CONSERVATION CROPPING SYSTEMS PROJECT

6th ANNUAL REPORT
2007

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Kelly Cooper Farm Manager

April 15, 2008

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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. Professionals from agricultural research, as well as natural resource conservation agencies and non-profit interest groups, assist the Board with technical advice and support. Diverse crops are grown in rotations that range from two to six years under no-till cropping systems. Rotations are studied to compare their effect on water and wind erosion, soil tilth, soil moisture retention,

organic matter changes, infiltration and most importantly, profitability. Each crop within a rotation is grown every year and replicated three times. This project has a planned duration of at least 12 years. The goal is for this demonstration to go on indefinitely.

The project provides producers data that allows them to qualify and quantify the advantages and disadvantages of a range of crop rotations in no-till 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 will be a living classroom to demonstrate that agriculture can produce food and fiber in an environmentally favorable manner, preserving and enhancing wildlife habitat and water quality, while providing producers with good economic returns.

PROJECT PURPOSE

The landscape of eastern ND and SD is dissected by numerous tributaries and sub-watersheds that eventually end up in Hudson Bay or the Gulf of Mexico. The land is composed of rolling topography and wetland complexes of the prairie coteau, undulating features of the drift prairies, transitional beach ridges and the level cropland of the Red River Valley Basin. The sub-humid to semi-arid climate of this region receives significantly more precipitation than the central and western Dakotas. The growing season is also longer. Rotations from the western Dakotas where strategy is to conserve and store moisture may be problematic in the east where moisture-intense crops and possibly cover crops are needed to use excess moisture. Currently there is an absence of information on no-till cropping systems in this region. It is the purpose of this project to evaluate and demonstrate the use of crop rotations and crop management strategies that are effective in sustaining the environment and producing ample food and fiber within the climate, hydrology, soils and social aspects of this geographic area.

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 below for their support! Without them this project would not exist.

2007 PROJECT SPONSORS

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Special Thanks
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Dave Kinzler
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Figure 1. Aerial picture of the Conservation Cropping Systems Project

CROP ROTATIONS AT CCSP

Fourteen crop rotations ranging from two 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 this year, has been planted in bulk area 1 and would be a 7th crop grown on the plots. 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 with out sacrificing the opportunity to participate in financially lucrative commodity markets. Three seeding techniques: disk drill, shank drill and strip till, are being studied within the HRSW-HRWW-corn-soybean rotation. Additional crops will are added and subtracted as deemed necessary. The key components of rotations are their moisture intensity and their plant diversity. Moisture intensity of the rotation must be increased as one moves from arid to humid climates and when the cropping system is changed to no-till. Cover crops may be required in climates where precipitation exceeds evapotranspiration even though high moisture crops are grown. Conversely, low-water-use crops may be required in arid climates to store soil moisture. Crop diversity is needed to reduce the level of pathogens (weeds, disease, insects) specific to a crop type.

Rotation	
HRSW - HRWW - Corn - Soybean disk drill	A
HRSW - HRWW - Corn - Soybean shank drill	B
HRSW - HRWW - Corn - Soybean strip-till	C
HRSW - Corn - Soybean	D
HRSW - Soybean	E
Corn - Soybean	F
HRSW - Corn - Soybean - Corn - Soybean	G
HRSW - HRWW - Corn - Soybean - Corn - Soybean	H
HRSW - HRWW - Flax - Corn - Corn - Soybean	I
HRWW - Soybean - Corn - Corn - Flax	J
HRSW - HRWW - Corn - Corn - Soybean - Soybean	***L***
HRSW - HRWW - Alfalfa - Alfalfa - Corn - Soybean	N

Figure 2. Crop rotations at the Cropping Systems Project at Forman, ND, 2007.

Figure 3 shows the location of each crop within each rotation. Each plot is 60 feet by 200 feet. Each crop within the rotation sequence is present each year. Each rotation sequence has 3 replications. For example in rotation F, corn is replicated three times as Fc1, Fc2 and Fc3.

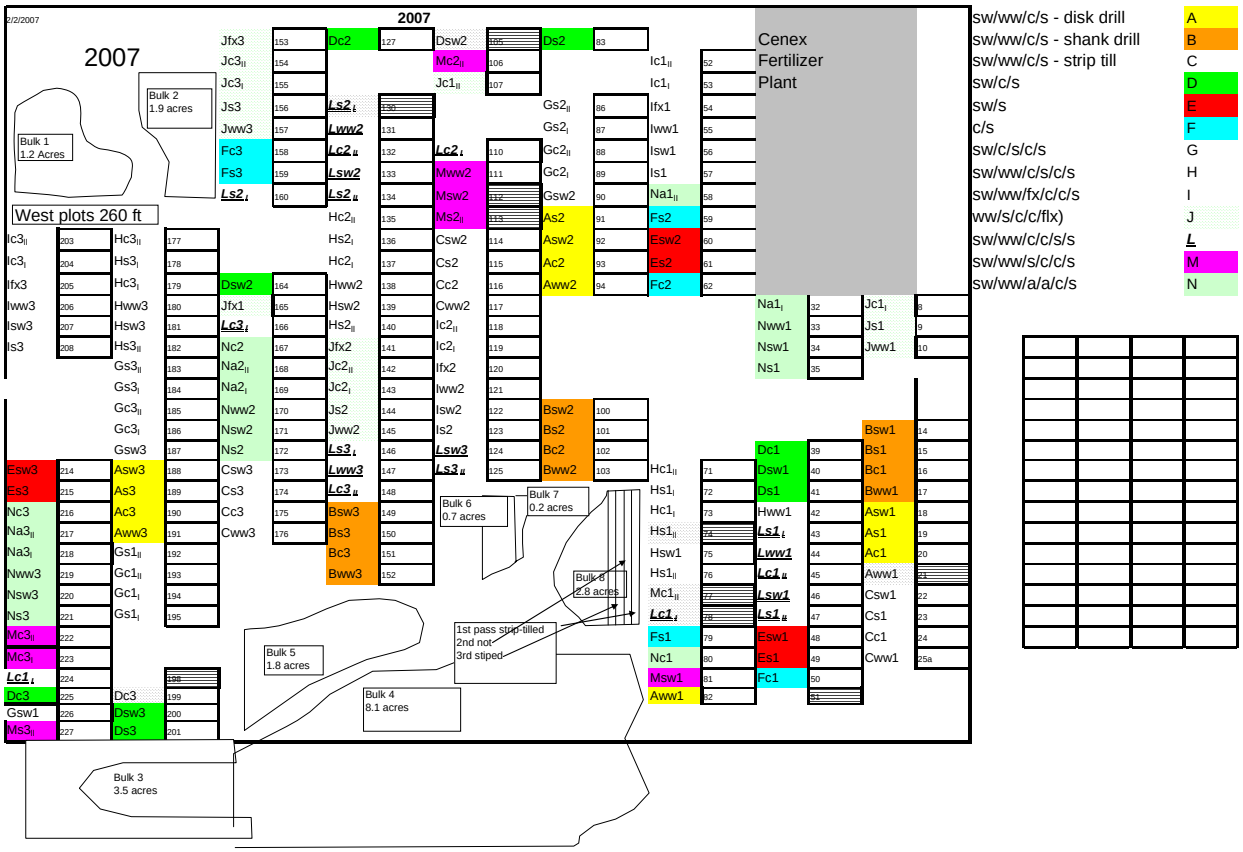


Figure 3. Plot map of rotations and their location in 2007.

Local Weather

The 2007 season started out cold, snowy, and wet. The snow and mud seemed to persist for ever in April. Then finally after two weeks of mostly 20 degree below normal temperatures things turned around on the 15th. By April 18 the soybean stubble was ready to plant to wheat. This window of opportunity only lasted 2 days. By early evening on the 19th rain was falling and by the 22nd we had 1.56 inches. A couple local farmers who did not plant wheat did get some corn in. We received enough rain to slow things down for over a week. By comparison on sandier soil to our west corn was going in but with the heavy soils around Forman most farmers were struggling to plant. By May 1st things had dried enough to plant corn in the plots. We finished the plots and bulk area 8 on May 3rd with bulk area 4 left to do. However on the 4th rain started to fall. By May 6th we had 4.08 inches for the 3 day event. This delayed finishing the last bulk area until May 22. The phrase “before the rain” became quite common when talking about corn planting. In a nutshell the rest of the season was beautiful for growing corn. We had plenty of moisture and heat units. (See figure 4,5,6). However something was not quite right. Both corn and beans did not have good color until July. Winter wheat looked very nice, but had some leaf disease. The Buteo over wintered very well with little if any winter kill. The Howard spring wheat grew nicely, in spite of some very wet conditions early on. All crops matured nicely. The high moisture was only a hindrance at planting. All other operations were able to be done timely although

windows of opportunity were sometimes narrow. Corn harvest was straight forward. The corn matured early with the above normal GDUs. (See figures 4 and 5). Although temperatures were lower than 2006 GDUs were actually higher in 2007. Corn that was planted before the May rains was dry in early October. The weather turned damp and wet the 2nd week of October and persisted for 2 weeks. Many farmers kept going in the mud and increasing grain moisture levels only to have conditions turn perfect at the end of October and most all of November, the usual combining period. Had we known perfect drying conditions were coming thousands of dollars of drying cost would have been saved.

Calender year 2007 Weather

	Temperature (f)			Precipitation (in)		
Month	64 Yr Mean	2007 Mean	deviation	64 Yr Mean	2007 Total	deviation
January	7.6	11.8	*4*	0.5	0.2	-0.3
February	11.9	9.5	*-2*	0.5	1.1	0.6
March	26.0	32.0	*6*	0.8	1.7	0.9
April	44.0	40.0	*-4*	2.0	3.0	1.0
May	55.7	59.7	*4*	3.0	5.0	2.0
June	65.0	67.5	*3*	3.6	7.2	3.6
July	70.1	72.8	*3*	2.9	4.8	1.9
August	68.2	67.2	*-1*	2.8	2.2	-0.5
September	59.5	61.2	*2*	2.1	1.9	-0.2
October	46.0	49.1	*3*	1.4	1.3	0.0
November	28.6	30.8	*2*	0.6	0.1	-0.6
December	15.3	12.3	*-3*	0.6	0.8	0.2
mean totals	**41.5**	**45.0**	***3.5***	**20.6**	**29.0**	***8.4***

Figure 4. Growing season temperature and precipitation at Forman, ND in 2007 (Data from Britton SD when Forman data missing)

Precipitation in 2007 in contrast to 2006 was well above average by 8.4 inches as seen in table 2. Early spring moisture was more than adequate and all growing season months except August were above normal on rain. The CCSP farm managed to avoid any damaging hail this year as well as excessive winds.

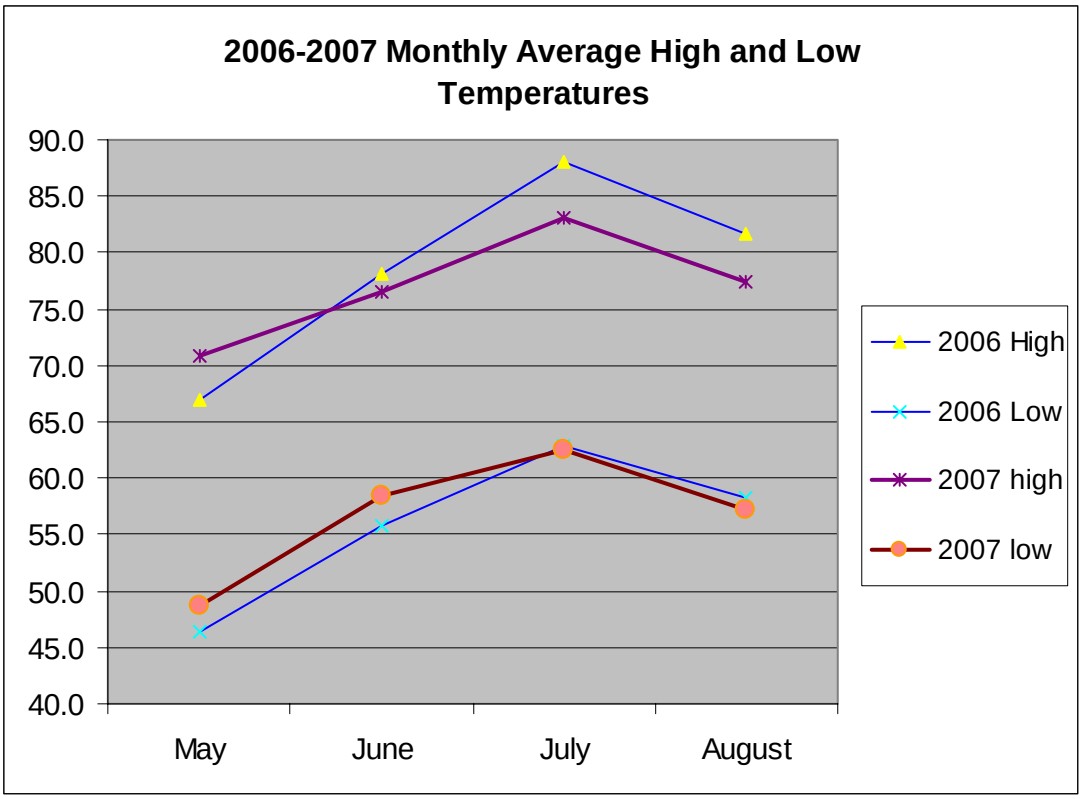


Figure 5. Average highs and lows of 2006 and 2007.

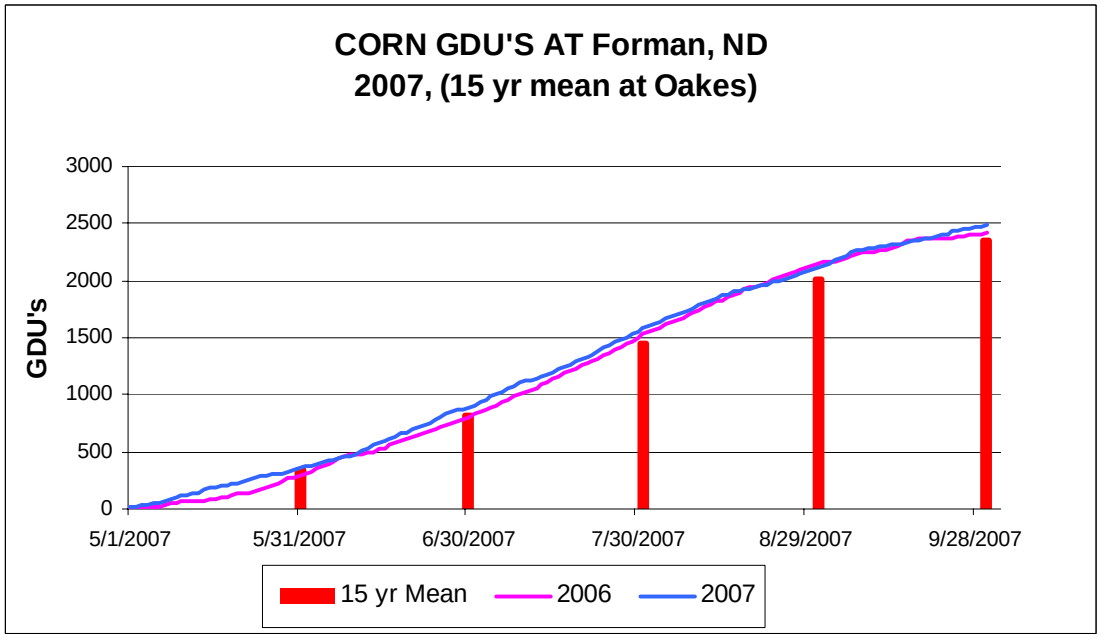


Figure 6. Growing degree units accumulated for corn at Forman, ND, 2497 in 2007 and the 15-yr mean of 2345.

Figure 7. Crop Inputs and timing.

Crop	Planting Date	Harvest Date	Planting Rate	Chemical	Rate	Date
Alfalfa 1st Yr	8/28/2006	June July	15 #			
Alfalfa 2nd Yr	8/5/2005		15 #	RU/24D (kill out)	44 oz+2pts	09/07/07
Alfalfa(establish)	8/3/2007		20 #	select	8 oz	08/31/07
HRSW	4/19/2007	8/3/2007	116 #	Axial	8.2 oz pt/ac	05/27/07
Howard				Tilt	2 oz/ac	05/27/07
				WideMatch	1 pint	05/27/07
				MCPE	1/2 pint	05/27/07
				Interlock	4 oz	05/27/07
				Folicur	3 oz	06/20/07
				Proline	3 oz	06/20/07
				Round Up	22 oz	07/23/07
HRWW	9/21/2006	7/21/2007	114 #	Everest	0.6 oz /ac	05/13/07
Buteo				2-4D	1/2 pt	05/13/07
				Headline	8 oz/ac	05/13/07
				Puma	1 oz/acre	05/13/07
				Interlock	4 oz/acre	05/13/07
				Folicur	3 oz	06/09/07
				Proline	3 oz	06/09/07
				Round Up	22 oz	07/10/07
Corn	5/3/2007	10/10/2007	29,200	Roundup Ultra Max II	22 oz	05/20/07
Dekalb 4295				Lumax	4 pt	05/20/07
				Roundup Weather Max II	32 oz	06/26/07
South Bulk	5/18/2007	11/2/2007				
Dekalb 4295						
Pioneer 38H64						
Soybean	5/25/2007	10/4/2007	146,000	Roundup Ultra Max II	22 oz	06/10/07
				+Resource on 30 plots	3 oz	
				Roundup Weather Max II	22 oz	07/05/07
Flax	5/1/2007	8/29/2007	140#	Bison Advanace	11 oz	06/09/07
				Select	12 oz	06/09/07
				Roundup Weather Max II	32 oz	8/13/2007

Fertilizer Nitrogen

Corn received nitrogen to bring soil+fert levels to 170 lbs for all but soy and alf ground which received 97 lbs N fert. All plot received 45 lbs P. 5 Gallons 10-34,1pint zinc. 1.5 % Avail in furrow

Winter Wheat at planting 78 lbs 11-52-0, 2 spring stream bar apps at 60 lbs each
Spring Wheat at planting 105 lbs 11-52-0, 2 stream bar apps one at 60 one at 50 lbs

Soybeans 10 gallons 10-34-0

Flax 100 lbs n stream bar diluted 50-50 with water

AGRONOMIC PRACTICES AND YIELD

A general outline of agronomic practices used is listed in Figure 7.

Wheat: CDC Buteo HRWW was planted on September 20-21, 2006 with a John Deere (JD) 1560 single disk drill in the 3 disk drill plots (Rotation “A”) with the balance of the plots seeded a 10-foot Concord air drill with triple shot Anderson seed boots at a10-inch spacing. Howard spring wheat was planted with the JD 1560 drill and the Concord drill on April 19, 2007. 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. In the “N” rotation where alfalfa is grown for 2 years following winter wheat, an additional 80 lbs of 11-55-0 was deep banded with the Concord. Fertilizer nitrogen applications of 20 gal/ac 28-0-0 was applied with stream bars to HRWW on April 27, and 20 gallons again on May 16. An application of 20 gal/ac of 28-0-0 with stream bars was applied to HRSW on May 16th and 16.6 gallons 28-0-0 was applied on May 22.

Flax: York flax was planted with the Concord air drill on May 1. Flax received a post application of 100 lbs/ac Nitrogen as 28-0-0.

Corn: Dekalb DKC42-95 was planted with an 8-row John Deere7200 planter with 30-inch spacing equipped with Sunco residue cleaning wheels, Keaton seed firmers with in-furrow fertilizer placement on May 3 in the plots and bulk area 8. Bulk area 4 was planted with DKC42-95 and Pioneer 38H65 with and without Avail on May 21. Corn received 30 gal/ac of 28-0-0 and 6.5 gal/ac 10-34-0 placed in a 3” by 2” band at planting with 5 gallons 10-34-0 in furrow with 1.5% Avail. A strip-till operation was performed on November, 10th 2006 to all 2006 corn plots except rotation “A” and the 2006 corn plots.

Soybeans: Pioneer 90M60 soybeans were planted in 30-inch rows with the John Deere 7200 planter on May 24-25. Soybean plots received 10 gal/ac of 34-0-0 in a 3” by 2” band at planting.

Alfalfa: Dairyland Hybriforce-400 alfalfa was planted August 28, 2006 @15 lbs / acre.

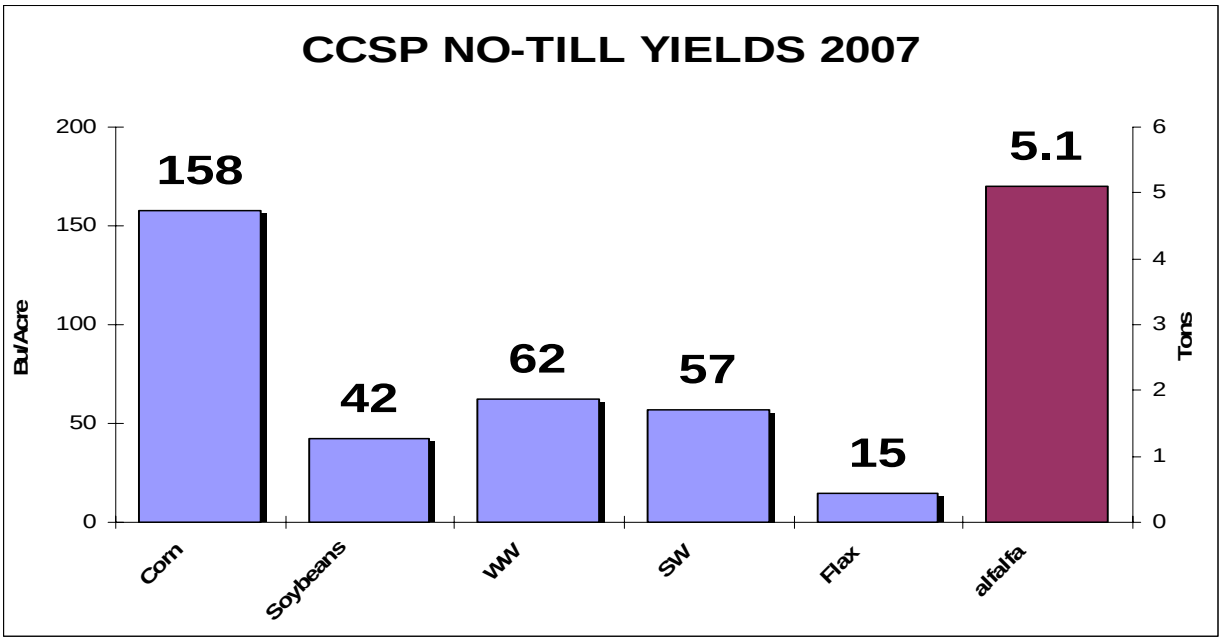


Figure 8. Crop yield averaged across all rotations at the Conservation Cropping Systems Project in 2007.

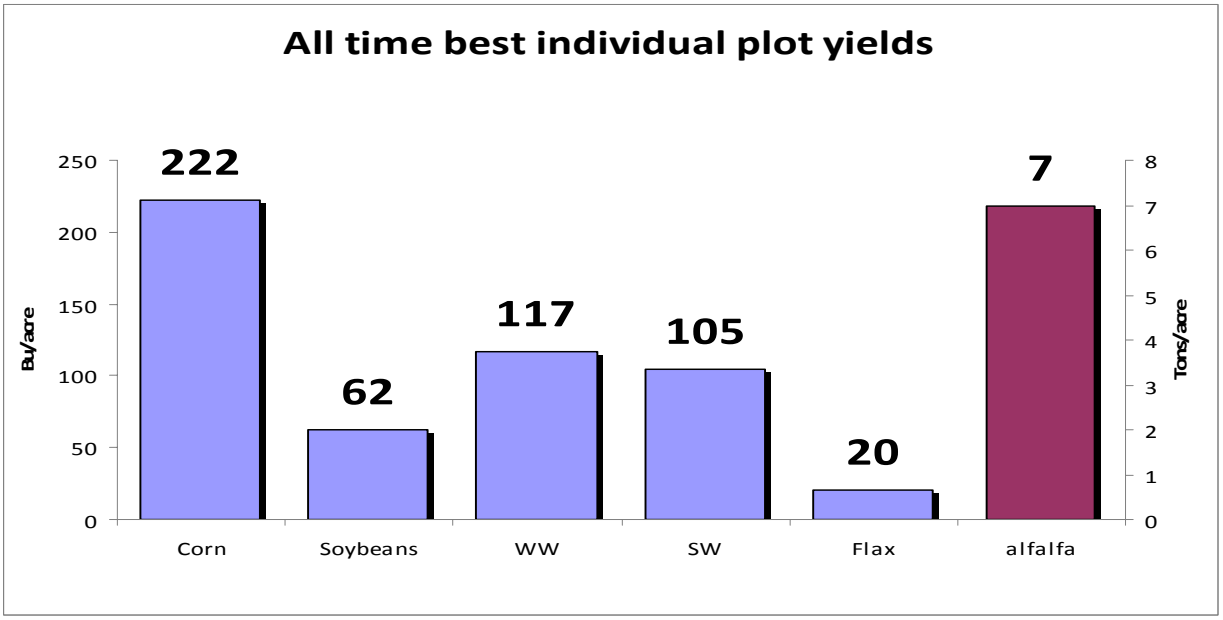


Figure 9. Best individual plot yields to date.

Crop observations

Winter wheat went in timely in the fall of 06 and rains were more than adequate to get the crop off to a good start. Winter kill was not seen anywhere. Tan spot was prevalent early on. Symptoms similar to wheat streak were observed near boot stage but were only on individual plants which made it likely the symptoms were not caused by wheat streak, and were unofficially determined to be a small amount of Barley Yellow Drawf. Moisture was very high in late April into May. By early July the winter wheat looked very good, but heads were not filled completely. Yields were good but not nearly reaching the potential as was seen in 2004, see figure 9, when winter wheat averaged over 100 bushels on the plots. The winter wheat was combined July 20. The alfalfa was planted later than normal, but still over wintered very well to make a nice stand. Spring wheat was seeded as early as conventional tillage wheat in the area. Having duals on the MX305, and a 20 foot, 2 point 1560 John Deere drill in good condition, seeding went very well. Rain came immediately after seeding was completed. In fact the last two shank till plots were seeded in moderate rain. The Howard spring wheat appeared to hold up well to disease. We used an early shot of Tilt and later a Folicure-Proline treatment to hold down scab and keep the flag leaf healthy. Yields were good for the area, which averaged 52 bushels per acre (see figure 8). Weed control was good. We used wild oat control this year, Axial, and it performed very well. Everest was used on the winter wheat since there is reported activity against foxtail barley, which is a difficult to deal with weed on the plots. Wild oats were well controlled in the winter wheat. Foxtail barley however still survived.

I had not been happy with the flax stand so we went to using the Concord shank drill. Trying to seed shallow, especially in corn stalks, was difficult with the disk drill. The 10 inch spacing on the Concord would be a problem in standing corn stalks, so the corn stalks were mowed with a rotary mower. The ground was wet when we seeded the flax, and was left lumpy. Rain fell shortly after planting, healing up the lumps. Where the flax was seeded shallow, we had a nice stand. Where seeded deep, the stand was not so good. Had it not rained, the deeper seeded plots may have turned out better. Seeding in wet conditions with any crop is never going to be perfect, but when the forecast is not looking any better, you have do what needs to be done. The flax ended up maturing during a wet period in August having issues with quality and yields were disappointing.

Corn was in early and seeding went very well. This was probably the driest conditions we have planted in for several years. Unfortunately, wet weather followed. Rotations appeared to have a large influence. The corn following alfalfa on the “N” rotation did the best and looked the best the whole year. One of the most enjoyable things in no-till farming is planting corn into sprayed out alfalfa. The seed bed is as close to perfect as one could want. When moisture is adequate, alfalfa ground will probably always give us our highest yielding corn and this year followed that thought. At the other end of the yields was corn on corn. Stand establishment and health was less than desirable and pheasants seemed to really enjoy digging out the emerging plants. The corn on corn also suffered from the fact that it was not possible to strip till in

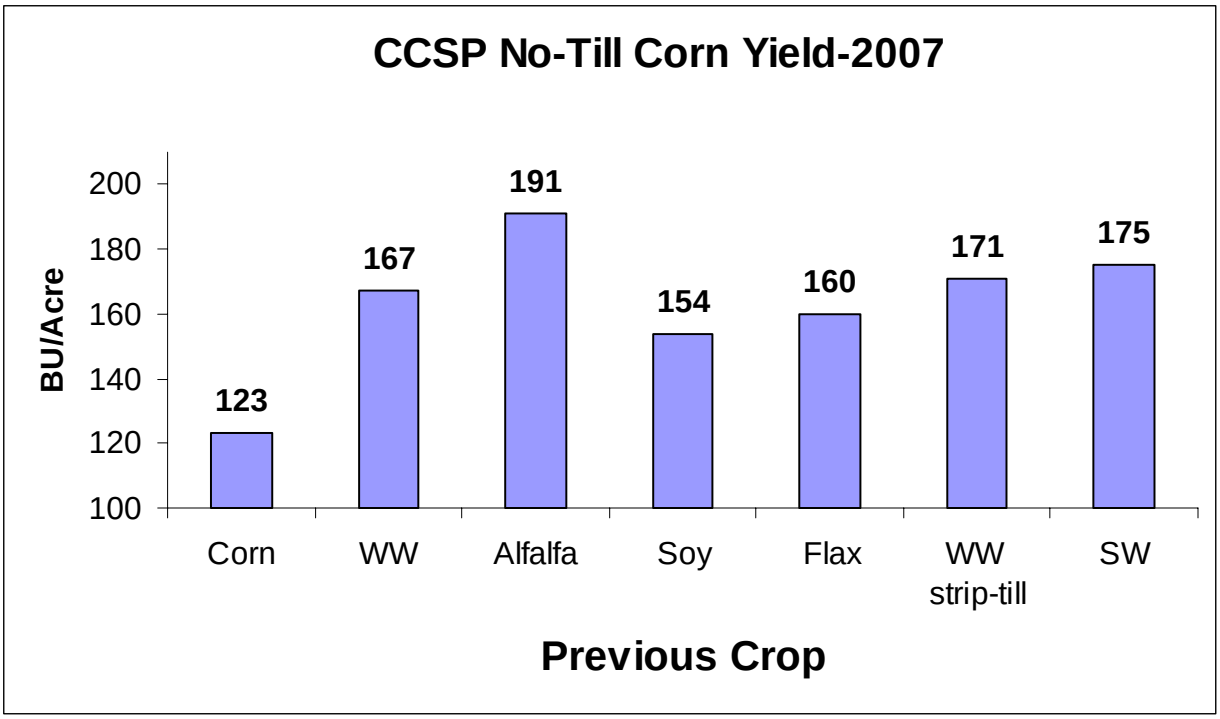
the fall. When one decides on using GPS guidance, realize that the old corn stalks are in crooked rows. When the strip till machine crosses the old corn rows it will act like a dump rake. We knew this would happen and decided to plant across the corn rows. The planter did not plug up, but seed did not get placed well when crossing rows and stands suffered. Based on my experience I would discourage any one from trying to cross corn rows and wait to use guidance following another crop. Planting into the strip tilled wheat ground went well and was uneventful. The non strip tilled wheat was wet, but seeding went OK. Weed control was good with the 1rst shot being 22oz Round up Ultramax with 4 pints Lumax. Another shot of Ultramax was applied before corn was completely canopied on 6/26/07. Wet weather did kill out spots of corn and pigweed came late season. Otherwise weed control was good. We did a couple other tests with corn. In bulk area 4 we did an Avail and variety comparison. Avail is a product used to increase phosphorus availability to plants. It is been said that you need to rotate corn varieties if you are going to plant corn on corn, so we used the same variety as was planted last year, DKC 4295, and a different variety, Pioneer 38H65. The Pioneer variety is rated several days later then the Dekalb variety and was wetter at harvest. This bulk area was planted May 17-18. The moisture adjusted yields did not appear significantly different as a result of variety or the in furrow application of avail with 5 gallons 10-34-0. See Figure 11 for results. In bulk area 8, we used the strip till machine on every other pass. The results are posted in figure 13, where you can see that strip till gave us about a 7 bushel yield bump. Note in figure 12 that strip till winter wheat has given us a 12 bushel advantage over non strip tilled winter wheat on average from 2004-2007.

Soybean planting was done May 24-25. We used the John Deere 7200 30 inch row planter. We were planning on using a shank till unit, but rain was in the forecast and the shank drill was a couple days out so we used the 7200. Planting went well, but plugging occurred with the planter in corn stalks after dew fall on the night of the 24th. When the sun came out in the morning, no problems and we finished planting. I noticed that a couple of the planter units were not seeding as many beans as the others. We are using Kinze brush meters, and I could not see any problems with the brushes. But I started seeding immediately after the seed was run through the treater, and it was a little moist. The stand was not what I was shooting for but beans compensate well and yields were good, average of 42 across all plots. One interesting note was where beans were in the “N” rotation yields were a little better, see figure 2. I thought the color was not good in all crops in June. Also, the best corn yields were in the alfalfa rotation as well. Walt Albus, at the Irrigation field trial in Oakes, has been doing comparisons with irrigated corn on soybean ground. In replicated plots his low nitrogen which has only 15 lbs produced 200 bushels in 2006, but only 95 bushels in 2007. Both of our sites had very high rainfall events in late May and early June. This illustrates the fact the nitrogen release from the soil can vary significantly from year to year. You can get all the Oakes Irrigation data at their website.

http://www.ag.ndsu.nodak.edu/oakes/vegstd.htm
go to Corn Continuous corn, strip-till n-rate study 2007, 2006.

Rotation effect on corn yield

The most dramatic observation of 2007 for corn was the highest yields on alfalfa ground and corn on corn yields suffered. Pheasant and blackbird damage during crop emergence was also notable. Damage varied across the plots skewing final yields. We had corn on bulk area 8, please see figure 13, which was planted on soybean ground. The corn yielded 170 to 179 bushels depending on whether it was strip tilled or not and did not suffer from bird damage. In looking at overall final yields it appears that corn planted on flax and soybeans was poorer yielding than some of the other rotations in the plots. Most of the lower yielding plots were hit hard by birds reducing stand and therefore lowering yield. Whether one can say that the previous crop was the cause of greater bird damage is difficult to say. Habitat plays a large roll in where wildlife will cause crop damage. If pheasants had cover in close proximity to a particular plot, that is where the most damage would be. In bulk area 8 cover was not available and stands were good as well as yields. Many local producers suffered stand loss as well. It is possible that pheasants did not like being in wheat stubble, as the wheat rotations look better than the soybean and flax. The corn on corn low yield was also affected by bird damage, but also by what I can only call the corn on corn syndrome. In 2008 we will be working with Syngenta on looking to see if nematodes are a contributing factor to lowering yields. They are scheduled to have a product labeled as a seed treat that has been shown to improve yields where corn nematodes are present. As it stands right now, the returns on other crops may not push growing corn on corn. It appears that our rotations do a very good job of maintaining high corn yields but these are interesting times and things change by the minute. 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.



11. Effect on corn yield by previous crop

Education

Our goal at CCSP is to promote conservation practices that are economically feasible for producers to utilize. Our main field day that was held on July 12, 2007 was our largest to date with over 225 people attending. NRCS employees utilized the farm for a training session just prior to the public field day that allowed them to see the various crops and different cropping systems all in one place. They also took advantage of the freshly dug soil pit to see the rooting depth and soil structure that develops under no till. The main event included small group tours of the plots. Stops on the tour included discussions of weed control in corn and wheat, affects of previous crops and strip till on corn, fungicides, fertility and of course the soil pit. Amity products offered a sneak peak at their new no till drill. Ride and drives were offered by Titan machinery highlighting their MX305 RTK guided tractor. An evening meal was served to top off a very nice summer day. In October an agriculture class from Wahpeton Science came over for a small tour. Impromptu small tours with sponsors, producers, or any interested group always welcome. We look forward to the open exchange of ideas. Our next field is scheduled for Thursday July 10, 2008.

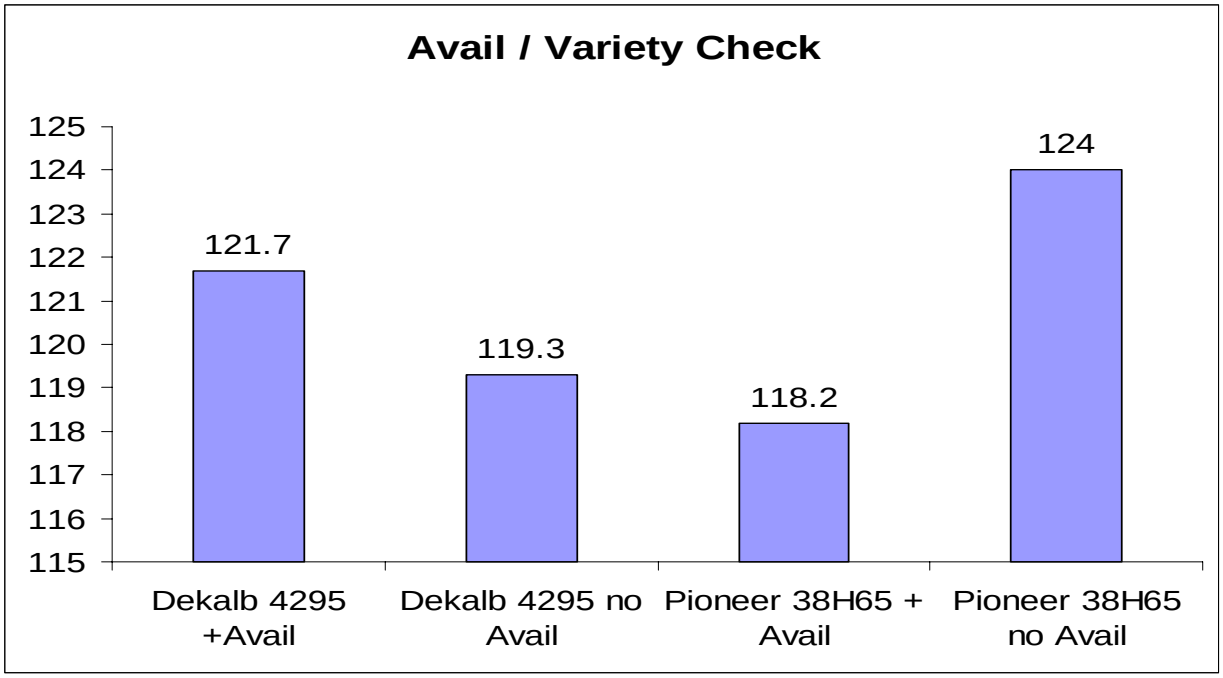


Figure 12. The effect of different variety and in furrow Avail.

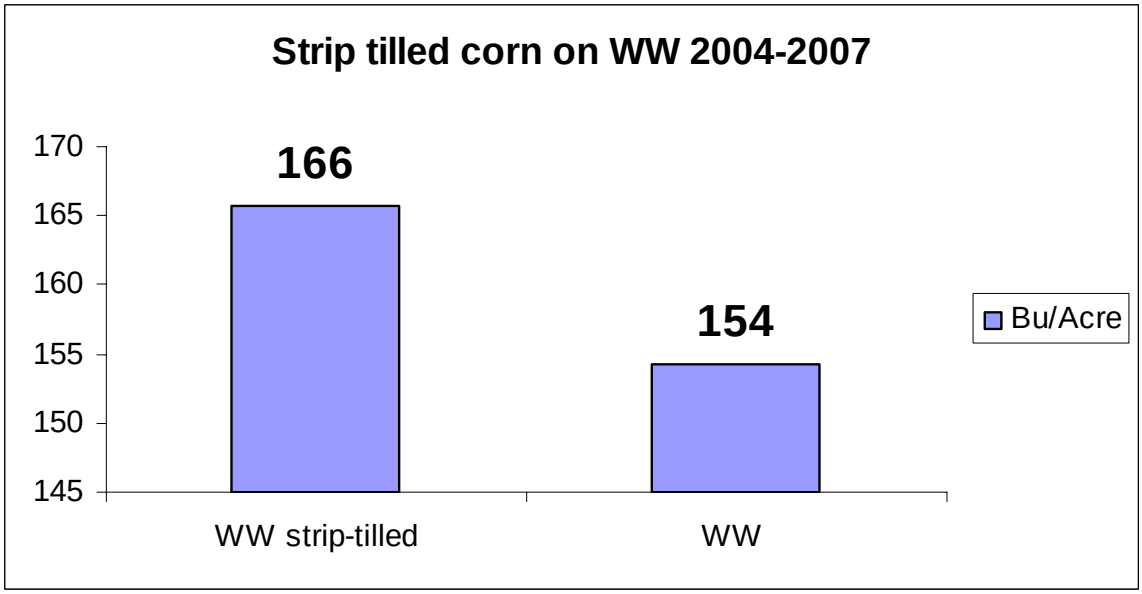


Figure 13. The effect of strip till on corn yields on wheat ground.

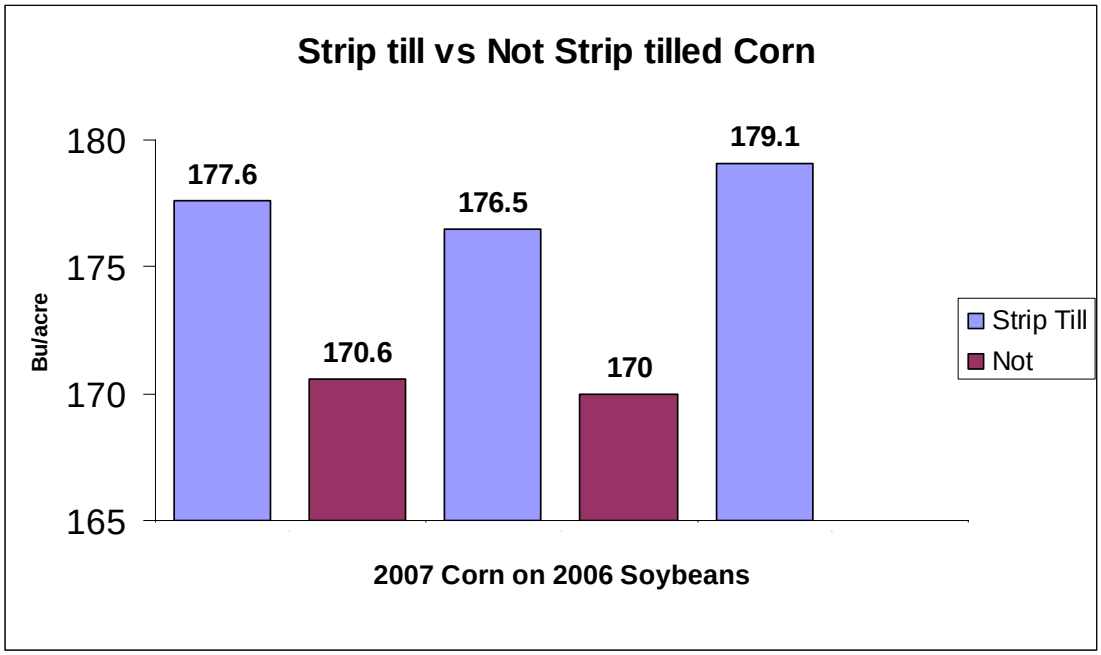


Figure 14. The effect of strip till on corn yields on soybean ground.

Final comments from the Farm Manager.

Let me first thank all of sponsors. Their financial support make this project possible. I want to especially thank the new sponsors in 2007. RDO equipment, who has come on board this year as a platinum sponsor with financial contribution and use of brand new “Gator”. Valent and Simplot Soil Builders with a product donation will put them into the bronze sponsor category. Special thanks to Arysta life sciences with product donation and Brampton Farm Service for a cash contribution.

The year of 2007 is now a part of history and will probably be remembered as the year “everything changed.” I read a book this winter titled “The Worst Hard Time” written by Tim Egan. The books details real life accounts of people living through the 1930s in the heart of the dust bowl centering on the panhandle of Oklahoma. The resulting soil destruction from unwise land use caused one of the worst ecological disasters of modern history. The reason all of this marginal land was broken up in the first place was the high price of wheat in the 1920’s, very similar to what we experienced in the winter of 2007. The book details much of the misinformation, bad ideas, and outright lies that contributed to tearing millions of acres of land to sheds of what it was. At the present time, we have the technology to farm and ranch in ways that would prevent a repeat of the 1930’s. However, we must be vigilant. We are heavily dependant on glyphosate and resistance is occurring and predicted to only expand. More

tillage is being suggested by some weed scientists as a way to head off resistance. Some insect pests are also encouraged by reduced or no till farming methods. Pressure to produce more crops, and increasingly high input costs could push producers back to using more tillage if we do not find new ways to deal with these future issues. Moisture savings and improved water infiltration will always be on the side of no till but could easily be dismissed if weeds and insects become uncontrollable by current means.

A couple of areas of interest we plan to pursue in the future are soil health and cover crops. Having spent 25 plus years working with soil I was amazed to learn this winter how little we actually know about the biology there is in the material under our feet. Craig Venter, co-discover of the human genome, is currently working on sequencing of soil DNA directly (usually called metagenomics), because 99% of soil microorganisms will not grow in a laboratory. Literally thousands of new species of organisms will be discovered. How will this change farming? Personally, I think it will change our thinking about what we add to the soil, be it fertilizer or chemicals. We have for years known how rhyzobia interact with legumes to fix nitrogen. We currently test soils for nutrients. But what is more important, the nutrients in the soil, or the biology? It is without question that thousands of scientifically valid projects have documented the benefits of applied fertilizers. But, how much corn would be grown using corn varieties common in 1900? By changing the genetics, a corn plant can make better use of the sunlight, nutrients, and biology of the soil to make more bushels. What happens when we start managing the biology of the soil? It seems to be common knowledge among farmers that ground that has had manure, plowed down alfalfa or clover tends to grow better crops. We have for the most part only looked at the nutrient side of the equation. The difficulty as I see it in managing soil biology is that we would be working with literally thousands of species. Adding manure, compost, or cover crops can dramatically increase numbers of the soil micro flora. Can we do a better job of increasing the biology that improves crop production? Are there products we are using that are lowering numbers? It has always been said that ammonia kills things in the immediate application zone, but in a short period of time things get right back to normal, even increasing because the added nitrogen is a food source. Lots of interesting stuff!

Our work with strip till goes on and from what I have seen this spring, April 4, 2008, I like what I see. The strips in the soybean and flax ground are mounded up nicely and dry. Frost is still in the ground so it is not quite the time to get too excited. The strips in the corn are still damp as more snow was caught. Time will tell. We have abundant soil moisture this spring and it is early. I know that 175 miles west it is very dry and it is very probable that we will get into a dry cycle again here as well.

A question was bought up this winter about the value of using IPM or Integrated Pest Management. It seems we now have many choices of products to use for

an ever growing list of “potential” problems. Most of these products are not curative, so you can’t wait to see if the problem is there first before you act. Farming practices can be put on the “potential” list as well such as tile drainage, strip till, and crop choice. Some 20 years ago I remember a common saying among farmers in this area was “we NEVER get too much rain”. After 15 years of “too much rain”, don’t hear that comment anymore. Making choices on how many of these preventative products or practices to use is almost as difficult as making marketing decisions when crop prices fluctuate as much in one week as what the total price of the crop used to be. I don’t think there will ever be an excuse for not scouting your fields. In fact the money that will be spent on preventative measures should demand even closer inspection of your crops, including yield monitoring. The answer? Get the paper and pencil out and assign risk probabilities even if you have to guess. You may be surprised how simple things may look when you analyze the results. But it’s like Yogi always said “Prediction is very hard, especially when it’s about the future.”

Small Group Discussion at summer field day.