

Results of this study suggest:

- Cost savings will be the most important driver
- Most growers did not see a yield difference using direct seeding practices
- Access to machinery remains the main barrier to further adoption

Machinery costs results:

- Variable production costs such as fuel, labor, and machinery repairs are reduced under direct seeding (Figure 1).
 - DS production averaged 3.69 gallons of fuel per acre
 - CT production averaged 6.33 gallons per acre
 - Repair costs are 29% higher for CT
- Fixed costs of machinery ownership are typically higher
 - Per acre fixed costs depend on farm size

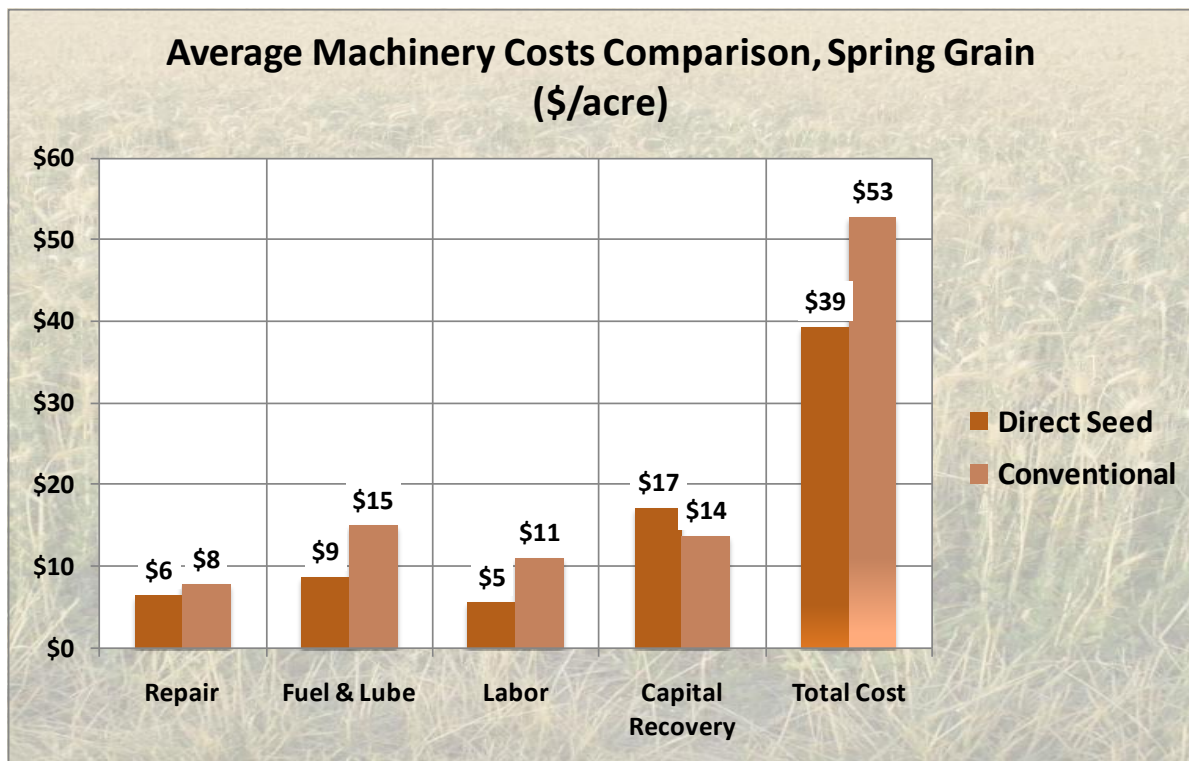


Figure 1. Machinery cost comparisons for surveyed direct seed and conventional tillage growers.

Machine labor costs:

Machinery labor costs for DS were just half of the CT machinery labor expense:

- DS production averaged 0.27 hours per acre of machinery labor
- CT production averaged 0.52 hours per acre of machinery labor
- Valued at \$20/hour, DS labor costs were \$5.50 compared to \$10.98 for CT

Machinery cost variability across respondents:

- Each grower is unique!
- More cost variability within tillage categories than across tillage categories
- Newer, more expensive machinery complements typically have lower variable costs, higher fixed costs
- Older, less expensive machinery will typically have higher repair, fuel, and labor costs
- Higher horsepower tractors required to pull heavy no-till drills will use more fuel

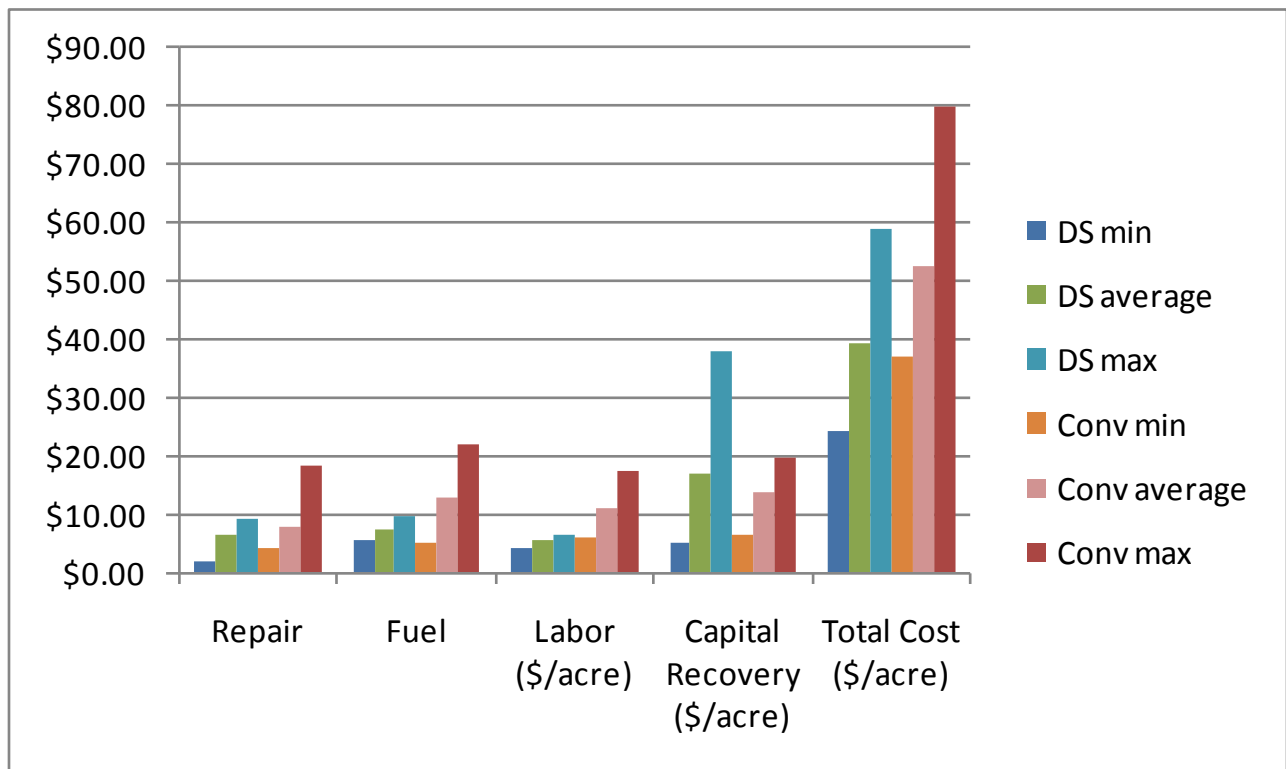


Figure 2. Minimum, average, and maximum machinery costs by for direct seed (DS) and conventional (Conv) tillage growers

Yield results:

- Most growers in this program did not see yield changes under direct seeding.
 - Two growers had higher yields for their direct seeded spring grains
 - One grower had lower yields for their seeded spring grain
 - These yield differences can be explained by seeding timing problems.
- Direct seed mentors have higher than average crop yields for their areas.

One frequently stated barrier to DS production is the cost of DS machinery. DS drills are typically much more expensive than CT drills, with a good new DS drill costing nearly \$200,000, compared to \$80,000 for a top-of-the-line CT drill. Capital recovery costs, which refer to an annual cost for depreciation and interest in the machinery investment, are about 40% higher for DS growers, averaging \$19.41 per acre compared to \$13.81 per acre (Figure 1).

Profitability vs feasibility

For any grower contemplating a switch to direct seeding, both profitability and feasibility must be considered. While DS practices may be more profitable, as results in this study indicate, cash flow considerations may prohibit purchasing new equipment. An equipment purchase is typically paid for with a multi-year note, for example, a 3- or 5-year loan. These loan costs are used to calculate cash flow or feasibility, while profitability is calculated over the estimated life of the machinery.

Capital costs

Machinery may be paid for with some combination of savings, trade-ins, and loans. The total value of an investment should be weighed against the opportunity cost of capital. The amount of capital tied up in machinery could otherwise be earning interest. Growers can get low interest loans for machinery payments as well as generous per acre incentives for switching to direct seed. The mentoring program is an excellent opportunity to get custom seeding and assistance in other aspects of direct seeding from participating growers.

Summary:

- Operating costs, particularly fuel and labor, can be reduced by switching to direct seed practices.
- Tillage reduction increases herbicide usage; these expenses must be weighed against variable cost savings.
- Fixed costs, specifically capital recovery costs, will vary by farm size.
- Savings in variable costs may well be outweighed by increases in fixed costs.