot treatment of weed escapes or limited use of undercutting operations, such as sweeps or blades used to level ruts or alleviate compaction.
- Planting implements should be equipped with coulters and/or disk openers designed to cut through surface residue.
- No more than 1/3 of the row width shall be disturbed from harvest through planting by nutrient injection, row cleaning, planting, or other operations.
- Row cleaners may be attached to the planters to move residue out of the row area and help warm and dry the seedbed.
- Anhydrous injectors, manure injectors, and similar equipment may need to be modified to operate in high residue situations.
- Weed control techniques must be carefully planned, yet sufficiently flexible, to complement the system.

Additional Specifications

applicable to purposes identified during planning

Reduce erosion from wind and water, and improve water and air quality

- On sloping ground where water erosion is a problem, the row area formed during the planting operation shall be level with or above the row middles unless planting is on the contour. See table 1 notes.
- The required amount, timing, and orientation of residue will be in accordance with site specific data recorded in table 1. Current wind and water erosion technology will be used to establish minimum requirements.

Maintain or increase soil organic matter content

Tillage aerates the soil and increases crop residue decomposition. No-till and strip-till protect the soil from excessive erosion, reduce soil aeration from tillage, allow organic matter to accumulate, and improve the condition of the soil. The required amounts of residue for soil protection are specified in table 1. Tables 2 and 3 can be used to plan and record the crops, field operations, and management necessary to achieve a positive trend in soil organic matter content based on the NRCS Soil Condition Index (SCI) procedure described in the National Agronomy Manual.

Conserve moisture

Residue shall be evenly distributed and maintained on the soil surface to retain soil moisture for crop use by enhancing infiltration and reducing evaporation. A minimum of 50 percent surface cover is required to significantly reduce surface evaporation and meet the intent of this practice purpose.

Manage Snow

Maintain at least 6 inches standing stubble over winter when residue is maintained for snow management purposes.

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 are specified in table 1. This information is based on a wildlife habitat index procedure.

Record planned practice specifications in table 1. Tables 2 and 3 and figures 1 and 2 are for optional use when more detailed planning or design information is needed.

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