**Conservation Practice Effects**

|  |
| --- |
| **Residue and Tillage Management, Reduced Till (Ac) 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.****Major Resource Concerns Addressed: Soil erosion, water quality, plant productivity.****Benchmark Condition: Corn and soybean crop rotation.****Date: October, 2016 Developer/Location: Hal Gordon, OR Date: October, 2016 Developer/Location: Hal Gordon, OR** |
| **Positive Effects** | **Negative Effects** |
| **Soil*** **Sheet, rill, wind, gully erosion is reduced by increasing residue and reducing soil disturbance.**
* **Improvement in soil health and water holding capacity.**
* **Decreased erosion and less oxidation from lack of soil disturbance will increase or maintain organic matter.**
* **Fewer field operations and less tillage reduce the potential for soil compaction.**
* **Low disturbance and high residue increase organic matter which buffers salts.**
* **Increase in soil carbon.**

**Water*** **Increased infiltration results in more water moving through the profile, reducing runoff, ponding and seasonal high water table.**
* **Increased infiltration and decreased evaporation results in more available water.**
* **Decreased runoff and erosion reduces nutrients, pesticides, salt, pathogens and sediment to surface waters.**
* **High soil organic carbon may cause microbes to immobilize nutrients to leaching.**

**Air*** **Fewer field operations reduce the generation of particulate matter, ozone precursors and CO2.**

**Plants*** **Possible increase in crop yields.**
* **Conserving moisture and improving soil conditions improve plant productivity and health.**

**Animals*** **Crop residue provides food, cover, shelter and habitat for wildlife.**

**Energy*** **Fewer passes over the field reduces fuel and oil use.**

**Human*** **Reduction in field labor, fewer passes over the field.**
* **Reduced equipment repairs with fewer passes over the field.**
* **Improved drainage allows working the field earlier and later in field season.**
* **Salvage value of obsolete field equipment.**
* **Increase yields/reduce costs as land becomes more productive.**
* **Create sustainability of natural resources that support your business.**
* **Increase the property value (real estate) of your property.**
* **Create open space and improve habitat for wildlife.**
* **Conserve soil and water for periods of drought and future use.**
* **Prevent off-site negative impacts.**
* **Comply with environmental regulations.**
* **Save time, money and labor.**
* **Promote family health and safety.**
* **Make land more attractive and promote good stewardship.**
* **May be eligible for cost share.**
* **Increased profitability in the long run.**
 | **Land*** **No change in land in production.**
* **More intensive land use.**

**Capital*** **Additional field equipment required including no-till drill and spray rig.**
* **Increase in pest management costs.**
* **Annual operation, maintenance and replacement costs of new field equipment.**

**Labor*** **None.**

**Management*** **Increase management costs in developing crop, nutrient, pest plans and record keeping.**
* **Steep learning curve first few years.**

**Risk*** **Reduced flexibility when tillage is not available as a management option.**
* **Increase in pesticide use (substitute tillage with chemical pest control).**
* **Increased infiltration reduces the efficiency of flood and furrow irrigation.**
* **Increased infiltration may increase nutrient, salt and agricultural chemicals leaching to ground water.**
* **High residue on cold and wet soils may delay crop emergence and early growth.**
 |
| **Net Effect: Improved soil productivity and improved water quality at a profit.** |

**Commonly Associated Practices:** Conservation Crop Rotation, Contour Farming, Integrated Pest Management, Irrigation Water Management, Nutrient Management.

**Note:** This worksheet contains general talking points for the conservation planner to discuss with the land user. It is the first step towards an economic or financial analysis. The second step would include identifying a specific site for analysis at the farm or field level, editing the template for local conditions, adding units and quantities of farm inputs and outputs. The third step in the economic analysis is to place a dollar value on as many variables as possible, put all units in the same time frame, using amortization ($/Acres/Year) or net present value ($/Acre), so benefits and costs can be compared. The fourth and final step would be to combine several conservation practices into a conservation system, which is how most conservation practices are applied at the field level. Data for the worksheet comes from the land user, conservation planner, technical specialist and local agricultural supply vendors and contractors. See Economics Technical Note: TN 200-ECN-1, Basic Economic Analysis Using T-Charts (August 2013) for more information.