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No-till
On The Plains

No-till for Profitability

by Roger Long



Curiosity may have killed the cat but it prompted this Lebanon, KS farmer to try a new way of growing crops. When asked what prompted him into no-till, the first response was, “Curiosity, I guess! . . . I was intrigued with the idea of being able to grow crops other than wheat.” That curiosity, along with the urging of a consultant specializing in no-till systems (Matt Hagny) and friends throughout the



Photo by Tim Christian.

During a summer tour, Kent explains his changing rotations and the role of cropping diversity in helping him achieve his profitability and risk-management objectives.

I was out with a NRCS technician and mentioned that ‘I’ll be glad to get these terraces finished so I can start building some soil.’ The technician pointed out that I wouldn’t be *building* soil. He told me that the average soil loss for the area was eight tons per acre per year and that with the terraces, I would be only losing about four tons per acre. My thought was that it would now take me twice as long to ruin my farm.” Kent saw no-till as a way to build soil by increasing residue, increasing organic matter, and virtually eliminating erosion. The interview with Kent was taken on a combine while harvesting sunflowers. The 160-acre field was two separate 80-acre fields two years ago. Kent had one of the 80s in no-till for over four

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Photo by Kent Stones.

Kent Stones, Lebanon, KS, strives for precision no-till seeding with his Flexi-coil air drill with modified FSO openers.

country, got Kent started with part of his acres in no-till in 1994. By 1997, Kent had switched completely to no-till.

Kent tells a story of a past attempt to build soil. “The ‘85 Farm Bill mandated conservation compliance.

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years; the other field was in its second year of no-till. Strong winds had caused some lodging problems throughout the field, but the 80 acres that had been in a no-till



Photo by Roger Long.

Stones' operation does all its own harvesting—work-load spreading is key.

system for four years showed much less lodging than the other 80. "The flowers over here [four years of no-till] just show better plant health." It is quantifiable results like better plant health that directly increases production as to why Kent really likes his no-till system. He may have had several reasons for converting from conventional tillage to no-till but he has one big reason for staying in no-till: Economics.

"My major concern when going into no-till was: 'Is it economically justifiable?' And the answer is a qualified 'yes.'" The qualified part comes from the standpoint that the risks must be properly managed. Kent believes crop insurance is a must and uses marketing tools extensively. If the risks are managed, no-till is a more profitable system than conventional tillage. For Kent, the increased profit comes primarily from an increase in production. Kent now farms more acres and is growing substantially more bushels per acre per year with no-till. He

points out that, on occasion, some yields per harvest may be slightly lower than in a tillage system but because of the higher cropping intensity allowed by no-till, he ends up growing more bushels per acre in the long run. All those extra bushels with less time in the field and less equipment, albeit more expensive seeding equipment.

Low Costs, Low Inventories

Kent knows to the penny, without referring to cheat sheets, what his per-bushel production costs are: "Sunflowers, \$10.20 per hundredweight; corn, \$2.21 per bushel." Kent uses five-year yield averages to calculate his per bushel (or cwt.) cost of production. "Some guys use and promote a ten-

year yield average, but things are so much more different now than eight or ten years ago—I want to use more recent data." The above numbers are

**Disadvantage to no-till:
"You have more grain to deal with, so you need more bins and your combine wears out faster."**

indeed total costs of production per bushel, including direct inputs, labor, machinery, interest, taxes, land rent, storage, and marketing. The costs are very realistic, since the farm corporation pays Kent and his wife Cindy respectable salaries, as well as renting the machinery and some land from them (through a holding company) at rental rates toward the high side of the range of 'going' values. The meticulous calculation of costs is typical of Stones' management, and certainly the attention to detail is what has

allowed them to keep their production costs so competitive (at least by U.S. standards).

A key to Kent's management of profitability is something that is not often seen in the popular press: "You can swing your profitability 15 percent by altering inputs and 50 percent by increasing production." Marketing commonly gets the most attention but Kent has found that of the three areas of management, marketing actually has the least effect on profitability, roughly 10 percent. Kent also has a rather unique perspective on paying income taxes, which he says has taken him thirty years to realize, "Short of fraud, there are only two ways to avoid paying substantial income tax: one is simply that I didn't make a profit; the other way is to amass and carry a huge inventory, which is *never* a good business practice—it nearly tanked Chrysler in the '80s, for instance."

Kent's equipment now consists of one Flexi-coil air drill, one John Deere planter, one Spra-Coupe, one combine, two tractors, and a grain cart. Gone are two late-model 4-wheel-drive tractors and all of his tillage equipment. They first adapted their existing planter and later bought a no-till drill in the winter of 1996; since then, their seeding equipment has undergone several major revisions (trades) and numerous modifications. As with most no-tillers, their equipment inventory has drastically declined. Kent notes that while the number of iron tools may have declined, the total dollars going into equipment maintenance has stayed roughly the same. The huge advantage with no-till is that they are now farming considerably more acres with those same maintenance dollars. Again, they are growing more bushels per acre on the increased number of acres so the maintenance cost per bushel of grain produced is dramatically lower. Kent points out one disadvantage to

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no-till: “You have more grain to deal with, so you need more bins and your combine wears out faster.” What a tragedy!

Envision, then Get After It!

An advantage to no-till is that they are able to have their own grain handling facility and trucking capabilities. Without the countless

“If you look ten years down the road, don’t you think almost all of the acres will be in no-till? If that is true, then why not get there now?”

hours spent in tillage operations, Kent has more time to expand the scope and control of how his crops are taken to market. “Our philosophy has always been to extend our involvement of the production of the crop.” Having their own combine, grain bins, and over-the-road semi allows them to take advantage of more marketing options. The on-farm grain bins allow them to market identity preserved grains and to extract market premiums from many of their crops. “We are currently growing crops under contract for three different companies.” He normally has 60 to 65 percent of his crop contracted for sale before harvest and would like to have 100 percent of his crop contracted before harvest. With a vastly more diverse crop mix and unique harvesting times, the grain bins also provide a harvesting convenience compared to waiting for local elevator operating hours.

Kent places a very high value on having relationships with processors. He has been working toward producing as few ‘commodities’ as possible. “I think you have to look 10 years down the road and see where you need to be.” Once you see where it is you want to be, then “Get after it!” Being a “price taker” of commodities is tough and “it’s only going to get tougher.” That is why Kent believes it is very important to “position” yourself with processing companies now. That same philosophy carries through to why he has converted to no-till: “If you look ten years down the road, don’t you think almost all of the acres will be in no-till? If that is true, then why not get there now?”

‘Cerebral’ Rotations

Kent has added several new crops with the implementation of no-till. Their conventional tillage break out of crops consisted of 50 percent wheat, 25 percent milo, and 25 percent summerfallow. His crops under management now are: wheat, corn, milo, soybeans, sunflowers, and alfalfa. “Cropping diversity and intensity are key principles in a no-till system.” His typical rotation consists of wheat >>corn or milo >>soybeans or sunflowers and then immediately to wheat. He has also been successful with adding ‘stacking’ to his rotation, meaning that a particular crop is grown back-to-back (2 consecutive years) in the same field within the context of a longer rotation. Kent has stacked all of the crops at one time or another with the exception of sunflowers. He especially likes the yields of the soybeans after soybeans. Currently, he’s looking for a broadleaf winter annual to add to his rotation. He expresses

some interest in canola, since he has a friend who had a very positive experience with the crop this past year.

Economics do play a role in his rotation decisions. “We have been steadily increasing our stacked corn and milo in the rotation. Generally, we’ve been dropping milo out in favor of more corn.” Kent is noticing that milo and sunflowers aren’t pulling their weight for profitability and so he’s moving more towards corn and soybeans to fill those places in the rotation. “On our better soils, we will do corn >>corn and then to sunflowers or soybeans, but on poorer soils we go corn >>milo and then to the broadleaf crop or crops. As our soils continue to improve under no-till, we may end up doing stacked corn on some of those thinner soils as well.” Kent keeps wheat on 20 to 33 percent of his acres. Wheat is currently on about 20 percent of his acres but if it were more profitable it would be higher because of the increased residue it leaves behind. Kent concedes that even in very low-disturbance no-till, it is sometimes difficult to keep as much residue on the surface as he would like. His Lebanon area receives an average of 23 inches of precipitation per year



Photo by Roger Long.

Keeping large amounts of crop residues on the soil surface is critical to Kent’s ability to turn more moisture into grain with intensified rotations. In addition to the standing ‘flower stalks, note the previous year’s milo stalks, and 2-yr. old wheat stubble (even older residues are visible to the discerning eye).

so producing large quantities of biomass is not always accomplished.

When asked which rotation is more difficult to manage, Kent's response was that his no-till rotation is more "cerebral" than the old wheat and milo mix but is much less stressful from a manpower standpoint. The more diverse crop mix also creates a more diverse planting and harvesting schedule. They no longer have big crunch times of extremely long

"You can't really be 1000 percent better at any one thing but you can be 1% better at a thousand different things."

working days. They also no longer have extended periods of idle time so their workload stays relatively even. Besides Kent and Cindy, the operation has only one other full-time employee, since no-till and diverse rotations help reduce total labor needs. Cindy spends about 40 hours per week in the office on accounting and financial activities. Perhaps the most important aspect for Kent is the lifestyle: "You spend

less time in the field and more time with your family. You show more respect for their needs."

Soil testing is done regularly and fertilizer applications are made accordingly. For corn and sunflowers, he broadcasts approximately 90 percent of the nitrogen requirements in the winter as urea and the balance is applied with the planter in a '2x2' placement (actually 3x0, or 3 inches away from the seed furrow and about the same depth as the seed). All of his phosphorus goes on at planting in a 2x2 or in the seed furrow, and sometimes he uses both 2x2 and furrow placement at the same time. He doesn't use any anhydrous ammonia because of the negative impact on the soil. "I want my worms happy and prosperous." For wheat, Kent applies 11-52-0 with the seed, then top-dresses a urea blend during winter to supply his nitrogen and sulfur needs.

He has grid sampled his fields and some of those fields have been grid sampled twice within a four year interval. He has the capability to variably apply fertilizer with his



Photo by Kent Stones.

Stones' planter going into heavy wheat stubble.

seeding equipment and do variable seeding rates. Kent used grid samples to variably apply fertilizer and has seen the soil test variability reduced in the second set of grid samples. His contention is that grid sampling and site specific management have made him more profitable but he admits that it is difficult to point to any one particular facet. "I have more details and that makes me a better manager."

"You can't really be 1000 percent better at any one thing but you can be 1% better at a thousand different things." Managing every component of crop production for profitability is what has led this no-till farmer to success. "I can't imagine what else I could have done with my background and education that would have been more financially rewarding."

Soil Health and the Limits of Human Knowledge

by Matt Hagny

P E R S P E C T I V E

Matt Hagny is a consulting agronomist for no-till systems, based in Salina, KS

I am often asked questions that force me to answer, "I don't know." Sometimes a check of the literature or industry professionals turns up a plausibly decent answer. Other times, none is forthcoming; sometimes this is merely a reflection of the amount of time available for searching, or an indicator of shortcomings in indexing or networking

the knowledge base. In other cases it is quite likely that *no one* really knows the answers to the questions, and even the best guesses aren't that great. Some of the toughest questions have to do with soil health or what might be loosely defined as a diverse and robust ecosystem of soil organisms that can benefit vascular plants (crops). This is an area of

study that is in its infancy. Just how naive we really are I hope to convince you.

In agriculture, we are confronted almost daily with 'opportunities' to improve our soils' condition or 'health.' Certain companies and no-till gurus have instilled these thoughts in our heads, and it has