FARMWIN 97

From Horse-Drawn Plows to Cow Icons, a Window on Farming's Future

When you open Art Olsen's John Deere ledger for 1945, you enter some of the last days of the past of farming: no gasoline used on the farm, not even a tractor. The plow is still pulled by a horse, and the horse has a name. In fact, Olsen's ledger shows names for several horses, cows, pigs, and sheep, along with their ages. His crops were as diverse then as the livestock on his farm in Walden Township in Starbuck, Minnesota.

How times have changed! That ledger book has given way to check-book-balancing computer programs. And now a group of farmers in Minnesota has taken computerized recordkeeping still another giant leap forward, using systems engineering techniques.

"Farmers, software designers, and agricultural scientists worked as equal partners right from the beginning, in 1989, to develop FarmWin 97," says Sam Alessi, a systems scientist with the Agricultural Research Service in Morris, Minnesota. ARS paid to have Alessi—a neighbor of Olsen's—trained by one of the fathers of systems engineering, Wayne Wymore.

In 1959, Wymore became the chairman of the first degree-granting program in systems engineering—at the University of Arizona, where he is now professor emeritus. He has since been very active as a consultant in projects worldwide.

Earlier this year, the farmer-owned Sunrise Software company of Morris, Minnesota, released this new whole-farm recordkeeping software for sale. FarmWin 97 is written for the Windows 95 operating system. It was developed through a cooperative research and development agreement between the U.S. Department of Agriculture and Sunrise Software, working with scientists in Morris and collaborating farmers.

Alessi says this is the first such agreement USDA has signed with farmers and the second with a software company.

It's All in There

Kevin Brustuen, one of the first farmers involved and now president of Sunrise Software, says FarmWin 97 helps farmers keep track of every aspect of farming. It gives them the ability to instantly compare costs per acre for separate operations, such as tillage or mowing—for one field or for the entire farm.

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Instead of providing handwritten lists of horses and their names, FarmWin 97 lets farmers look inside a computer icon barn, take out their cows and tractors, and move them to any field to test operations before they actually try them.

For example, if the farmer takes a tractor out for three trips across a field, the computer automatically drains some fuel out of the tractor's tank to account for what would be used in real-life operation. The farmer has already entered a price for the fuel, which is automatically updated every time a check to pay for fuel is recorded. Also, fuel purchases trigger automatic on-screen filling of storage tanks to help track fuel available for use.

But if you click on the barn icon on the desktop of one of FarmWin 97's developers, Craig Murphy, you'll see that some of the old ways have returned: You'll find three sheep, a goat, a wild horse, and two pigs. Last year, you'd have found 17 cattle being raised for organic beef.

Yes, Murphy is an organic farmer.

A Boon to Organic Growers

Far from being in conflict with organic farming, Murphy says FarmWin 97 offers what farmers need to be certified as organic: an audit trail.

"FarmWin 97 helps me document every stage a crop has been through on its way to the customer," says Murphy. "For example, it can follow a bushel of wheat from field number 10 to a specific grain wagon to storage bin number 3. And from there it knows when and which truck took the wheat from the bin and that the truck took the wheat to company A or to warehouse B. Then, if customers have a problem, they can trace the wheat all the way back," Murphy says.

When you click the icons for Murphy's 470 acres of tillable fields, you'll find corn, soybeans, hard red spring wheat, sunflowers, alfalfa, and buckwheat. "I try to be pretty diverse," he says. "FarmWin 97 helps me keep track of a complex series of crop rotations.

"Fertility and weed control are different for organic farmers, and FarmWin 97 helps us manage them. It doesn't matter what size the farm is or whether it's organic or conventional," he adds.

Murphy began working on the FarmWin 97 team 4 years ago. The farmer team has expanded from 2 farmers in 1989 to 12 today. Murphy hopes FarmWin 97 will help him decide if he should develop an

organic version of no-till using small grains such as barley or hard red spring wheat. He expects the software to answer such questions as what are the costs versus the savings of keeping the ground covered year round? Then he'll balance the financial figures with his own estimate of the environmental costs and benefits.

Eventually, says company president Brustuen, the plan is to include more of the environmental side of farming, connecting it to programs that, for example, predict how much fertilizer is needed, to avoid waste. "We carefully designed FarmWin 97 for expansion," he says.

Brustuen has temporarily stopped farming to devote all of his time to getting the company off the ground. He says he has made the layout of his database public to help other companies integrate their software with FarmWin 97. The aim of FarmWin 97 is to set the standard in farm software so that all other farm programs will be compatible with it.

Easy As Pie

Alessi says he has seen FarmWin 97 spark some lively discussions around a family farm table. Even family members a bit skeptical of the program jump in when they see pie charts clearly show a certain farm operation taking a bigger slice out of the family's time budget than they expected.

He says he has seen farmers change operations after using the software, sometimes hiring another to do a task cheaper than they could do it for themselves. He's also seen them use the data to negotiate cheaper rents on the least profitable of their leased fields.

Russell Rogotzke, who farms 475 acres of corn, soybeans, and sweet corn and peas grown for Del Monte, has used Farmbook, an earlier version of FarmWin 97, to make changes on both sides of leasing arrangements. He has not only asked for lower rents because of lower profits, but he has also found that certain fields he hires himself out to plant for others may require so much extra diesel fuel because of the number of turns involved that they're not worth his efforts.

"We need instant information to help us meet the challenges of agriculture," says Rogotzke. "One of those challenges is for us to be environmentally sound so we can pass on good farmland to future generations."—By **Don Comis,** ARS.

For questions about FarmWin 97 engineering, contact Sam Alessi at the USDA-ARS North Central Soil Conservation Research Laboratory,

KEITH WELLER (K7735-7)

Sunrise Software president Kevin Brustuen (left), ARS systems architect Sam Alessi (center), and farm manager Craig Murphy use FARMWIN 97 to evaluate the organic farming methods used on Murphy's farm near Morris, Minnesota.

Rogotzke believes the assistance the software has given him over the years accounts for the mellower, easily tilled soil on his Springfield, Minnesota, farm. Each year, he makes changes based on the program.

"I haven't plowed in quite a number of years," he says. "I believe that's why my soil didn't blow in the extremely high winds we had last spring. And I appreciate the way the computer program allows me direct access to USDA researchers.

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Direct questions about acquiring or using FarmWin 97 to Kevin Brustuen at Sunrise Software; phone (320) 589-4030 or visit the web page at http://www.infolink.morris.mn.us/~sunrise/ ◆