

FARM  JOURNAL

FIELD DAYS™

MAKE EVERY MACHINE
EARN ITS KEEP



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Make Every Machine Earn Its Keep

Introducing a new production system to your existing practice (for example, adding no-till to conventional horizontal tillage to protect erodible land or please a landlord) probably will require acquiring new implements or attachments. That's the time to examine what Farm Journal Field Agronomist Ken Ferrie calls your equipment balance sheet.

Analyzing your inventory will help you maintain sufficient implements and tractors, without burdening your operation with excess machinery. In fact, it's a good idea to study your balance sheet even if you aren't adding a new system or resizing to take on additional land.

"I've noticed the amount of machinery and manpower required for a given number of acres varies a great deal from one farmer to another," Ferrie says. "Some are overpowered with machinery but short of operators. Some have a shed full of equipment they never got rid of, even though it no longer fits their operation. Neglecting to balance equipment, manpower and acres can result in unnecessary expenditures on machinery and lower yields from failing to finish planting or harvesting in the optimum window."

By Darrell Smith, dsmith@farmjournal.com



Tool to Explore Options

Here are a few examples of the kind of comparisons you can make using Iowa State University's Ag Decision Maker tool. These calculations assume a 1,000-acre farm with one operator. The free tool will generate ideas for upgrading your system to plant or harvest in fewer days, or help you choose a new production system.

FALL OPERATIONS

Combining (20' head)	15 days
Conventional horizontal tillage (15' chisel plow)	11 days
Vertical tillage (27' tool)	8 days
Strip-till (23' bar)	13 days
No-till (only operation is applying a burndown herbicide)	3 days

SPRING TILLAGE OPERATIONS

Conventional horizontal tillage (two field cultivations)	8 days
Vertical tillage (27' vertical harrow, two passes)	8 days
Row warmers (52' bar; in strips made the previous fall)	5 days
No-till	0 days

PLANTING

40' conventional planter	9 days
60' conventional planter	6 days
30' high-speed planter	6 days
60' high-speed planter	3 days



A MACHINERY ANALYSIS FOR MR. INDY PENDENT

To keep things simple, we'll use a hypothetical Iowa farmer, Mr. Indy Pendent, who operates 1,000 acres all by himself. He uses Iowa State University's Ag Decision Maker tool to evaluate his operation. Indy's optimum planting window is April 9 to May 20. Weather records show, on average, there are 23 days fit for fieldwork during that period. For harvest, Indy's optimum window is Sept. 24 to Oct. 28, with an average of 28 days suitable for fieldwork.

In the fall, Indy runs his 20' combine 10 hours per day at 4½ mph. Plugging combine size and speed into the Decision Maker tool shows he needs 15 working days to complete harvest.

After harvest, Indy runs his 15' chisel plow at 6 mph for 10 hours per day. The Decision Maker tool shows he needs 11 days. So combining and chiseling require 26 of the 28 days of good weather he usually gets in the fall. That doesn't allow much wiggle room, Indy decides, creating a strong risk of weather delays costing him yield.



HARVEST OPTIONS

The Decision Maker tool offers Indy a range of options to make harvest more efficient. A conservative measure would be to trade up to a wider chisel, which might require a larger tractor.

At the other end of the spectrum, he could convert his conventional horizontal tillage system to no-till. Then his only post-harvest operation would be spraying a burndown herbicide, requiring only three days. So his fall work would be wrapped up in 18 days, leaving a 10-day margin for bad weather. With no-till, he could even drop down to a smaller combine, with a 15' head, harvesting and spraying in 23 days, and still have a five-day margin for weather.

SPRING OPTIONS

In the spring, Indy makes two passes with a field cultivator before planting – a total of 2,000 acres, requiring eight days. He spends three days spraying a weed and feed application. Planting takes nine days, so his spring work totals 20 days. His optimum planting window is 23 days. The Decision Maker tools shows Indy upgrading to a 60' planter would cut planting time to six days. Or he could pursue various other options, all the way to no-tilling all or part of his acres.

The tool tells Indy how much time he could save with a high-speed planter, and the efficiency of a center-fill planter. It shows him the size tractor he'll need to pull each implement in various soil conditions.

ACCURATE RECORDS MATTER

"Mr. Indy Pendent is just an example," Ferrie emphasizes. "Every farm is different. With several years of accurate records, you can plug in your own numbers. Just don't rely on memory because it's almost always wrong. Properly sizing implements and tractors will smooth the transition as you add new production systems to maximize profit by managing around each field's weakness."



How to Gauge Iron Resources



ASSESS WHERE YOU ARE NOW

Farm Journal Field Agronomist Ken Ferrie advises asking these questions: “Do you have excess equipment that would be more efficient if you added more acres? Or will you have to resize if you have an opportunity to expand? What size implements do you really need? How many tractors?”

USE REAL NUMBERS

The answers to those questions are based on how many acres you farm, your labor force and how many days you have to do the work. “You must be timely with planting and harvesting,” Ferrie says. “Consider pinch times in the fall and spring. Use actual numbers, not emotion.”

TECHNOLOGY MAKES MACHINERY ANALYSIS POSSIBLE

“These are complex questions, but computers make this kind of analysis possible,” Ferrie says. “The best decision-making tool I’ve found is Iowa State University’s Ag Decision Maker (www.extension.iastate.edu/agdm). It works for farmers anywhere if they plug in their own figures. Your land-grant university might have a similar program tailored to your region.”