

PRECISION FARMING

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Let's start with what my definition of precision farming is. I think it is to do something different to a specific part of a field for a specific reason. Whether that be seeding, fertilizing, tilling, spraying or even nothing at all like grassed waterways to prevent erosion. This is all accomplished through the accurate collection of data; whether that comes from a yield map, infra red photo, soil test, a note pad, etc. More importantly though is the accurate interpretation of this data.

The first thing that we have to do is check for the ringers in the crowd, the true precision farmers. That way David and I won't get killed on our presentation. So how many of you still farm with a one bottom horse plow or use a scythe to harvest your grain. No good. Now a lot of you may be thinking well that was a stupid question, but when you think about it they were the leaders of this industry. My grandfather started out that way. Now if you walk behind a one bottom plow working your field every year and cut your grain with a scythe and hand stooked it, I would be willing to bet they knew more about every inch of their land and yields than those of us with our 60' airseeder and our 30' straight cut combines and all the electronics in the world. Now most of them had the data but were very limited on what they could do with it.

My grandfather had one of the first pieces of precision fertilizer application equipment, a pitch fork. He knew that if he spread the manure from the barn on the hill top of the field he could grow a better crop there. Now he didn't understand the science behind the increase in water holding capacity, organic matter or even the fertility benefits. He couldn't read or write and barely spoke English but he knew that it worked. Unfortunately, you will find out as you progress that the more you learn the less we actually know or understand.

My father was no different. He noticed that wheat did very poorly on certain fields, certain types of forage grew better on different areas of the field. He made cropping decisions based on his knowledge, not understanding that it was a copper deficiency problem on the wheat and pH differences on the forages. So again making it work by a simple method even though not knowing the real reason. You will find that that may become a common theme.

As for myself, we started doing variable nitrogen applications with the old anhydrous applicator by speeding up, slowing down or not applying. No great technology involved but still got the results we wanted and made money. We also had an old Beeline applicator similar to a Valmar, only difference being that it was a two tank system with electric drive. This allowed us to vary our application



rate of Edge, Avadex, and Treflan to compensate for our big range of ph levels. It also allowed us to put down custom grass blends on the go. For example we would put timothy in one tank and alfalfa in the other tank and change the speed of the electric motor to change our blend. On the better soils we put a lot of alfalfa and very little timothy and on poorer spots the opposite. All the calculations had to be done ahead of time so you knew how far to turn the dials to get the proper numbers on the monitor but it worked and added to the bottom line. We even did the same thing with copper, applying a base rate to the field with higher rates where needed. All without a great deal of technology. We also used a similar idea with spraying Roundup - a low base rate and slowing down to increase the rate on quackgrass patches. Still nothing fancy.

From there we up graded to a Dickey-John cold flow kit on a deep tillage unit which gave us an infinite application rate plus greater accuracy even though we were still doing it manually. Even when we banded 46-0-0 with our air seeder we would have a rate for the front tank and the back tank to essentially give us four rates -- front, back, both on or both off.

Our present system is more complicated but still all manual controlled. It is a flexicoil 5000 with a 2320 and a 320 tank setup plus anhydrous. When operating at full capacity we have 2 rates for granular Avadex application to adjust for ph differences. We also change our seeding depth electronically on the go. On very sandy soils that are typically warm in the spring due to a lack of trash cover and will not crust over, we will seed deeper to get to the moisture to maintain even field germination. On 60% organic matter soils that are cooler in the spring due to trash but have good moisture, we will seed shallower to get faster germination. Along with this we still have infinite rate anhydrous with the Dickey-John unit. We also seed treat on the go and place the seed in paired rows with all the starter fertilizer between the two rows. We do all of this manually -- lot to keep track of, you bet. Why haven't I changed to something more automated? For a couple reasons. I still can't achieve full automation for everything I am presently doing, either due to machine or software limitations. And secondly it is still working and making me money. But most of all I'm cheap. Rumor has it some of my ancestors actually invented copper wire while fighting over a penny.

Now what the future holds for the next generation is almost an unknown due to how rapidly everything is changing. In the near future, better electronics and new technologies will lead to controlled traffic lanes in the field, and driverless tractor. The distant future may be the use of nano robots, nano lasers and molecular traps for data collection and desk top manufacturing for the on-farm processing of our high tech commodities.

Now for a few tips to hopefully help you on your journey. Look at your present equipment to see what can be done to help. Maybe adding an nh3 controller and some banding knives to your old deep tillage may be a start that works and is affordable. From there decide where you would like to go, and how you would like to get there and more importantly will the dollars invested pay for its self to get you there. Decide how precise do I need to be? Do I need a prescription map for fertilizer application since the hired man is doing it or am I the only one doing it and I can do it manually? Do I need to look at every acre or just bigger areas in the field. Look to see if the problem you want to solve can be solved or diagnosed. Look at the data from some my seeding rate trial done at my place last year. Highest sclerotinia rates were on the lowest seeding rates, but there was no difference in yield. Some what confusing? Back to that "don't understand it all" again.

So in closing, have a plan, even if it is just to tick the neighbor off because your rows are straighter than his. Try lots of different equipment before you buy something. But most of all, talk to as many people as possible and ask as many intelligent and dumb questions as possible.

So if you're leaving here with more questions than answers and some what confused, that means you probably learned something or I did a real bad job. Remember there are a lot of tons of soil in one acre.