

CONSERVATION CROPPING SYSTEMS PROJECT

8th ANNUAL REPORT
2009



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Kelly Cooper Farm Manager

March 8, 2010

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PROJECT DESCRIPTION

The Conservation Cropping Systems Project (CCSP) is located on a 130-acre tract of farm land two miles south of Forman, ND along Highway 32, Figure 1. A 14 member Board of Directors composed of local producers in northeastern South Dakota and southeastern North Dakota advises the CCSP staff. Diverse crops are grown in rotations that range from one to six years under no-till, strip till, shank and disk drill cropping systems. Rotations are demonstrated to look at their effect on water and wind erosion, soil tilth, soil moisture retention, organic matter changes, and profitability. Each crop within a rotation is grown every year and

replicated three times. Other practices are done including variety trails, livestock waste applications, carbon sequestration studies, weed control experiments, and equipment demos to name a few.

The project provides producers data and physical observations that allows them to see advantages and disadvantages of a range of crop rotations in no-till and conservation crop production. The effective use of crop rotations to break weed, disease, and insect cycles is demonstrated. The placement of legumes in rotations reduces dependence on fertilizer N. The ability to efficiently cycle plant nutrients in diverse rotations reduces nutrient runoff into surface water and leaching into ground water. This project is a living classroom to demonstrate that agriculture can produce food, fuel and fiber in an environmentally favorable manner, preserving and enhancing soil, wildlife habitat and water quality, while providing producers with good economic returns.

PROJECT PURPOSE

Our goal is to demonstrate profitable farming methods, machinery, and philosophies that promote soil and water conservation.

PROJECT SPONSORS

The Conservation Cropping System Project is funded through the sponsorship of governmental, corporate and private parties. The Wild Rice Soil Conservation District is the principle cooperating agency, supplying office space, facilities and administration of the project. Other cooperating agencies are the Natural Resources Conservation Service (NRCS), North Dakota State University (NDSU), South Dakota State University (SDSU). Sponsorship is either as a cash donation, in-kind or both. There are four levels of sponsorship: Platinum (\$10,000 or greater), gold (\$5,000 - \$9,999), silver (\$2,500 - \$4,999) and bronze (\$500 - \$2,499). We wish to thank our sponsors listed on the next page for their support! Without them this project would not exist.

2009 PROJECT SPONSORS

Platinum

Ducks Unlimited/Bayer Crop Science
North Dakota Community Foundation
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Wild Rice Soil Conservation District

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Farmer Union Oil Co.;
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Valent

Special Thanks

Bill Smith
Doug Askerooth
Crete Grain
Dave Kinzler
Marshall County SCD
Neiber Auctioneering
Walt Albus



Figure 1. 2009 overhead view of the Conservation Cropping Systems Project.

CROP ROTATIONS AT CCSP

Fifteen cropping systems and rotations ranging from one to six years in length are being studied, (see figure 2). Six crops are present in rotations: HRSW, HRWW, corn, soybean, alfalfa and flax. Switch grass, new in 2007, has been planted in bulk area 1 and was the 7th crop to be grown on the farm. We want to look at switch grass as a possible energy crop that could be planted on existing CRP acres or any land coming out of CRP. The idea being that switch grass would offer wildlife and erosion control benefits without sacrificing the opportunity to participate in financially lucrative commodity markets. Cover crops were added in 2008. These can include a whole host of traditional and non-traditional crops that work to pull up and stabilize nutrients, manage salinity, and improve soil health. Three seeding techniques: disk drill, shank drill and strip till, are being studied within the HRSW-HRWW-corn-soybean rotation. New in 2009 was the addition of a prototype “Twin Disc” drill from Amity Technology which was used on a limited basis with cover crops, soybeans, and winter wheat. Additional crops

are added and subtracted as deemed desirable. Key considerations of rotations are their profitability, weed/insect control, moisture use or savings, and something we could call farm synergy. Rotations do a wonderful job of giving a farmer built-in opportunities to manage weed and insect resistance, spread manure, pick rocks, graze cattle, plant cover crops and so forth.

CCSP Rotation Key	
spring wheat/winter wheat/corn/soybeans - disk drill	A
spring wheat/winter wheat-st/corn/soybeans - shank drill	B
spring wheat/winter wheat-st/corn/soybeans	C
spring wheat-st/corn/soybeans	D
spring wheat/soybeans	E
corn/soybeans-st	F
spring wheat-st/corn/soybeans/corn/soybeans	G
continues corn since 2006-st	H6
continues corn since 2008-st	H8
spring wheat/winter wheat/flax-st/corn-st/corn/soybeans	I
winter wheat/soybeans/corn-st/corn/flax	J
winter wheat-cc-st/corn/soybeans	KH
spring wheat/winter wheat-st/corn-st/corn/soybeans/soybeans	L
spring wheat/winter wheat/soybeans/corn-st/corn/soybeans	M
spring wheat/winter wheat/alfalfa/alfalfa/corn/soybeans	N
corn/cover crop	O

note-st denotes strip till operation, cc-denotes cover crop

Figure 2. Crop rotations at the Cropping Systems Project at Forman, ND, 2009.

and abundant snow. March and April were below normal temperature wise and snow was slow to melt. See Figure 4 below. This year was the first time since I became farm manager that spring wheat was not planted on April 19. Wet conditions delayed planting until May 6. The year continued with a lack of high temperatures with all crops being delayed in maturity. Hail was not present at the plots this year. There were some high winds but damage was limited to some of the corn on corn plots. That corn was still able to be harvested. October brought sustained wetness. In looking through the daily weather logs of our local co-op observer, the maximum number of continuous days without precipitation was two 3 day periods. Foliage stayed wet all day. Water flowed out of the plots until freeze up.

Calendar year 2009 Weather							
Month	Temperature (f)			Precipitation (in)			deviation
	64 Yr Mean	2009 Mean	deviation	64 Yr Mean	2009 Total	deviation	
January	7.6	4.0	-3.6	0.50	0.48	-0.02	
February	11.9	12.0	0.1	0.50	0.64	0.14	
March	26.0	23.0	-3.0	0.80	1.62	0.82	
April	44.0	42.0	-2.0	2.01	0.87	-1.14	
May	55.7	56.0	0.3	2.95	1.68	-1.27	
June	65.0	64.0	-1.0	3.60	4.96	1.36	
July	70.1	67.0	-3.1	2.88	1.81	-1.07	
August	68.2	67.0	-1.2	2.75	2.95	0.20	
September	59.5	64.0	4.5	2.07	3.96	1.89	
October	46.0	40.0	-6.0	1.35	4.91	3.56	
November	28.6	38.0	9.4	0.60	0.55	-0.05	
December	15.3	10.0	-5.3	0.60	1.25	0.65	
mean total	41.5	40.6	-0.9	20.61	25.68	5.07	
note: Temps are from Oakes ndawn, growing season precip is CCSP farm Non growing season precip from local NOAA coop observer se of Forman							

Figure 4. Growing season temperature and precipitation 2009

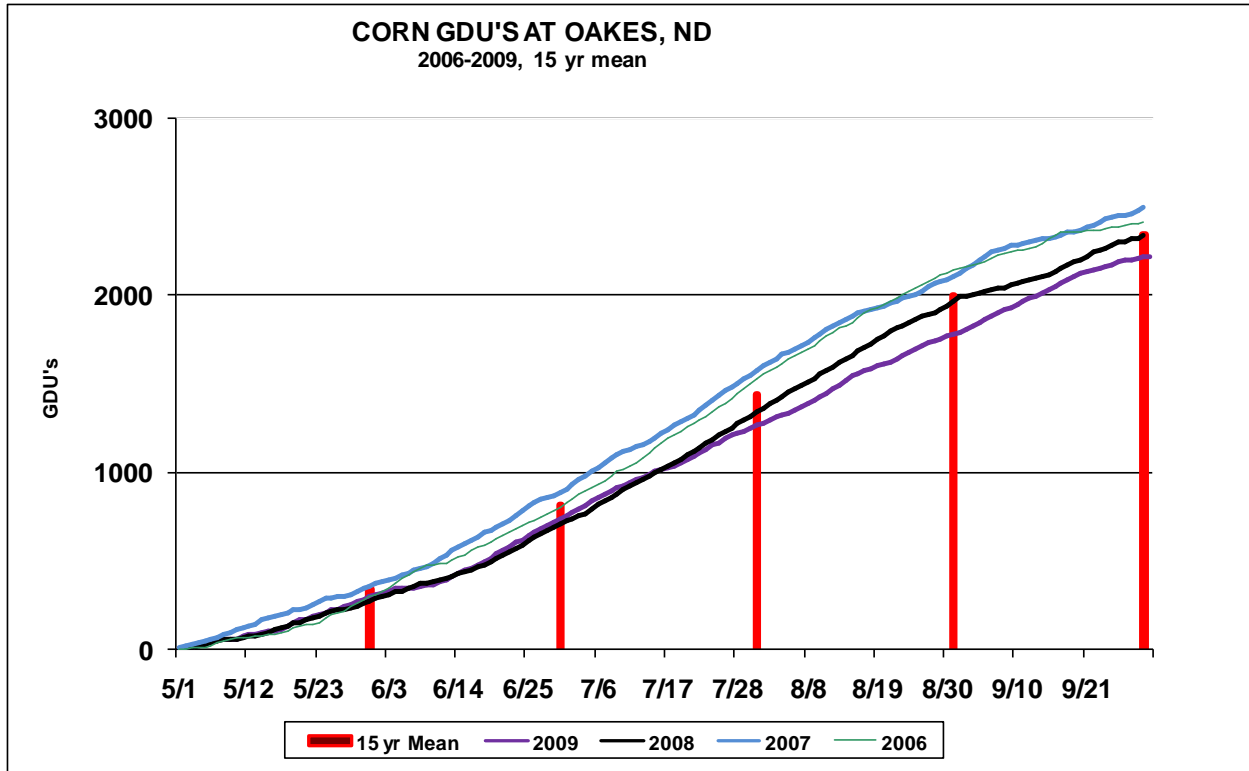


Figure 5. Growing degree units accumulated for corn at Forman, ND, 2219 in 2009 May 1- Sept 30 and the 15-yr mean of 2345.

Crop	Planting Date	Harvest Date	Planting Rate	Chemical	Rate	Date
Alfalfa 2nd Yr Dairyland HybriForce 400	8/3/2007	June July	20lbs	RU/24D/ (kill out)	44 oz+1.5pts	09/17/09
Alfalfa(establish) Dairyland HybriForce 400	8/4/2008		20 lbs	Select Max	12 oz+NIS	08/30/09
	Planting	Harvest				
HRSW Faller	5/6/2009	8/26/2009	120 lbs	Wolverine	1.7 pts	06/01/09
				Interlock	4 oz	06/01/09
				Prosario + NIS	6.5 oz	07/03/09
				Round Up Ultra Max	22 oz	08/13/09
	Planting	Harvest				
HRWW Westbred		8/5/2009	114 #	Wolverine	1.7pts	05/22/09
Smokey Hill	9/20-9/21-08			Stratego	4 oz/acre	05/22/09
on Spr wht and Flax -817 on Soybean	9/24/2008			Interlock	4 oz	05/22/09
				Prosario + NIS	6.5 oz	06/15/09
				Round Up Ultra Max	22 oz	07/18/09
	Planting	Harvest				
Corn	5/12-5/20	11/22/2009	32,000	Roundup Ultra Max II	22 oz	05/29/09
				Laudis	3 oz	05/29/09
Strip tilling done	11/19/2008			Buctril	6 oz	05/29/09
				Interlock	6 oz	05/29/09
				Roundup Ultra Max II	32 oz	07/01/09
				Interlock	4 oz	07/01/09
	Planting	Harvest				
Soybean	5/23/2009	11/6/2009	180,000	32 ozRU+1.5 24-d+2oz valor		11/3+4/2008
				Roundup Ultra Max II	22 oz	6/23-25/09
				Roundup Ultra Max II	22 oz	07/18/09
Rolled at unifoliolate stage 80 degrees no damage 6/14/09						
	Planting	Harvest				
Flax	5/18/2009	8/18/2008	120#	Round Up Ultra Max	44 oz	11/3+4/2008
				2-4d	1.5 pt	11/3+4/2008
				Valor	2 oz	11/3+4/2008
				Callisto	6 oz	05/21/09
				Select Max	16 oz	07/01/09
				Roundup Ultra Max II	22 oz	8/10/2008
Fertilizer						
Corn received 125 lbs nitrogen at planting, 2nd year corn had extra 50 lbs stream barred						
All plot received 45 lbs P. , Avipel powder was added to seeded for bird protection						
Winter Wheat at planting 78 lbs 11-52-0, 2 spring stream bar apps, 1rst 75 lbs, 2nd at 60 lbs.						
Spring Wheat at planting 105 lbs 11-52-0, 1 stream bar app one at 105 lbs						
Soybeans 10 gallons 10-34-0						
Flax 50 lbs n stream bar during light rain						

Figure 6. Crop Inputs and timing.

AGRONOMIC PRACTICES AND YIELD

A general outline of agronomic practices used is listed in Figure 6.

Wheat: WestBred "Smokey Hill" HRWW was planted on September 21-22, 2008 with a John Deere (JD) 1560 single disk drill in the 3 disk drill plots (Rotation "A") with the balance of the plots seeded with a 10-foot Concord air drill with triple shot Anderson seed boots at a 10-inch spacing. Faller spring wheat was planted with the JD 1560 drill and the Concord drill on May 6, 2009. Starter fertilizer at a rate of 78 lb/ac of 11-55-0 was placed with the winter wheat seed in all non alfalfa winter wheat plots. Fertilizer nitrogen applications of 28-0-0 were applied with stream bars to HRWW on May 9-75 lbs as N, and 60 lbs N again on May 27. An application of 105 lbs N as 28-0-0 with stream bars was applied to HRSW on May 27th

Flax: York flax was planted with the John Deere 1560 on May 18. Flax received a post application of 50 lbs/ac Nitrogen as 28-0-0.

Corn: Main Varieties planted were Dk 43-27, and Pioneer 38M60. Variety trial corn included the aforementioned varieties plus Croplan 2924VT3 , Croplan 321 VT3, and Pioneer 9494XR. Corn was planted in several different trails as well as the rotations. Variety, strip till, corn on corn, and corn nematode seed treatments were addressed. The first corn was planted May 12 and finished May 20. Two plots were replanted May 31. All corn planted at setting of 32,097. Fertilizer at planting was 125 lbs nitrogen and 45 lbs phosphorus including 5 gallons 10-34 infurrow. The corn on corn received another 50 lbs with a streambar application. Strip tilling was done on slightly frozen ground to the appropriate plots on November 19th 2008.

Soybeans: Pioneer 90M92 and 90M01 were planted May 23 at 180K population with 10 gallons 10-34-0 sidebanded. The early maturing 90M01 soybeans were planted where winter wheat is seeded in the fall.

Alfalfa: Dairyland Hybriforce-400 alfalfa was planted August 4, 2008 @20 lbs / acre.

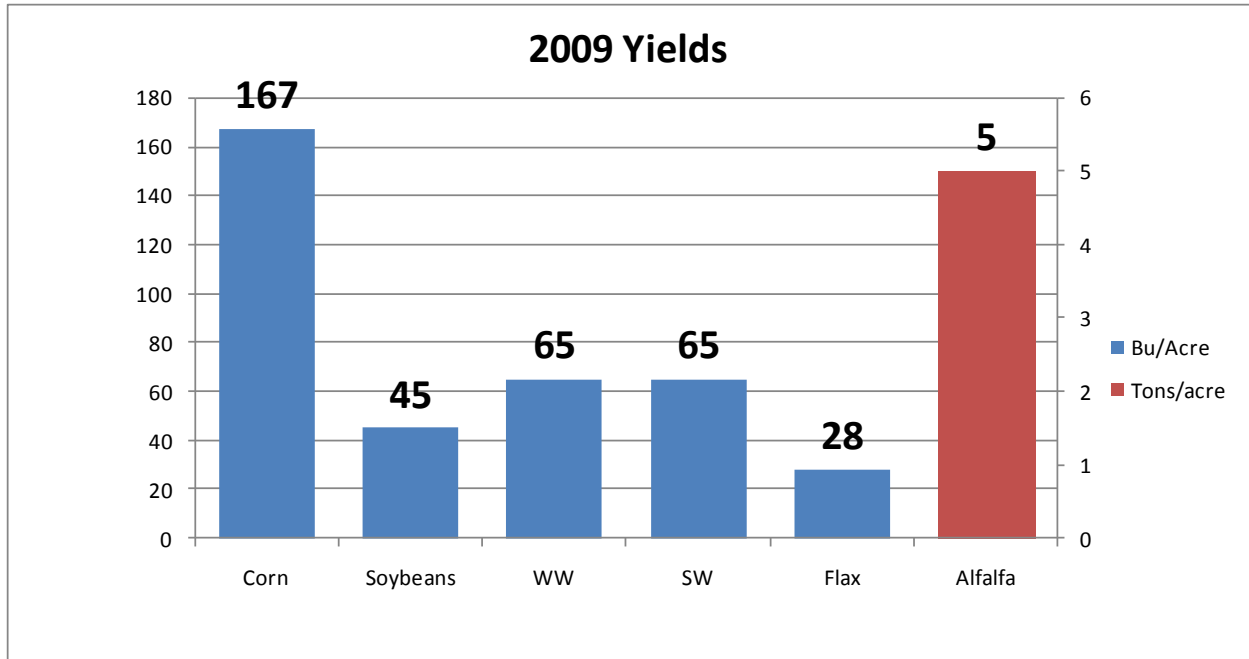


Figure 7. Crop yield averaged across all rotations at the Conservation Cropping Systems Project in 2009.

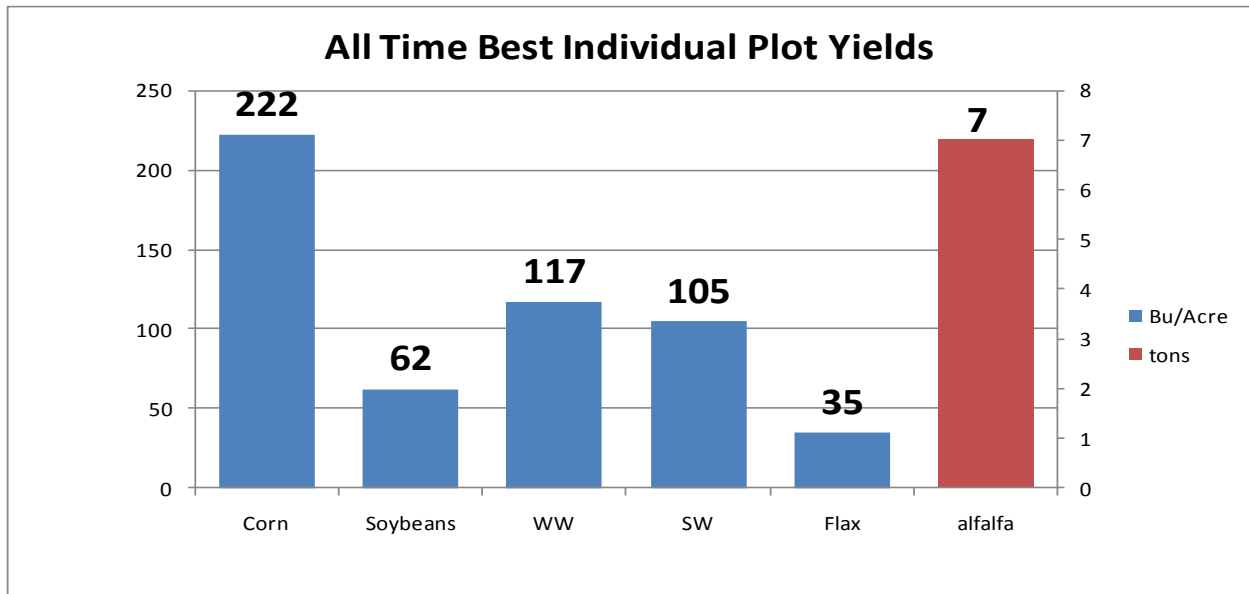


Figure 8. Best individual plot yields to date.

Crop observations

For rotation key see figure 2 on page 6.

Wheat

Smokey Hill Winter wheat, a WestBred variety was planted on schedule September 20-21. The early soybeans were combined and a WestBred experimental winter wheat planted into the stubble on September 24. Smokey Hill is a variety better suited for warmer areas than North Dakota but we wanted to see how it would overwinter planted into good spring wheat stubble and also in the thinner cover of a previous flax crop. The experimental, as yet un-named variety -817 was planted on the most risky plots of early maturing soybeans. The fall was warm late and the winter wheat grew very well. The first snowfall gave excellent cover in the stubble plots. Our biggest issue on the winter wheat plots is black bird damage. Some plots close to sloughs are especially hard hit. In spite of this persistent pressure, yields stay impressive. The WestBred experimental, -817, did suffer some winter kill on the soybean stubble where little protection was present, but it stood out sufficiently to look normal at harvest. One plot of this variety was planted next to an old winter wheat plot that did not get a late round up spray. Wheat streak spread into the corner of the plot, but the yield still held up fairly well at 60. The Smokey Hill came through just fine in the tall spring wheat stubble and did well in the flax stubble as well. I felt the early prolonged soil wetness and lack of good growing conditions in late April and early May reduced yields. Spring wheat with the latter then average seeding dates grew faster and I believe was healthier. Average of all winter wheat yields was 65 bu with the top yielding plot at 79 bushels. Protein average was 12.05. It was a wonderful year for spring wheat in spite of the late seeding. Comments were made regarding late planting and the potential for spring wheat to be hurt by hot temperature at flowering and filling, but hot weather was not a problem this year. Spring wheat planted in the area did very well. We planted Faller this year on May 6. I was quite amazed that the 1560 John Deere drill planted in as wet of conditions as we had. Residue management is of course the key as an even cover of soybean residue supports the tires and keeps the discs clean on the drill. Prosaro fungicide was applied to both winter and spring wheat at early flowering. Scab did not show up in the grain samples in any significant amounts. We used Wolverine for weed control which proved effective. A small amount of wild oats were present in the spring wheat as the timing was on the late side do to the late planting which allowed wild oats a head start.

Flax

This was another good flax year. In the early development wet soils caused some yellowing that went away once temperatures became at least moderately warm. We had our highest average and best yielding plot to date. York flax was planted May 18, into very wet soil. Weed control was rather aggressive with a fall application of Round-Up, Valor, and 2-4D. Callisto was applied at 6 oz after planting. Weather did not permit the application of Bromoxynil. Select was applied just prior to bloom. Round up was applied pre-harvest. We straight cut the flax easily and were happy with the quality.

Corn

With the wet spring, corn was planted as early as possible on any plot that could be gotten across. Depth was set at a strong 2 inches. Avipel was used on all corn to repel pheasants and blackbirds. Residue managers could not be used as they would only expose excessively wet soil that would end up plugging the planter. As any wet year on no-till, residue can be an advantage. If the ground is just wet, not fully saturated, you can drive across it and plant as long as there is a continuous layer of residue on the surface. This year however, much of the ground was just too soft. The strip tilled ground was different this year. My best guess was that during the snow melt, the tilled soil liquefied and lost structure resulting in a seed bed that was not the nice mellow fluffy soil as we had in 2008. Planting was completed in 8 days. Stands turned out very well except on the straight no-till corn into winter wheat where there was no strip till. Notable this year was the direct seeded corn on corn (153-165bu) did better than the direct seeded corn into winter wheat(131 bu). This is the opposite of last year when the direct seeded corn into winter wheat stubble was the best yielding when considering landscape. This just goes to show that if you are in a dry area, nothing will beat standing wheat stubble for saving soil moisture. When moisture is high, the best yielding corn will be on the alfalfa ground as we have seen this happen several years. This is also direct seeded with no disturbance. I would speculate that the old alfalfa ground is dried out deeper, and also the decaying roots are all good for the corn on a wet year. When the year is dry the corn suffers on the alfalfa ground.

We did a variety and strip till plot in Bulk Area 8 this year. We strip tilled ever other pass of 8 rows last fall and then this spring planted 4 rows of each variety in the strip tilled pass and also in the non strip tilled pass right beside it. The strip till machine is an eight row CaseIH NTX 5310- 3 point mount. The previous crop was soybeans. 3 rows were combined out of each pass. The results are in figure 11. Yield response to strip tilling was dramatic. The trial was not replicated, but all varieties yielded better and had lower moisture at harvest where we had strip tilled. There is large difference in yield in all but one variety. Strip tilling in general has shown a yield advantage on the CCSP farm. In 2008 however yields were a few bushels less. I think that in low rainfall conditions, you can't afford to lose any moisture that would be utilized during the growing season or getting the seed germinated. Black soil, even in a strip will lose moisture to evaporation that covered soil will not. Since rainfall and timing are beyond our ability to predict, one must use their best judgment on picking their options.

Strip tilling, as most other things this past year was difficult to get done. With excessive wet conditions in the fall of 2008, I decided to wait for the ground to partially freeze up before strip tilling. This does not give a very big window of time to get the work done but we were successful. Many people have done strip tilling in the spring as well. I would like to try re-strip tilling this next spring. Getting the soil dried out enough to plant is a struggle with excess moisture and all of us have battled this for the last couple of springs and the coming spring looks to be wet again. Many farmers are using some type

of minimal disturbance implement. It would be my hope that if needed, the strip till machine could be used to lightly stir and dry out the strips where seeding could be done in a short time period. Running the strip till machine shallow and fast should take little fuel and not take too much time.

We also did a nematode seed treatment study in cooperation with Syngenta. The full results have not been made available as of this report date, but yields were not improved at our site. Soil tests for nematodes were taken and the sites were monitored during the growing season. I again would be speculating but I think that nematodes were not a significant cause of the lower yields of 2nd year corn on our farm. I hope to continue using this seed treatment for another year to get more data.

Avipel was used on all corn, with no checks left. All varmint problems were blamed on gophers and I could not see that birds did any damage. I planted sweet corn in a couple of plots that are always hard hit by blackbirds as the plants are just emerging. This year the stands were excellent. So, I do not have any side by side or replicated data, but I will be using avipel next year if a section 18 is again granted.

2009 was a very stressful year for farmers growing corn and beans. GDU's were low this year and moisture high. These types of years produce an abundance of unusual quirks. With all the below normal temperatures, September turned out to be the 3rd warmest month on record in North Dakota. That, along with the fact we did not get an early hard frost, allowed an extremely late corn and bean crop to mature. Mature yes, dry down? Mostly not. I have heard of some varieties and a few fields that were 18-19% at harvest, but not many. As indicated by local elevators, 18% moisture corn was indeed rare as drying speed was extremely slow causing many elevators to close down in the early afternoon to let dryers catch. Day length of corn will of course make a difference, but I am thinking that in this area, if you planted after May 20th moisture was still pretty nasty, >30%, by the 1st of December. Most corn in the immediate area around Forman has been combined but other areas nearby still have corn standing.

Soybeans

Soybean seeding went much better than corn planting. Pioneer 90M92 was seeded in the majority of the plots with Pioneer 90M01 seeded in the early harvest plots. All plots were planted May 23. I seeded 1 notch deeper than last year, just a little more than an inch. Moisture was of course not an issue so all beans came up nicely and stand was good. I was not able to roll the beans before emergence, and on the advice of a board member rolled the beans after emergence. Eric Delahoyde obtained some information gathered by Pioneer that showed little if any damage would occur if rolling was done at the unifoliate stage. Fortunately a roller became available when the beans were in the

proper stage and it was a nice warm sunny day. I was a little nervous especially since the 40 ft roller would double up in the middle of the plots. As it turned out the only damage that was observed was where a bean plant was squished against a corn cob from the previous corn crop and this was no big deal at all. Even when the roller doubled or tripled up no problems were seen. I would not be afraid to do this again but would be careful of temperature. Bean yields were good on the plots, mostly in the 40's. This of course does not reflect areas close to sloughs as all plots are pretty much on higher ground. In 2 of our bulk areas we had beans that were planted later and next to sloughs yields were considerable less. On the larger Bulk Area we used the new Amity drill and stand and yield were good. The first pass was made without setting the speed meter, which resulted in a 10x seeding rate. It was interesting to observe this very heavy population ended up yielding very well.

Many of our non-plot or inner plots, areas that have drains or are next to sloughs and cannot be used for plots were seeded to soybeans this year. Since we have been turning on some of these areas for planting and combining, compaction has gotten to be an issue. I decided to use the strip till machine prior to planting beans in some of these areas and felt it was successful. Under normal conditions, beans do very well direct planted. This year was of course abnormal in many ways. Strip tilling for beans in some areas may be an option worth considering.

Alfalfa

Again in 2009 alfalfa continues to be a fun crop to grow on the demo farm as stand establishment is so easy when fall seeded into winter wheat stubble. Our procedure is to bale the straw off if possible and then double plant with the 1560 drill direct into the stubble. We have been planting Dairyland Hybriforce 400 at 20 lbs, 10 lbs a pass. Every year it seems to work. I am sure we will hit a year with a dry fall sooner or later. By seeding in early August we often receive a timely rain that in combination with longer nights and cooler days of fall alfalfa seems to catch very well. The wheat stubble helps hold the moisture at the soil surface and when winter comes the stubble catches snow and protects the young plants. We grow the alfalfa 2 years and it is sprayed out in the fall of the second year. The following spring corn is seeded directly into what is arguably the nicest seed bed on the farm. The first corn crop tends to be either the best or the poorest, depending on moisture. This year with high rainfall, the corn yield on alfalfa was the best.

Cover Crops

This is our second year of cover crops. The planned areas which were typical of places most farmers would plant cover crops were too wet until mid July. A number of plots were seeded with various mixes and seeded with different drills. Seeders used: John Deere 1560, Concorde air drill, Amity twin disc, John Deere 7200 row crop planter, and the broadcast was done by using the Concorde out of ground and lowering the ground

driven seed metering wheel. Broadcast did not work well, as others have found. Small seeds like turnips will fair OK. The 7200, Amity, and Concorde (in ground) did well. The 1560 should work well but the one we have is worn out and did not give good results. We have a new drill coming for 2010 to look forward to. Finding cover crop seed in the ground is difficult since it is often the same color and size as soil peds. Cocktail cover crop mixtures are usually seeded shallow so it is important to see what the drill is doing. In 2010 I want to try some common dyes on the seed to see if that will help in getting drills set properly.

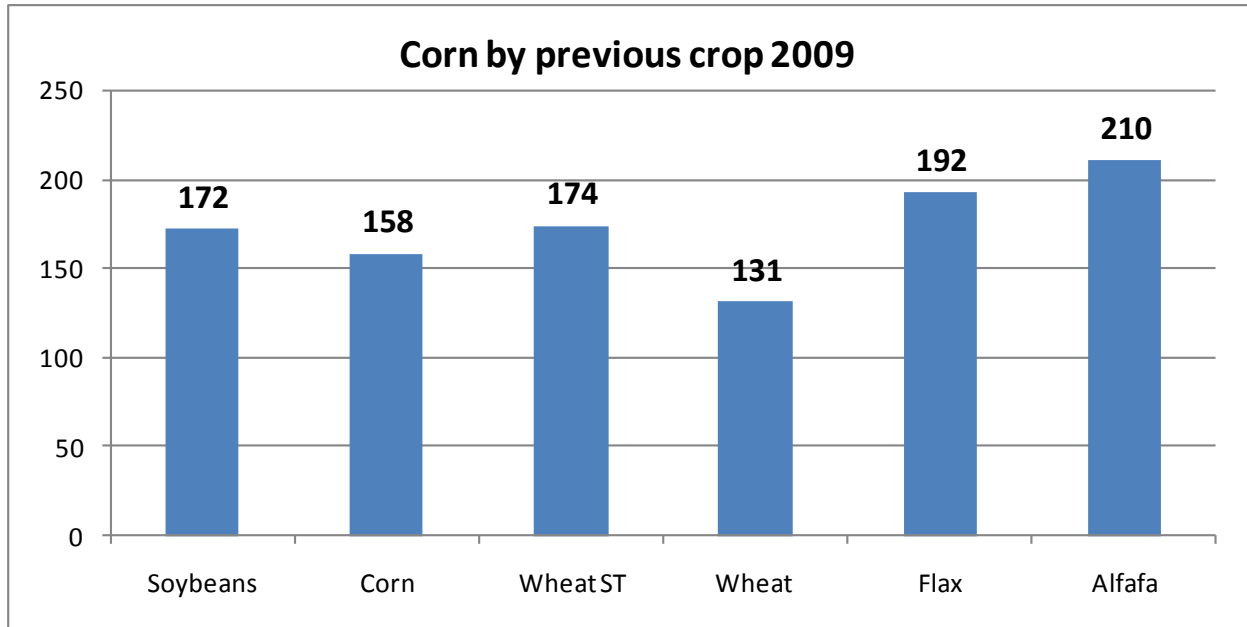
Picking a cover crop to plant can be simple or complicated. It may be as simple as having some old barley left over from a couple of years ago, to tailoring a mix of warm and cool season plants with legumes for building nitrogen to special grazing mixes, or habitats for specific wildlife. Salinity management is a serious issue and can also be addressed by cover crops. Our featured speaker at this year's field day, Lee Briese, is dedicating a portion of his career to managing salinity issues. He says there is no easy fix to the problem but fundamentally, you need to get something growing in this areas and keep them growing. Otherwise the problem will continue to get worse. Lee states that not only is planting the proper crop important but so is timing. Once a plant gets past the seedling stage, it has a much greater capacity to deal with salt. A perennial plant would be best, followed by a winter annual. The issue gets complicated because many plants can be salt tolerant but they cannot be flooded. What we do know is that keeping these areas black is the worst thing to do.

A few comments based on our experience with cover crops this year.

- They need to be seeded properly. Broadcast did not produce a desirable stand.
- Be thinking about weeds and herbicides. Always spray prior to seeding. If the area you want to plant has weed problems, plan at least a kill down spray late in the fall. Consider your goals for the cover crop and when the weeds will have to be killed. For instance if you want to kill volunteer grains, Selectmax or like products could be used that would not hurt most broadleaf cover crops.
- Get rapid establishment for best results and weed suppression. Take advantage of approaching weather systems.
- Consider application of nitrogen fertilizer or mixes with legumes. We saw improved growth and more frost tolerance with adding nitrogen on radishes.
- Earlier seeding is better. This was a cold year and late planted cover crops did not get good growth.
- Salinity management is not as simple as planting salt tolerant crops. Many salt tolerant crops do poorly as seedlings and just never really get going in adverse conditions. Timing is important. If possible pick a time to seed after drying has occurred and some light rains afterward. The idea is to have some downward movement of salt out of the germination zone. This will give you a better chance of getting the plant through the critical germination and seedling stage. After that, many plants can grow. Spreading straw after seeding may be something that would help as was demonstrated in the Valley City area by the Barnes county SCD. The theory is that by spreading a mulch

you are reducing upward movements of salts by limiting drying. Then, with light rains you may actually move salts down for a long enough period to get the plants germinated and past the seedling stage. Stay tuned, as Barnes County will continue their work and we are planning to try some mulch ourselves.

Rotation effects



Note: The "Wheat ST" was Strip tilled
 9. Effect on corn yield by previous crop

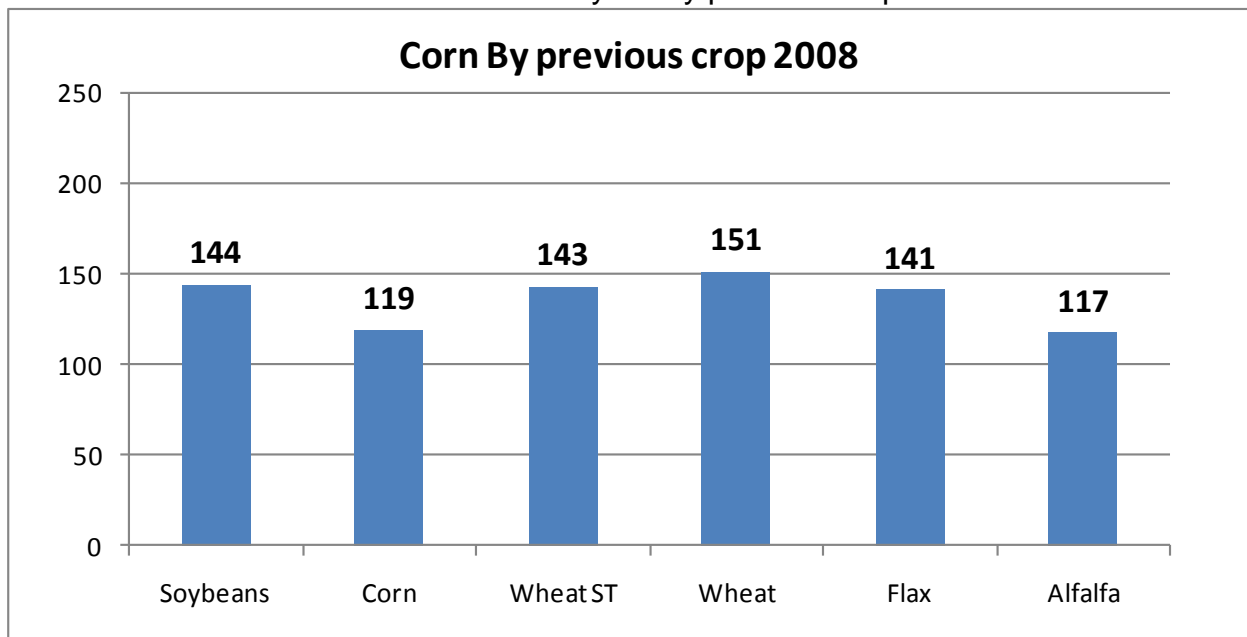


Figure 10. Dry year yields.

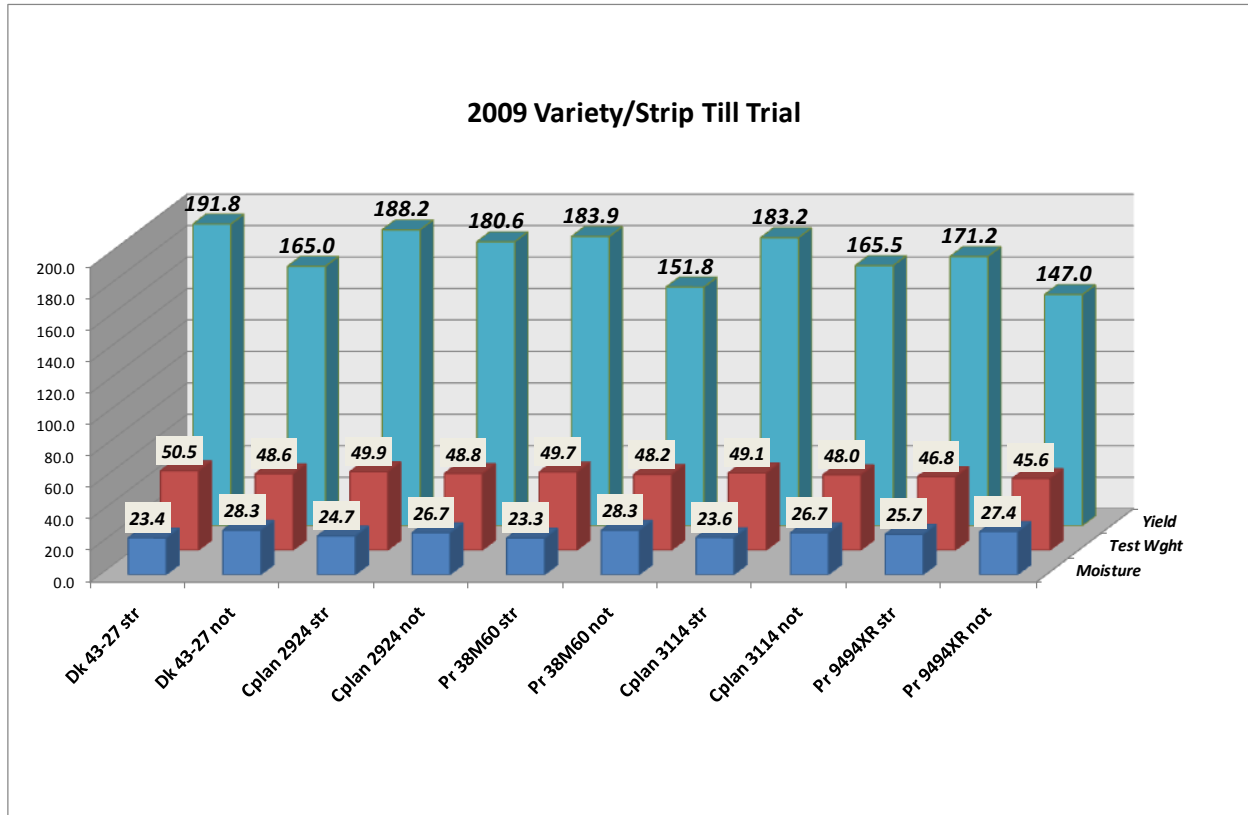


Figure 11. Variety/Strip Till Trial

Note: str following variety indicates strip tilled, Not indicates no strip till.
Old crop was soybeans.

A copy of all our annual reports, more detailed yield graphs and tables, periodic crop updates and comments can be found on our website, www.notillfarm.org.

Education

Our goal at CCSP is to promote conservation practices that are economically feasible for producers to utilize. Our main field day was held on July 9, 2009 where nearly 200 people attended. Again this year we hosted a tour of NRCS employees in the afternoon before the main field day. Later in the afternoon we had our main tour. "Farm Talk with Mick Kjar" was broadcast live from the tour where many of the board members, guests and members of the CCSP staff were able to visit live on the radio about their interests in conservation farming.

Impromptu small tours with sponsors, producers, or any interested group are always welcome. We look forward to the open exchange of ideas. Our next field day is scheduled for Thursday July 15, 2010.

Final comments from the Farm Manager.

Sponsors keep this project going so I want to thank all who have given their time, money, and talents in an effort to keep soil productive and available to feed a future world.

2009 was the kind of year you like to say goodbye to. Unfortunately even though the calendar has changed, some of last year's crop still remains, and most of last year's water. It seemed every operation was done in an unsatisfactory manor in an unsatisfactory time frame, but things did get done. It was not like having 100% hail, or a fire, but it was like being held on the brink of disaster the whole year, and then having things work out, such as the warm September, for example. Without the 3rd warmest September on record, we would not have been complaining about high moisture corn, because the corn would have been far too immature to combine. Also most important, we did not get an early killing frost that would have made the warm September a mute point. I know that there are areas of our two states worse than we are here and you don't have to go very far away to find them. Just to the south of us way more rain fell with devastating results. People could not cut silage because of the mud, beans were left until freeze up, and corn is still out. Just speaking about our CCSP farm, crops did well. Planting was late, with only two plots that did not get planted, and those were used for cover crops. We got all the row crop off and the yield was good. Strip tilling was finished just as the ground was getting too frozen to pull the machine. I would have liked to put Valor on for soybeans next year, but temperatures were just barely warm enough and I did not want to get froze out with a tank full of spray. All CCSP crop was hauled to the elevator, but our board members are still drying and moving corn, with the predictable problems of dryer fires, damaged corn, frozen corn and the like. Enough whining, but I always like to give a feeling of what the year felt like in this part of the report.

The tough question in years like this is how do you maintain a conservation plan on your farm when systems are in place to save moisture, when you desperately need to get rid of excess moisture? The prudent answer is to use a proper degree of fall back. Many people want to maintain a zero soil disturbance, but working the ground does dry things out. Coulter implements are being used for that purpose and they do at least leave a lot of residue on the soil surface, so not all of your soil armor is being lost. Cover crops can come into play as well. Not only was October above normal in precipitation, there was very little sunshine resulting in little if any evaporation. One of our cover crop plots that was on a side hill, following winter wheat, had water coming out of it from the middle of October until freeze up. It was a genuine flowing spring. No till has been well proven to increase rain fall infiltration, but let's face it, full is full, and water is going to move sideways. Tile drainage may be an overall palatable solution if we are going to be dealing with these levels of moisture long term and we still want to grow crops. I have also seen tile systems overwhelmed as well. One area that I was working with in the mid nineties got hit with several large rains in a week's

time resulting in over 12 inches of total rainfall. The tile systems were only designed to remove 6 inches in a whole year. The potato crops in that area were all zeroed out. Otherwise we may consider perennial vegetation on at least some portion of our land. CRP is being seriously considered and implemented by a number of land owners in our area. The benefits are not only economical short term, but long term if this stops the progression of salinity.

I have observed that farmers are finding ways to deal with the high moisture, especially when it comes to equipment. One observation by a board member who cuts silage was that no-till corn was able to be cut where conventional tillage corn was not. It seems the machine just sank in the conventional tillage but was supported in the no till. The soil structure of no-till is definitely an advantage. I have found the same thing in planting wheat on soybean ground. At a recent meeting the development of perennial grain crops was being discussed. New developments in genetic engineering, such as multiplex automated genome engineering (MAGE), where multiple genes instead of single genes, can be inserted all at once into bacteria, offer another level of possibilities. I do not believe this process can be used in plants at this time. It is interesting to consider the possibility of wheat or any other crop that could grow year around, utilizing late fall and early spring sun and moisture. Could multiple perennial crops be grown in the same field, with one crop in dormancy while another crop produces seed?

Yes, we do have challenges, but having excess water to deal with is still better than no water. I remember the dry years of the 70's and 80's and that was no picnic either. Driving around the country I can see we still produced a lot of crop this year as evident by the large piles of wheat, corn and soybeans outside of elevators and farms that would not fit into bins. That is indeed a blessing we can all be thankful for.



Tour stop at 2009 summer field day.