United States Department of Agriculture
Natural Resources Conservation Service

2016 – 1
2017 – 1 Renewal

Soil Quality Enhancement Activity – SQL01 – Controlled traffic system

Enhancement Description
Controlled traffic confines heavy traffic from tractor drive wheels/tracks, combine wheels, fertilizer or manure spreaders and grain carts to specific lanes in crop fields year after year.

Land Use Applicability
Cropland

Benefits
Controlled traffic systems will reduce soil compaction, increase infiltration, and improve crop yields. Additional benefits include reductions in erosion, runoff and sedimentation as well as energy savings as the need for sub-soiling decreases and firm traffic tracks form for better traction.

Conditions Where Enhancement Applies
This enhancement applies to all annually planted crop land use acres.

Criteria
Implementation of this enhancement **requires** the use of a *controlled traffic system* on annually planted cropland that includes the following:

1. Limit wheel/track traffic to no more 50 percent of the row middles or a maximum of 50 percent of the area of the field.
2. Wheel/track traffic is in the same lanes for all passes, all equipment and years.
3. No tire or rubber track that is greater than 26 inches wide (for 30-inch rows). For 20-inch or 15-inch rows, use skip rows to provide space for primary tracks (36-inch maximum width tires/tracks for a 40-inch space).

The minimum components required to maintain the controlled traffic system enhancement activity are:

1. All equipment must cover the same width or multiples of that width (See Figure 1),
2. Number of traffic lanes are minimized (See Table 1),
3. For full width tillage Geographic Positioning System (GPS) is required to maintain the designated traffic lanes,
4. For narrow width or drilled crops, a skip row system or GPS is required, and
5. Do not deep till (> 4 inches) the controlled traffic paths.

Adoption Requirements
This enhancement is considered adopted when all three of the criteria above have been implemented on the land use acre.

Documentation Requirements

A description of the controlled traffic system that includes:

1. List of fields with controlled traffic system,
2. Crops rotation for the fields,
3. Equipment used,
4. Row spacing and number of planter units,
5. Planting width for drills,
6. Wheel/track spacing and operational width for tractors, combines, grain carts, harvesters, sprayers, manure spreaders, etc. Tires on planters and drill can be ignored, and
7. Sketch of the traffic paths and wheel/track spacing.

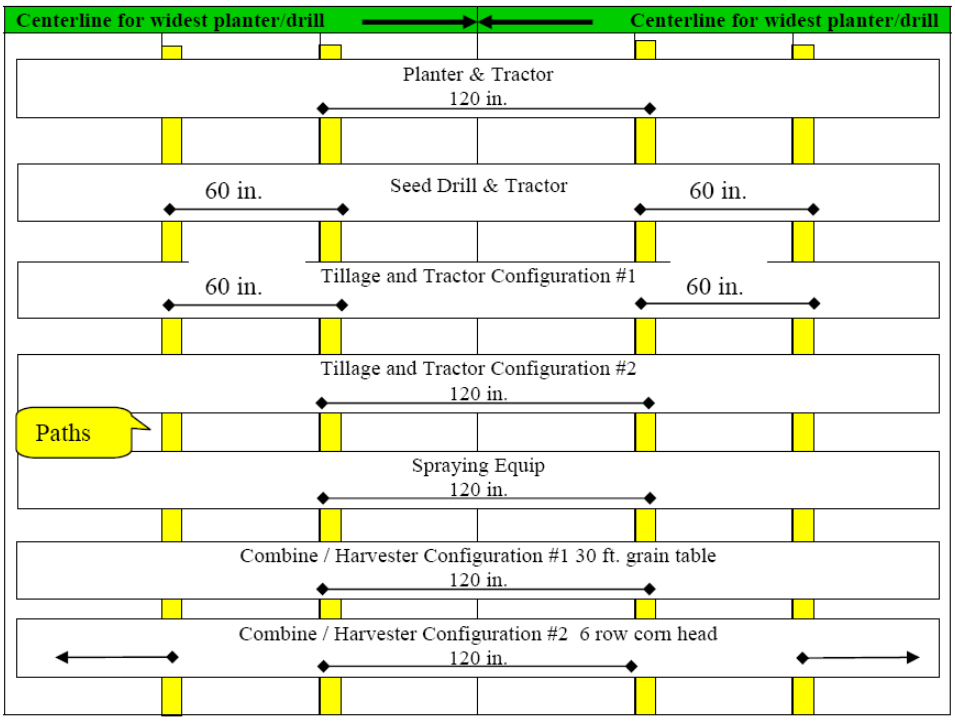

Figure 1. Example of Wheel/Track Spacing and Paths Using Multiples of the Basic Width (units are in inches or number of rows**):**

Situation: 12 row planters with 30 inch rows for corn, 15 foot grain drill, and 6 row corn head on combine, 30 foot grain table on combine, 15 foot tillage tools.

1. If 2 or more tillage operations have the same width and tractor tire configuration the operations are only entered once.
2. If 2 or more combine/harvesting operations have the same width and tire configuration the operation is only entered once.

Note: The 6 row corn head begins by taking the center 6 rows of the 12 row configuration, then harvesting the three outside rows along with 3 outside rows from the adjacent planter pass. This reduces the number of row middles receiving wheel traffic (down to 33% in this example). This applies for any system where the combine is one-half the planter width.

Table 1. Examples of traffic patterns for controlled traffic systems.

Number of rows	Tractor (in)	Combine (in)	Number of paths	% Trafficked Assumes 20" tires
----------30" row spacing----------				
6	60	120	4	44
6	120	120	2	22
8	120	120	2	17
8	60 & 120	120 & 180	6	50
12	60 & 120	120 (6-row)	4	22
16	60 & 120	120 & 180 (8-row)	8	33
24	60 & 120	120& 180 (12-row)	12	33
----------36" row spacing----------				
6	72	144	4	37
8	72	144	4	28
12	72	144	4	18

Note: In the first scenario (line 1), the tractor tire spacing is 60 inches and the combine tire spacing is 120 inches. Each set of six rows has four tire paths. By increasing the tractor tire spacing to match the combine tire spacing, (lines 2 and 3) the number of paths and area trafficked are cut in half.

References

Reeder, R.C. 2002. Controlled traffic. Encyclopedia of Soil Science. Marcell Dekker, Inc. pp233-236.

Reeder, R.C. and J.M. Smith. 2000. Controlled Traffic. In: Conservation Tillage Systems and Management, MWPS-45. Midwest Plan Service, Ames, IA. pp 77-82.

Utah State Supplement 2015 for SQL01

Notes: no Utah-specific supplement

Enhancement Name	Enhancement Code	Potential Duplicative Practices (code)	Incompatible Enhancements
Controlled Traffic System	SQL01	none	ANM12 ANM21 ENR01 WQL09

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Operations & Maintenance, Conservation Measures, and Client Acknowledgement

Operation and Maintenance
Operation: Maintenance:
Conservation Measures
Actions that must be implemented by the landowner/manager during prac implementation:
Client's Acknowledgement Statement
The Client acknowledges that: a. They have received a copy of the enhancement and understand the con b. It shall be the responsibility of the client to obtain all necessary permit comply with all ordinances and laws pertaining to the application of this p **Cooperator:** _____ **Planner:** _____ **Biologist:** _____