

Leading Edge

The Journal of No-Till Agriculture

January 2008 • Volume 7 • Number 1

No·till
On The Plains

So Much from So Little

by Roger Long

Whether it's because of a need for networking when developing new practices or due to some quirk of their personalities, no-tillers typically share a true desire to help their neighbor—and consequently their competitor—in adopting their newfound techniques for greater productivity and profitability. Maybe it's the underlying notion that those same neighbors have such an enormous impact on the very neighborhood where those



no-tillers reside, or perhaps they're just so thrilled with the results that they can't contain themselves. Possessing that same philanthropic spirit, Mark Watson of Alliance, Nebraska, exemplifies it with both humility and zeal. While many no-tillers have given freely in presentations, interviews, and neighborly discussions, few full-time commercial growers put forth the time and effort that Watson does.

Mark began assisting his local NRCS district office last year with presentations that not only expound the financial rewards of no-till but also highlight the benefits of protecting and conserving natural resources. Watson's simple, powerful message not only says, "You can do it!" but also, "I know *you* can do it because *I've* done it!" No-till principles are the fabric of Watson's presentations, with proven real-world examples woven throughout to provide the audience with tangible data for planning their own no-till systems. Gregarious by nature, Watson's speaking schedule looks like that



Photo by Mark Watson.

Watsons harvesting 100-bu/a wheat following edible beans, which is a fairly typical yield for their irrigated wheat. Mark likes the stripper head, since he doesn't have to worry about getting the straw spread uniformly behind the combine.

Contents

<i>So Much from So Little</i>	393
<i>Soil Structure Examined</i>	398
<i>Tread Lightly</i>	406
<i>Deep Ripping</i>	408
<i>Interpreting Research</i>	410
<i>Wiltse Revisited</i>	412
<i>A Champion Spirit</i>	413



Watsons' irrigated corn in dry bean stubble. Mark comments, "No-till seedbeds tend to be more consistent than tilled seedbeds, which I think leads to uniform seedling emergence and higher productivity. . . . This field yielded 204 bu/a with 14 inches of irrigation. I thought this was pretty good considering we had less than 8 inches of precipitation during the year. No-till farming is the best water-management production system available to farmers." Watsons' average water application has been only 8 inches per acre per year during the last 4 years in the 3-crop rotation under the pivots.

of a full-time motivational speaker, with entire weeks filled with engagements throughout February and March—meetings where he will opine the methods of their success and encourage others to embark on a similar journey.

Mark and his brother, Bruce, grew up helping their father to farm many of the same acres they now crop. They know all too well how stingy Mother Nature—at least the one residing in western Nebraska—can be. Farmers in the Nebraska panhandle have never had it easy and 'making do' is many times a mere fact of life. Yet the Watsons have not just 'gotten by' in some extremely difficult years but have actually prospered.

Watsons farm in the middle of winter wheat >>summerfallow country (one crop every 2 years), but in 1994 they left behind the inefficiencies of extended fallow periods when they went 100% no-till. Long-term average annual precipitation for the Alliance area is a scant 14 inches, and Mark will readily point out they haven't even gotten that much in recent years, yet he still looks at a 13-month fallow period to grow

a solitary wheat crop as wasteful. Mark spells it out, "Even in dry years we get 10 inches of rain and our soils will only hold 1 to 1.5 inches of water per foot of soil, so we will only have 6 inches of moisture in a 4-foot profile at best. That's wasting at least 4 inches of moisture in the driest years and up to 13 inches in wetter years." Watsons now typically use a winter wheat >>winter wheat >>corn (or proso millet) >>chickpea rotation, without summerfallow, and are looking to improve and intensify it even further by adding some type of cover crop between their second-year wheat and the corn or millet. They've had more millet than corn lately due to the extended drought, so adding cover crops might seem odd, but it just goes along with their understanding that it's inefficient to try to 'bank' too much moisture in the soil at any given time.

Judicious Inputs

The Watsons farm a total of 3,000+ acres with roughly 10% under irrigation (3 pivots). Their water-use efficiency, and for that matter, all input

Editors:

Matt Hagny
Andy Holzwarth
Roger Long
Keith Thompson

E-mail: editor.leading.edge@notill.org

Science Advisors:

Dwayne Beck (SDSU: Dakota Lakes)
Jill Clapperton (Agri-Food Canada)
Rolf Derpsch (consultant, Paraguay)
John Grove (U.Ky., Soil Science)
Tom Schumacher (SDSU, Soil Science)
Ray Ward (Ward Laboratories)

Subscriptions & Advertising:

Phone: 888.330.5142

\$75 per year (U.S.) subscription rate

No-Till on the Plains Inc. publishes **Leading Edge** three times per year.

No-Till on the Plains Inc.
P.O. Box 379
Wamego, KS 66547-0379
888.330.5142
Website: www.notill.org

© Copyright 2008 No-Till on the Plains Inc.
All rights reserved.

No-Till on the Plains, Inc. is a non-profit organization under I.R.C. § 501(c)3, funded by fee-based activities and by generous donations from many individuals as well as organizations such as Kansas Department of Health & Environment, Kansas Soybean Commission, and Kansas Corn Commission.

Disclaimer: Mention of trade names does not imply endorsement or preference of any company's product by *Leading Edge*, and any omission of trade names is unintentional. Recommendations are current at the time of printing. Farmer experiences may not work for all. Views expressed are not necessarily those of the Editors or *Leading Edge*.



No-Till on the Plains Inc's Mission:

To assist agricultural producers in implementing economically, agronomically, and environmentally sound crop production systems.

Objective: To increase the adoption of cropping systems that will enhance economic potential, soil and water quality, and quality of life while reducing crop production risks.

efficiencies per bushels of grain produced, rival the most frugal of operators. Their '07 wheat yielded 38 bu/a for wheat-on-wheat—and 33 bushels for wheat following chickpeas—on less than 10 inches of moisture, including preplant rain.

Watsons' wheat is planted with a Case-IH SDX air drill with 7.5-inch spacing, using 60 to 70 lbs/a of wheat seed (120 lbs under irrigation) along with 6 lbs of N and around 20 lbs of P. The 6 lbs of N may sound a little low but that is where their soil testing comes into play. They have actually been trimming back nitrogen rates the past several years due to the quantities of N showing up in soil tests. Their test results of 0 – 8 inches and 8- to 36-inch samples often show 30 to 50 lbs/a of soil N, thus the light rate of N fertilizer to get things started. Top-dressing is similarly a calculated move on an as-needed basis. Mark is a bit perplexed at the substantial soil nitrate continuing to reappear despite significant removal in grain and frugal fertilizer application, although he thinks that fixation by free-living bacteria in the soil may explain some of it.

In lieu of a crop consultant, Mark employs his own legs for scouting and his agronomy degree from the University of Nebraska for crop management decisions. Mark reflects, "Dad always taught us to make our own mistakes." Not just a topic in college, agronomy has long been a passion for Mark and he thoroughly enjoys hands-on production agriculture. And Mark actually acquired the no-till bug when he was taking agronomy classes at the University of Nebraska, and although the 'incubation period' was lengthy, the concept finally implanted into Watson's psyche.

Mark readily admits that their entry into no-till was more of an evolution than a revolution: "We did the chem-fallow thing in the '80s and early '90s and had always been

minimum-till. In the '90s, we had enough moisture that we could do more [intensive cropping] and it just kind of grew into full-blown no-till." He further notes, "I could see that even in this low-rainfall area, we were wasting water by not growing something every year."

Mark credits

"I could see that even in this low-rainfall area, we were wasting water by not growing something every year."

the introduction to Dwayne Beck in '93 as being a catalyst in their progression towards more intensive cropping and solving more problems ecologically or biologically rather than with tillage.

The Watsons will soon be starting their 14th year in no-till. Unlike the early '90s, rainfall has been extremely scarce the past several years: "We've averaged less than 10 inches of precipitation annually for over 7 years now." But even through all those dry years, the Watsons have not backed off their cropping intensity, except for substituting more millet for corn. All of their acres have been continuously cropped since their inception into no-till in 1994.

At the outset, Mark knew that simply removing the fallow period and planting continuous wheat was not going to work. They needed a broadleaf—preferably, a legume broadleaf. Soybeans were not a viable option for their region, so they started looking for alternatives. Mark took the stance that it

was better to look west for a more analogous climate. He eventually found a company from Pullman, Washington, that would both supply seed and provide a market for chickpeas and field peas.

The market for field peas was limited, so Watsons gradually left the crop and concentrated on chickpeas (garbanzos). Mark really liked the agronomics of the field peas better, but the economics took a distant backseat to chickpeas. Watsons' best chickpea crop (dryland) was a little over 1,700 lbs/a, typically worth about \$0.30/pound.

However, with the growth of ethanol plants and the dried distiller grain (DDG) by-product, cattlemen are finding good results with a cake that mixes field peas and DDG, thus a market emerged. Mark expects the field pea market to expand, but he thinks current markets allow \$5 to \$6 per bushel with an expected yield of around 25 to 30 bu/a. He is willing to sacrifice a little income in



Watsons' dryland proso millet—this field made 2,450 lbs/a with negligible inputs.

Photo by Mark Watson.

the legume portion of the rotation because of the substantial benefits that can be realized in the following wheat crop; Mark believes a 10- to 15-bushel boost in wheat yield following field peas instead of chickpeas is quite realistic.

As for the corn and proso millet, the Watsons added these to their rotation at the same time (1994) although the crops were already being grown sporadically in the area—but they were extremely marginal under tillage regimes. Mark then reflects, “*Everything* is marginal out here. But we had to try something to get the diversity we needed.”

Watsons’ dryland corn gets planted at 15,000 seeds/a, always with some starter fertilizer side-banded and any additional N applied pre-plant with the sprayer as determined by soil tests. Millet gets the same pop-up as wheat, again with N according to soil tests and applied pre-plant with the sprayer.

Both Art & Science

Mark is a huge fan of their Shelbourne stripper head: “We’ve harvested around 10,000 acres with it over the last 5 years and all we’ve done to it is change the oil in the gear box.” Oddly, they bought the head due to extremely short wheat in ’02: “It was a dry year and the wheat was only 8 or 10 inches tall. With a sickle, we would’ve been scalping the ground, and then we wouldn’t have had any stubble at all. We needed to preserve what

little stubble we had that year. We had been looking at a stripper head anyway, so we just went ahead and bought it that year.”

That turned out to be a real blessing in disguise. After purchasing the stripper head, Mark came across some studies where UNL was testing the head on proso millet, which they found to work very well.

“If we have a field with downy brome, we don’t give it a chance. We’ll go to three years of [summer] crops. Eventually any rotation is going to have a problem if you do it long enough. We need to keep our flexibility.”

Then, on an exploratory trip to Dwayne Beck’s research farm near Pierre, SD, Mark heard Beck advocating harvesting dry edible beans with the head, which Mark again has found to be successful: “I’m getting so I don’t want to grow a crop unless I can harvest it with my stripper head . . . except for corn, of course.”

Mark also notes the efficiency the stripper head adds to the combine: “It’s the best residue-management tool I have.”

Indirectly, no-till has greatly reduced the pesky weeds that once burdened Bruce and Mark’s acres. “We simply don’t have much for weed problems anymore,” says Mark. Two- and three-year breaks from wheat are the primary cause of the reduction of ‘cheatgrass,’ but without no-till, it wasn’t very feasible to grow other crops in their arid climate—and certainly not continuously as the Watsons are doing. Watsons react to changes in weed pressures in their fields by altering the rotation: “If we have a field with a weed problem like downy brome, then we don’t give it a chance. We’ll go to three years of [summer] crops in that field.” For them, that three-year stretch might be corn >>millet >>chickpea. Mark explains, “Eventually any rotation is going to have a problem if you do it long enough. We need to keep our flexibility.”

Reductions in weed pressures extend well beyond wheat—Mark sees a drastic reduction in pigweeds in their corn as well. Best of all, the reduction comes at the hand of the system: less excess water for germinating weeds, more competitive crops, and less idle ground with sunlight reaching the soil. Their herbicide usage is far less than when they first started no-tilling, and in their irrigated pinto beans they actually use less herbicide than many tillage farmers would for that crop.

Inputs aren’t the only aspect of Watsons’ operation with a minimalist flare. Their equipment has been weaned down to just two tractors, a 9510 JD combine, the Case SDX air drill, an eight-row 7200 JD planter, and an 850 RoGator, with Mark and Bruce supplying all the labor except for when one of their sons pitches in on occasion.



Photo by Mark Watson.

Watsons’ dryland wheat, which also produces some very nice yields.

Irrigation is a smaller factor in the equation, but Watsons are just as careful with those resources. They utilize a corn >>pinto bean (or Great Northern) >>winter wheat rotation and are looking to add a cover crop between the wheat and the corn. They have been allowing a neighbor to graze cattle on stalks the past few years, as much as a favor as anything, and Mark explains, “The grazing intensity is pretty minimal so I don’t really see it as a negative or positive impact on what we are doing.” They do pick up a few dollars per acre and the goodwill of their cattleman neighbor.

For that irrigation niche, Mark is looking for a cover crop that can be planted immediately after wheat harvest and would provide a few soil-enhancing attributes and possibly more grazing for the local bovine. Canola, lentils, or turnips are a few of the options being contemplated. The big factor will be how it affects yield and economics

of the following corn crop.

Under irrigation, Watsons plant a 94-day corn (‘full-season’ at their latitude and 4,000-ft elevation) at around 33,000 seeds/a, with about 140 lbs of N applied with their RoGator. As with their wheat, they to some extent are relying upon the legume (in this case, 2 years prior) providing some free nitrogen. And with N fertilizer over \$0.50/lb, that’s a substantial management ploy—one that puts money in their pocket, with Mark and Bruce harvesting over 200 bu/a irrigated corn in 2007.

Mark notes the opportunity of adding irrigation acres in the near future, after some landlords caught



Photo by Mark Watson.

These irrigated pinto beans of Watsons’ yielded over 2,400 lbs/a.


wind of the financial success of their no-till cropping scheme—they’ll be adding 6 pivots in ’08. As with any endeavor in a free market, the more successful you are, the more work that comes your way. It looks as though Watsons will be quite busy far into the future in guiding the conversion of tilled acres to no-till, both for their neighbors and themselves. ♻️

IT’S THE RIGHT SEED FOR THE RIGHT REASONS.

Hoegemeyer:

- ✓ Rugged, top-yielding hybrids that stand
- ✓ All the right trait options
- ✓ Western Corn Belt experts
- ✓ Great people & great service
- ✓ Independent for 70 years

Hoegemeyer has studied the growing conditions of the Western Corn Belt for 70 years and has earned a reputation for hybrids that work here. We applied our experience to discover superior hybrid corn genetics with traits that not only thrive in tough growing conditions, they surpass expectations. And Hoegemeyer results are delivered right here where you grow corn, year after year.

FOR 70 YEARS  **HOEGEMEYER**
THE RIGHT SEED.

1.800.AG LINE 1 | therightseed.com

You can qualify for a 3% cash discount, prime rate financing or 120 days No Payment/No Interest on all seed purchased through March 15, 2008. See your Hoegemeyer dealer for details.