WHY AM I DOING THIS?

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In 1972, I gave up a career as an electrical engineer working for a farm equipment manufacturer in Nebraska, loaded up my wife Judy and our small son and moved back home to the Pacific Northwest to farm with my father-in-law, Gerald Miller. A lot of people have asked me why did I do that? I enjoyed my career as an electrical engineer, particularly the challenge of solving complex problems, using engineering techniques, and making things work. Thirty years ago, I was ready for a new challenge, I wanted to raise my family in a rural setting, and both Judy and I missed our farming roots.

I worked for and with Jerry for four years. He taught me a lot. The lessons best remembered include his commitment to new ideas, his keen interest in the latest innovations in equipment and technology, and his desire to learn more of the science behind crop production. Some of the first lessons occurred when he began taking me on twilight tours in June, and of course the annual Spillman Farm Field Day at WSU.

By 1976, with three small sons, Judy and I were anxious to make our own way. Again, Jerry was supportive. He helped his daughter and wayward son-in-law by leasing us 300 acres and encouraging a neighbor to lease us an additional 200 acres.

Over the past 25 years, those 500 acres have slowly expanded to the 3600 acres we farm today. Judy and I operate as a partnership and continue to share the work. Thirty years after giving up my engineering career, I can honestly say I’ve had more challenges, used more of my engineering education, and had more opportunity to be innovative in problem solving than I could have ever experienced as an electrical engineer.

Why am I doing this?
I’m making this presentation in memory of Roger Veseth, whose dedication to improving production agriculture through direct seeding, has helped me to answer the question, “Why am I doing this?”

I have asked myself this question a lot! And, I expect to keep asking this question. Why do we plow? Why do we plow downhill rather than uphill? Why do we plow and not chisel? Which is best — fast or slow – deep or shallow – wet or dry?

Over the past 25 years, I’ve learned that too many times the answer is simply “we’ve always done it that way.”

Direct seeding is a system that requires a new look at what we do, how we do it and why. We’ve been direct seeding both our fall and spring crops for 5 years. Do we have all the answers? Certainly not. Have we made positive progress? Yes. Will we continue down this path? Yes. What have we learned? Rotation – Rotation – Rotation.

Crop Rotation, tillage rotation, and pesticide rotation are all interdependent. We farm in the higher rainfall area of the PNW and we annual crop. We learned long ago that in the higher rainfall areas of the Palouse that summer fallow was the greatest contributor to soil erosion, our number one challenge.

Tillage: Why am I doing this?
When we started farming, we didn’t own a plow. We only had a Soil-Saver chisel. We were very happy with the Soil-Saver. It left the stubble ground rough for winter and worked well on the contour, which allowed excellent moisture uptake and eliminated soil erosion.

In the spring the ground remained rough and required much cultivation to make a seedbed for spring barley. The
spring barley stubble was again chiseled with the Soil-Saver and left rough over winter. Again, spring meant a
good deal of cultivation to make a smooth seedbed for lentils. To plant winter wheat on the lentil ground, we put
fertilizer points on the Soil-Saver and injected aqua ammonia with our tillage. Several cultivations later it was
seeded to winter wheat. Considering we had old equipment, this worked quite well. However, after about 5 years
our grassy weeds were out of control.

Burning of stubble has never been my first or even second choice, but it was clear that we needed to make some
changes because this reduced tillage had exacerbated the grassy weeds. We bought a plow. For the next 15 years
we incorporated a tillage rotation with the crop rotation.

Plow winter wheat stubble to plant spring barley, chisel barley stubble to plant lentils in the spring, and disc lentil
ground in the fall and seed winter wheat. There was absolutely nothing wrong with this traditional program,
except: three cultivations, a great deal of harrowing, plus rolling the lentils. Productivity was very good and
control of weeds and pests seemed manageable. Over the years I experimented with various combinations of
equipment. The greatest challenge was the 100 bushel straw, even when there wasn’t 100 bushel wheat. The year
we purchased our used Mathews shredder was a watershed year in moving to the next stage with reduced tillage.

I shred every acre of wheat stubble after harvest. I parked the plow and went back to my old friend the Soil-Saver.
New chemistry was proving effective on the wild oats and cheat grass. By incorporating the shredded straw 4-6
inches deep, I soon found that the ground was mellower in the fall. So I’m back to winter wheat, shred and chisel,
cultivate and plant spring barley. The barley ground was shredded and chiseled and the seedbed was prepared
again in the spring for lentils. We discovered that the lentil ground wasn’t as hard after harvest as it used to be. We
opted to apply our fall fertilizer with the McGregor Ripper Shooter, cross cultivated and planted winter wheat. We
were on the road to reduced tillage.

Our next major change came with the purchase of a John Deere 455 grain drill in 1997, when we made another
discovery. We could leave barley stubble stand over the winter and direct seed the lentils in the spring. This
eliminated the fall tillage and at least three operations in the spring. This was real tillage reduction!

**Crop Rotation: Why am I doing this?**

With the steep decline in the wheat, barley, and lentil prices during the late 1990s, we had to rethink our crop
rotation. We eliminated barley and tried substituting spring wheat. Unfortunately, we had a terrible infestation of
Hessian fly and no good way to control them. They wintered over with a repeat performance the following year.
That has ended our enthusiasm for spring wheat.

By 1998, economic conditions on the farm were really tight. Yields had remained very stable – between 80-90
bushel wheat, 1200-1400 pound lentils, and 1.75-2.25 ton barley, but spring wheat had varied from 35-50 bushel.

We opted for a winter wheat – lentil crop rotation which would alternately let us control broadleaf, perennial, and
grassy weeds. We already knew that we could direct seed winter wheat into the lentil ground with the J.D. 455
grain drill. We also knew that our winter wheat yields after lentils were as good as we would get on chem.-fallow.

The challenge was planting 1800 acres of lentils in the spring. Timeliness of seeding is far more critical with
lentils than with winter or spring cereals. How can I gain timeliness in the spring?

**Profitability: Why am I doing this?**

By the fall of 1998, Judy and I really started asking this question? We knew that a 2-year rotation could not be a
long-term decision. We needed to find ways to increase profitability, efficiency, and timeliness.

Taking the lessons learned and knowledge gained from the past 20 years we sat down and questioned every
production assumption.
We needed to get as much of our field work as possible done in the fall – spring weather in the Palouse is too unpredictable to spend preparing a seedbed. So just how do you convert all that wheat straw into a spring seedbed for lentils?

We knew that we could shred the stubble and chisel – but then you have to smooth the seedbed. The lentils would grow but you can’t drive over it! The ground was just too rough. Then the questions began: Can we change the chisel points? Can we change the depth? Should we pull a harrow or cross harrow? Should we cross cultivate in the fall? How smooth is too smooth in the fall? Can we cultivate instead of chiseling?

What other operations can we eliminate? Do you need a rod-weeder? Why do we roll lentils?

WHAT WE DO?
First off, I am not a direct-seed or a no-till purist. I’ve been around no-till since my college days, when I worked for Morton Swanson who pioneered no-till farming in the Palouse, nearly 40 years ago.

Currently, we farm 3600 acres at five locations. We are in a 2-year rotation, which includes 1800 acres of winter wheat and 1800 acres of lentils. This rotation works very well for producing an excellent winter wheat crop. Plus, we have the advantage of two different weed control programs.

Lentil ground is sprayed with Roundup after the first fall rain (mid September) to eliminate the green bridge and control perennials. Madsen winter wheat is direct seeded into lentil ground the first week in October. We do this in a one-pass system using a McGregor Strawboss fertilizer machine pulling our modified John Deere 455 grain drill behind. I will soil test the winter wheat in March and aerially apply ammonium sulfate and chloride. In May, I spray the wheat for broadleaf weeds. Then, we pray for rain and watch it grow.

The winter wheat stubble is shredded with our 30-foot Mathews shredder after harvest. The trick is, the sooner the better! This is very heavy stubble, 100+ bushel. It is important to have a good straw-chopper/spreader on the combine to eliminate windrows. I like to spray Roundup after the fall rain has germinated the volunteer wheat, grasses, and jointed goatgrass (about mid-October) to eliminate the green bridge.

In order to make a lentil seedbed next spring, it is important to start the decomposition of this heavy straw residue in the fall. At the end of October, I mix some soil with the stubble to begin this process. The operation which used to include chiseling followed by a minimum of four spring operations to create a seedbed is now done with a J.D. 1010 Cultivator in the fall.

My cultivator is 36-feet wide, with chrome alloy points at 12-inch spacing, with a tined harrow behind. I cultivate 3 inches deep at 9 to 10 miles per hour across the chaff rows in two directions. This levels the ground, incorporates the soil and straw, making the ground darker, which will warm up earlier in the spring, and gives maximum water infiltration. This is the only tillage done once every 2 years.

In the spring, I apply a Roundup/Pursuit mixture to the lentil ground and **wait 20 days**. Waiting is the hard part. I direct seed lentils with the J.D. 455 grain drills. I do not roll or harrow the lentils after planting. I apply herbicide in May or early June and possibly an insecticide application in June or early July.

As you see, our journey toward direct seed has been accomplished in fits and starts. It has been based on questions and scientific explanations, tempered with experience and dictated by economics.

WHAT WE’VE LEARNED
We have eliminated soil erosion and greatly reduced soil compaction through reduced tillage. Over a 2-year rotation we have eliminated at least six trips over the field. Four of those trips were springtime operations, some of which were over wet ground. The benefits have included better moisture infiltration, no runoff, and an im-
proved moisture profile higher up the slopes.

The reduction of trips over the field has reduced fuel consumption, equipment hours, and repairs. The reduction of costs, plus the improved timeliness have provided consistent economic benefits.

Rotation, Rotation, Rotation. With our 2-year rotation, we are beginning to experience some of the same problems we saw 25 years ago. Grassy weeds are becoming a concern. This time it’s not the wild oats and cheatgrass, but Italian Rye and jointed goatgrass. The big question is whether we can find an adequate control soon enough.

Unfortunately, over the past 7 years, prices have not been conducive to experiment with a third crop. Spring barley and spring wheat have not proven to be economical options.

This fall we planted a small plot of Clearfield wheat to see if we can gain some control of these pests. We are also contemplating moving some ground back into a 3-year rotation including spring barley. However, the short-term economics of the decision are questionable.

Experiments are important but can be costly. Experiment on your own fields with your own program. Why am I doing this? Try to figure out why something works or doesn’t. Failures can be as valuable as successes, though not as much fun.

We’ve never been able to afford a drop in yield to justify lower costs. This is especially true if you’re farming for a landlord. You may be lucky and have a landlord who appreciates all the good things you are doing. But none of them appreciate a shaggy looking farm, and if you have lower yields, they’ll lose patience pretty quickly.

Transitioning from conventional to direct seed is profound. You can do things in year five that would not have been possible in year one. If your yield drops, it may be you are transitioning too fast. Don’t get ahead of yourself. Everything you do or don’t do will have an effect on the future. Understand how each operation will affect the next one. Remember to ask, “Why am I doing this?”

Let Mother Nature help you! “Why am I doing this? Mother Nature is my silent partner; I need to work with her, not against her.”

Soil erosion is the worst enemy of production agriculture. Soil health, fertility, plant and soil-borne diseases and insects all present challenges. However, once the soil has washed or blown away, all of the best practices in the world will not bring it back. Not only do you lose soil, but valuable moisture is often overlooked or mismanaged. This is especially true in the higher rainfall areas of the Palouse, where we often take our moisture for granted.

Another enemy is compaction. It comes in many forms – vertical, horizontal, excess power, wet soil – and can be caused by tillage implements, tire pressure, soil type, and weather and moisture conditions. It is important to identify all these culprits and restrict their impact.

Equipment is important but not the solution. In our 25 years of farming we haven’t purchased a single piece of equipment to direct seed. We purchased the shredder in order to comply with the USDA residue requirements in the late 1980s and the J.D. 455 grain drill was simply the state of the art replacement of our old double disc opener grain drills - much improved!

Communicate with your partners, your landlords, and your hired help what your goals are and “why I am doing this.”

**SUMMARY**

We have been practicing direct seeding in the Palouse for the past 5 years. We have eliminated soil erosion and keep more moisture on those upper slopes. We have been successful in that we have not seen a decline in yields.
due to our tillage system. Both soil tilth and productivity have improved, and cost of production has declined. At the same time we have improved our over all farm efficiency.

Twenty years ago, we knew that the single biggest problem we had with reduced tillage in the Palouse was the volume of the residue. Few of us could conceive of how to deal with all that straw without a plow or a match. Managing residue is mostly a mechanical problem and today, with improved equipment, it is a problem of the past.

We still have a long way to go. Profitability, pest control, and the need for rotational crops remain the challenges for the future.

Why am I doing this?
Because I love the land, the life style, and a good challenge. Whether you call it no-till, direct seed, reduced tillage, or low impact agriculture – it’s really not the name, it’s the concept of using good science, an understanding of natural processes, and modern technology to produce food and fiber in a profitable, productive, and sust- tainable manner for the future.