



United States Department of Agriculture  
Natural Resources Conservation Service

# CSP Job Sheet S-3

## SOIL MANAGEMENT ENHANCEMENT

February 2006

NEBRASKA

Name: \_\_\_\_\_

**Using GPS or other similar guided measure technology to reduce soil compaction by controlling areas of traffic**

Payment = \$1.00 / Acre / Year for STIR between 31 and 60 plus using GPS or similar technology for traffic control; \$2.00 / Acre / Year for STIR between 16 and 30 plus using GPS or similar technology for traffic control; \$4.00 / Acre / Year for STIR of less than 15 plus using GPS or similar technology for traffic control. This payment would apply to all acres within the field(s) where the STIR value has been achieved and GPS or other similar guided measure technology is used to carry out proper traffic control methods.

### Required Elements:

- Controlled wheel traffic system that limits wheel tracks to the same rows using a GPS or other similar guiding measure, if drilled crops are grown, a skip row is required.
- A controlled traffic system must also limit field access lanes (grain hauling etc.) from cropping zones within a field.
- Payments are based on the Soil Tillage Intensity Rating (STIR) as follows:
  - STIR between 31 and 60 plus documented traffic control;
  - STIR between 16 and 30 plus documented traffic control;
  - STIR of less than 15 plus documented traffic control.

Compaction is caused primarily by wheel traffic, but it also can be caused by animal traffic or natural processes. Soil is especially susceptible to compaction when it is at field capacity or wetter, has a low content of organic matter, or has poor aggregate stability. Saturated soils lack adequate strength to resist the deformation caused by traffic. Moldboard plowing and excessive tillage break down soil aggregates. After the aggregates are broken down and the soil surface is bare, the soil is more likely compacted by the excessive vehicle passes common in conventional tillage systems.

A controlled traffic system separates traffic zones from cropping zones within a field. Yields normally improve when traffic is restricted to controlled zones between the rows because the soil directly beneath the rows can retain a loosened structure. A controlled traffic system works well with row crops. If drilled crops are grown, a skip row is required

Mulch tillage systems (systems with tillage across the entire field) require autosteer technology (Sandusky, 2003) using guidance from a Global Positioning System (GPS) to locate traffic lanes year after year. Auto-steer technology keeps all field operations in the same traffic lanes. Some systems are even capable of 1-inch accuracy. This technology allows controlled traffic with standard agricultural equipment and full-width tillage. Automatic steering and controlled traffic reduce compaction beneath the row, thereby increasing infiltration and reducing the hazard of erosion and the need for sub-soiling.

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