

# Effects of NRCS Conservation Practices - National

## Residue and Tillage Management, Mulch Till

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.

Code: 345

Units: ac.

Typical Landuse:

|              |  |
|--------------|--|
| AL-Aso Land  |  |
| O-Other      |  |
| W-Water      |  |
| D-Developed  |  |
| FS-Farmstead |  |
| PI-Protected |  |
| P-Pasture    |  |
| R-Range      |  |
| F-Forest     |  |
| C-Crop       |  |

| <u>Soil Erosion</u>                                      | <u>Effect</u> | <u>Rationale</u>  |
|--|---------------|---|
| Soil Erosion - Sheet and Rill Erosion                    | 4             | Managing residue to reduce soil disturbance and increase residue cover reduces erosion by water.  |
| Soil Erosion - Wind Erosion                              | 4             | Managing residue to reduce soil disturbance and increase residue cover reduces erosion by wind.   |
| Soil Erosion - Ephemeral Gully Erosion                   | 1             | Managing residue to reduce soil disturbance and increase residue cover reduces erosion by water.  |
| Soil Erosion - Classic Gully Erosion                     | 0             | Not Applicable  |
| Soil Erosion - Streambank, Shoreline, Water Conveyance C | 0             | Not Applicable  |
| <u>Soil Quality Degradation</u>                          |               |   |
| Organic Matter Depletion                                 | 2             | Decreased erosion and less oxidation from less soil disturbance may increase or maintain organic matter.  |
| Compaction   | 1             | Less intensive tillage reduces the potential for soil compaction.   |
| Subsidence   | 0             | Not Applicable  |
| Concentration of Salts or Other Chemicals                | 1             | Less tillage disturbance and high residue cropping systems increase organic matter which may buffer salts.  |
| <u>Excess Water</u>                                      |               |   |
| Excess Water - Seeps                                     | 0             | Not Applicable  |
| Excess Water - Runoff, Flooding, or Ponding              | 1             | Mulch till increases infiltration, reducing runoff and ponding.   |
| Excess Water - Seasonal High Water Table                 | 0             | Not Applicable  |
| Excess Water - Drifted Snow                              | 0             | Not Applicable  |
| <u>Insufficient Water</u>                                |               |   |
| Insufficient Water - Inefficient Use of Irrigation Water | 1             | Mulch till increases infiltration and decreases evaporation resulting in more available water. However, increased infiltration reduces the efficiency of flood and furrow irrigation. |
| Insufficient Water - Inefficient Moisture Management     | 2             | Mulch till increases infiltration and decreases evaporation resulting in more available water.  |
| <u>Water Quality Degradation</u>                         |               |   |
| Pesticides in Surface Water                              | 4             | The action decreases runoff and erosion.  |
| Pesticides in Groundwater                                | 0             | Not Applicable  |
| Nutrients in Surface water                               | 2             | Less erosion and runoff reduces transport of nutrients.   |
| Nutrients in Groundwater                                 | 0             | Not Applicable  |
| Salts in Surface Water                                   | 1             | Less runoff reduces transport of soluble salts. However increased infiltration results in more seepage which can carry soluble salts to the surface.                                  |
| Salts in Groundwater                                     | 0             | Not Applicable  |
| Excess Pathogens and Chemicals from Manure, Bio-solic    | 1             | Less erosion and runoff reduces delivery of pathogens.  |
| Excess Pathogens and Chemicals from Manure, Bio-solic    | 0             | Not Applicable  |

| Excessive Sediment in Surface Water                    | 3                                    | Less erosion and runoff reduces transport of sediment.  |                               |  |                           |             |                                       |                     |                        |                                 |                                  |                       |                      |                                      |  |                          |
|--|--------------------------------------|---|-------------------------------|--|---------------------------|-------------|---------------------------------------|---------------------|------------------------|---------------------------------|----------------------------------|-----------------------|----------------------|--------------------------------------|--|--------------------------|
| Elevated Water Temperature                             | 0                                    | Not Applicable  |                               |  |                           |             |                                       |                     |                        |                                 |                                  |                       |                      |                                      |  |                          |
| Petroleum, Heavy Metals and Other Pollutants Transport | 0                                    | Not Applicable  |                               |  |                           |             |                                       |                     |                        |                                 |                                  |                       |                      |                                      |  |                          |
| Petroleum, Heavy Metals and Other Pollutants Transport | 0                                    | Not Applicable  |                               |  |                           |             |                                       |                     |                        |                                 |                                  |                       |                      |                                      |  |                          |
| <u>Air Quality Impacts</u>                             |                                      |   |                               |  |                           |             |                                       |                     |                        |                                 |                                  |                       |                      |                                      |  |                          |
| Emissions of Particulate Matter (PM) and PM Precursors | 4                                    | Less soil disturbance, increased residue on the surface and fewer field operations reduce the generation of particulate matter.   |                               |  |                           |             |                                       |                     |                        |                                 |                                  |                       |                      |                                      |  |                          |
| Emissions of Ozone Precursors                          | 1                                    | Reduced use of machinery reduces ozone precursor emissions.   |                               |  |                           |             |                                       |                     |                        |                                 |                                  |                       |                      |                                      |  |                          |
| Emissions of Greenhouse Gases (GHGs)                   | 3                                    | Reduced use of machinery reduces CO2 emissions and increases soil carbon storage.   |                               |  |                           |             |                                       |                     |                        |                                 |                                  |                       |                      |                                      |  |                          |
| Objectionable Odors                                    | 0                                    | Not Applicable  |                               |  |                           |             |                                       |                     |                        |                                 |                                  |                       |                      |                                      |  |                          |
| <u>Degraded Plant Condition</u>                        |                                      |   |                               |  |                           |             |                                       |                     |                        |                                 |                                  |                       |                      |                                      |  |                          |
| Undesirable Plant Productivity and Health              | 2                                    | Conserving moisture and improving soil conditions contribute to enhanced plant productivity and health.   |                               |  |                           |             |                                       |                     |                        |                                 |                                  |                       |                      |                                      |  |                          |
| Inadequate Structure and Composition                   | 0                                    | Not Applicable  |                               |  |                           |             |                                       |                     |                        |                                 |                                  |                       |                      |                                      |  |                          |
| Excessive Plant Pest Pressure                          | 0                                    | Not Applicable  |                               |  |                           |             |                                       |                     |                        |                                 |                                  |                       |                      |                                      |  |                          |
| Wildfire Hazard, Excessive Biomass Accumulation        | 0                                    | Not Applicable  |                               |  |                           |             |                                       |                     |                        |                                 |                                  |                       |                      |                                      |  |                          |
| <u>Fish and Wildlife - Inadequate Habitat</u>          |                                      |   |                               |  |                           |             |                                       |                     |                        |                                 |                                  |                       |                      |                                      |  |                          |
| Inadequate Habitat - Food                              | 2                                    | Crop residue provides some food for wildlife.   |                               |  |                           |             |                                       |                     |                        |                                 |                                  |                       |                      |                                      |  |                          |
| Inadequate Habitat - Cover/Shelter                     | 2                                    | Crop residue provides some cover/shelter.   |                               |  |                           |             |                                       |                     |                        |                                 |                                  |                       |                      |                                      |  |                          |
| Inadequate Habitat - Water                             | 4                                    | Not Applicable  |                               |  |                           |             |                                       |                     |                        |                                 |                                  |                       |                      |                                      |  |                          |
| Inadequate Habitat - Habitat Continuity (Space)        | 1                                    | Residue restores some habitat/space.  |                               |  |                           |             |                                       |                     |                        |                                 |                                  |                       |                      |                                      |  |                          |
| <u>Livestock Production Limitation</u>                 |                                      |   |                               |  |                           |             |                                       |                     |                        |                                 |                                  |                       |                      |                                      |  |                          |
| Inadequate Feed and Forage                             | 0                                    | Not Applicable  |                               |  |                           |             |                                       |                     |                        |                                 |                                  |                       |                      |                                      |  |                          |
| Inadequate Shelter                                     | 0                                    | Not Applicable  |                               |  |                           |             |                                       |                     |                        |                                 |                                  |                       |                      |                                      |  |                          |
| Inadequate Water                                       | 0                                    | Not Applicable  |                               |  |                           |             |                                       |                     |                        |                                 |                                  |                       |                      |                                      |  |                          |
| <u>Inefficient Energy Use</u>                          |                                      |   |                               |  |                           |             |                                       |                     |                        |                                 |                                  |                       |                      |                                      |  |                          |
| Equipment and Facilities                               | 2                                    | Few tillage trips across the field and less horsepower requirements.  |                               |  |                           |             |                                       |                     |                        |                                 |                                  |                       |                      |                                      |  |                          |
| Farming/Ranching Practices and Field Operations        | 2                                    | Few tillage trips across the field and less horsepower requirements.  |                               |  |                           |             |                                       |                     |                        |                                 |                                  |                       |                      |                                      |  |                          |
|  |                                      | <table border="1"> <thead> <tr> <th colspan="2"><u>CPPE Practice Effects:</u></th> </tr> </thead> <tbody> <tr> <td>5 Substantial Improvement</td> <td>0 No Effect</td> </tr> <tr> <td>4 Moderate to Substantial Improvement</td> <td>-1 Slight Worsening</td> </tr> <tr> <td>3 Moderate Improvement</td> <td>-2 Slight to Moderate Worsening</td> </tr> <tr> <td>2 Slight to Moderate Improvement</td> <td>-3 Moderate Worsening</td> </tr> <tr> <td>1 Slight Improvement</td> <td>-4 Moderate to Substantial Worsening</td> </tr> <tr> <td></td> <td>-5 Substantial Worsening</td> </tr> </tbody> </table> | <u>CPPE Practice Effects:</u> |  | 5 Substantial Improvement | 0 No Effect | 4 Moderate to Substantial Improvement | -1 Slight Worsening | 3 Moderate Improvement | -2 Slight to Moderate Worsening | 2 Slight to Moderate Improvement | -3 Moderate Worsening | 1 Slight Improvement | -4 Moderate to Substantial Worsening |  | -5 Substantial Worsening |
| <u>CPPE Practice Effects:</u>                          |                                      |   |                               |  |                           |             |                                       |                     |                        |                                 |                                  |                       |                      |                                      |  |                          |
| 5 Substantial Improvement                              | 0 No Effect                          |   |                               |  |                           |             |                                       |                     |                        |                                 |                                  |                       |                      |                                      |  |                          |
| 4 Moderate to Substantial Improvement                  | -1 Slight Worsening                  |   |                               |  |                           |             |                                       |                     |                        |                                 |                                  |                       |                      |                                      |  |                          |
| 3 Moderate Improvement                                 | -2 Slight to Moderate Worsening      |   |                               |  |                           |             |                                       |                     |                        |                                 |                                  |                       |                      |                                      |  |                          |
| 2 Slight to Moderate Improvement                       | -3 Moderate Worsening                |   |                               |  |                           |             |                                       |                     |                        |                                 |                                  |                       |                      |                                      |  |                          |
| 1 Slight Improvement                                   | -4 Moderate to Substantial Worsening |   |                               |  |                           |             |                                       |                     |                        |                                 |                                  |                       |                      |                                      |  |                          |
|  | -5 Substantial Worsening             |   |                               |  |                           |             |                                       |                     |                        |                                 |                                  |                       |                      |                                      |  |                          |