

# Farmers urged to try test plots of their own

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RACINE, WI. — High performance farmers know that it pays to operate their own "laboratories." Every year they set aside acreage for on-farm test plots. In these special tracts, they give their imaginations room to evaluate new theories, products and practices.

These farmers aren't just idly tinkering with plants. The plots are a serious tool, especially when you consider agriculture's prospects. As innovative growers like Burnie W. Rye find, this proving ground can contribute to the long-term viability of his operation.

When Rye and his wife, Thelma, purchased their farm in 1965, neighbors claimed the retired Army officer couldn't profitably farm his worn land in Mississippi's northern hills. But Rye stayed with the farm and used plots to engineer 60-bushel double-crop bean averages and corn yields topping the 200-bushel barrier.

"You've got to assume beans always will be \$5 a bushel," Rye, of Smithville, Miss., who farms with his son, Burnie L. Rye. "Sky-high markets in the '70s threw everything out of perspective. People can't wait for \$10 beans to pull them out of trouble. Intense production is what really matters."

Rye doesn't shoot for these high yields without considering costs. He watches inputs and only invests extra money in the crop when he figures that added yields will more than cover the outlay. In test plots, Rye aims for maximum yields. But in the field, he strives for Maximum Economic Yields (MEY).

The terms sound similar, but there's a difference. In maximum yield plots, production costs aren't a consideration. Growers and researchers use whatever it takes to churn out more bushels. To achieve MEY, they transfer these strategies to entire fields — but only with input levels balanced against the potential offered by land, weather and markets.

Per-acre costs go up. But yields increase at a faster rate and, in turn, cut the per-unit costs. With an MEY strategy, you produce a commodity at the lowest, most efficient unit cost, which also offers the best potential for a net profit. Economically, it makes sense.

"We generally believe farmers are better off boosting yields and revenue, even if they spend a little more to do it," observes Martin Thornton, vice president and senior farm manager for Peoples Bank of Bloomington, Ill. "And maximum yield plots show you what doesn't. From the plots, you can transfer cost-effective ideas to a full-scale production and know they give a return on the investment."

An effective testing program isn't necessarily complicated or time consuming, note farmers and yield researchers who work with plots. The plots will pay if you:

Set goals and understand how to reach them. Don't just blindly pump more inputs into the plot, advises Dr. J.W. Johnson, an Ohio Extension agronomist who boasts a 200-bushel, six-year corn yield. His secret: Sticking to the basics and balancing all the growth factors.

"Always remember that you improve yields by capturing more raw materials—sunlight, water and nutrients," instructs Johnson. "These materials are inter-related, too. You can increase seeding rates to gain more sunlight, provided you don't weaken the stalks with too high a population. Yields go up, provided there's enough water and nutrients to support populations. If you overplant and overload the stand, however, lodging reduces yields."

"No single change will consistently add another 80- to 120-bushels to your corn crop. Even irrigation won't give you that increase without altering populations, fertility and maybe pest control," Johnson says.

With these fundamentals in mind, set a goal. For example, tell yourself, "In this plot, I will learn

to grow 80-bushel soybeans."

An 80-bushel goal may not be practical over an entire farm. That requires too much expense and management time. But by learning how to hit 80 bushels in the plot, you discover what's needed to obtain 50 or 60 bushels across the farm.

Research before you plant. Every year, Danny Stevens travels hundreds of miles to study other farmers' equipment and growing techniques used to achieve higher yields. The travel has paid off for Stevens, a custom farmer in Trenton, Fla. He has recorded a 284-bushel corn yield in a 10-acre block, and typically cuts 30-ton yields on single-crop silage (double the state average).

"I've traveled as far as Texas and talked to people in Australia to get information I need," says Stevens, who oversees 4,000 silage acres for dairy and livestock feeders. "You can't live in a vacuum. Without these contacts, I'd spend time making mistakes other people already have made."

Thornton suggests, "Find people who've cracked the yield barriers, then visit them. If necessary, pay for advice. Consulting fees are worth it if the expert saves you time in reaching your own goals."

Pull out all the stops. Don't be afraid to test new ideas. Because experiments are conducted on a small scale, you also can spend more for inputs like seed, fertilizer and chemicals. After testing a practice, you may find it has no effect or doesn't return enough extra yield to cover the expense. But you also may find that an oddball theory works, at least in your situation.

For example, in Rye's operation, he obtains better yields with reduced populations—often with seeding rates 80 percent lower than normal recommendations. On wide rows, he plants two beans per foot. Depending on the hybrid, Rye spaces corn at two to three plants per foot on a 40-inch row. Between rows, Rye cuts an "air furrow," a subsoil channel that moves more water and air to roots. He also

irrigates corn and, when possible, beans.

Through plots, Rye found that larger seeds tend to produce the largest beans and record up to a 54 percent yield gain. Now, he buys foundation seed and screens for largest stock. Because he plants less seed, Rye offsets the extra cost of foundation beans.

"Wide spacings and big seed contribute to my yields, but neither is a recommended practice," says Rye. "Without my own testing, I wouldn't have known for sure if they made a difference."

Find low-cost ways to push yields. Ohio's Jay Johnson attributes much of his 200-bushel average to "sound management." He matches hybrids to their optimum seeding rates and planting dates, then scouts pests for top control. These measures cost nothing. But even an increase in inputs may not be cost-prohibitive, especially if you first test the higher levels in the plots.

"Compared to the way you normally grow a crop, it may not cost that much extra to transfer maximum yield levels to part of your production," says Johnson. "It takes only a few more dollars to increase the population by 4,000 or boost the fertilizer rate by 30 percent. In plots, you may find a consistent gain, enough to warrant more nutrients and seed."

Once you begin on-farm testing, some seed and chemical companies might supply part or all of your plot materials if they use the land as a demonstration site. You, in turn, can sample new products, often before they're released. And SCS and Extension offices sometimes loan or rent no-till planters to allow you to try the practice without trying up capital for equipment.

Make valid comparisons. Begin at planting with at least two replicated strips for each treatment you'll test, and leave untreated zones between the plots. These replications are necessary to take out the variability caused by a field's mixture of soil texture, pH or drainage.

If possible, compare more than one treatment. Increase fertility, for example, by 10, 25 and 50 percent, and chart the effect at each level. To broaden the test, use at least two seeding rates. In one set of replications, plant normal amounts; in other plots, increase the rate slightly. For a more extensive examination, try different hybrids or varieties.

To measure grain yields, run the combine through at least a one-tenth-acre block for each plot and clean out the machine when switching the harvest from one treatment to another. If treated areas are large enough, a five-acre sample provides an even better feel for yields.

Weigh the sample at an elevator and record the figures. Measure the harvested area to make sure you know exactly how much acreage it contains. Harvest your "check" sample from untreated rows near the plots.

Between treated and untreated plots, skip a few rows as a buffer because experimental pesticides or fertility rates could influence neighboring plants.

To compare bulky crops like cotton, peanuts or silage, set up large plots. Run the harvester through the plot until you fill the basket, wagon or truck, then measure the amount of acreage you're covered. The less area you cover to make a load, the better the yield. In addition, pull samples to check moisture or quality.

Study the economics. Maintain accurate cost records for treated and untreated acreage, then compare these to yields. This shows the economic benefit, if any. A 20 percent yield increase may impress you until records show it required a similar boost in production expense.

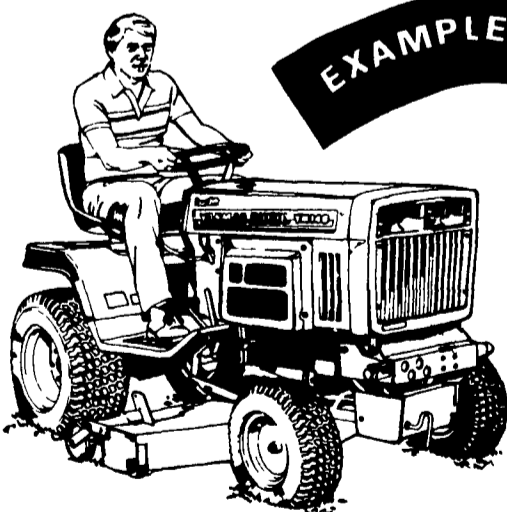
Keep in mind the influence of weather. In wet years, extra fertilizer and seed may produce impressive gains. But in a dry year, bean yields may remain static, and corn yields could drop. If plots received above average moisture, don't fantasize too much

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