



Continuous Corn 3 Years McClure Test Plots



Team Work....Exactrix Test Plots...Oct 26, 07..Southwestern Kansas....You can see Oklahoma.

Three years work riding on teamwork. "Just the facts, mam".

Team McClure....Discussing the plots...Weights and data recordation...review of the plot locations and confirmation that the data is correct....

Hannah from Montana. Truck driver from Ft. Benton, Montana and originally from Hugoton with two kids and great attitude.

Travis.....a young 19 year old truck driver that knows how to take care of a big truck on the back roads....Travis's family has been with Joel for quite awhile.

Ben McClure....Joel's brother....Foundation and Certified Seed Grower and Processor...wheat....large producer and manager of a corporate farm. Ordered an Exactrix TAPPS formulator for his corporate farm from Craig. The accountants said it was the right thing to do.

Walter McClure...PhD, Oklahoma State....Plant breeder and father of Joel and Ben....Milo was Walter's major crop in the 60's and 70's. Joel knows all about test plots from his dad.

Garrett Havel, Crop Quest. Agronomist.....Nathan Woydziak and Garrett work together to establish prescription application at Crop Quest.

Joel McClure and John...the lead man. John is a real go getter....the old bull and the young bull at work.

Craig Rife, Guy Swanson, Exactrix....were impressed by the team.



A very experienced team put together and concluded 3 years of test plot work....All plots were double checked for accuracy and all plots were weighed across a scale and data recorded and printed out by Garrett...right at the site....pretty impressive operation.

Half combine harvester passes were made with a 20 inch corn head on each plot since the plots were just over 2 acres each. This allowed the combine to unload more effectively.

The four different rates were Randomized and Replicated 3 times...the bands are offset 4 inches on top of last years plot to avoid tearing up the old bands and allowing Rotational Band Loading.

Joel McClure, irrigated and dryland producer...Corn, Wheat, Soy Beans, Milo, Sunflowers....experimenting with Cover Crops...University of Idaho, Pacific Gold Mustard and Austrian Winter Peas... Soy Beans are not in rotation in 07.

Cover Cropping....The Fumigant Mustard is used to cleanup up burrowing sand rats and mice on the eroded knolls..... and the Fumigant Mustard helped to reestablished some sandy ridges. Fumigant Mustard, Pacific Gold spring No-till seeded is used as a cover crop to hold the soil and reduce the dominance of the burrowing mammals.

Soils once found difficult to manage can now grow crops with the cover cropping technique. The mustard seems to have no effect on the plentiful pheasant population....not sure about the white tail rabbit population.



Hugoton KS....The heart of the Dust Bowl of the "Dirty Thirties". Conservation is on the menu at Hugoton, KS.

Typical N rates for the irrigated Hugoton area....250 pounds to 300 pounds N as solution 32 through the pivot...A \$70 to \$100 per acre advantage for TAPPS using NH₃.

The Plots....

Plots are.....Strip Till-20 inch centers.spring applied...30 to 45 days ahead of planting.

Timeline Plots 2005, 2006, 2007...three years corn on corn, low rate on low rate...high rate on high rate.

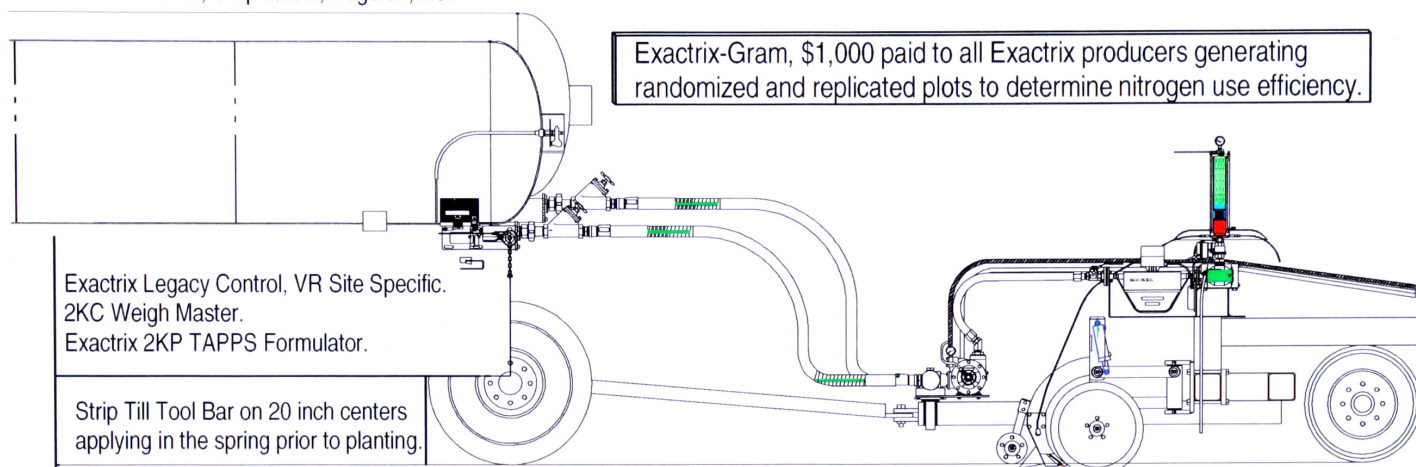
2005

Exactrix Test Plot Data...supplied by producer Joel McClure and Garrett Havel, Crop Quest, Hugoton, KS.

Strip Till, 20" Corn on Sunflower

Supplemental Irrigation.

Exactrix-Gram, \$1,000 paid to all Exactrix producers generating randomized and replicated plots to determine nitrogen use efficiency.



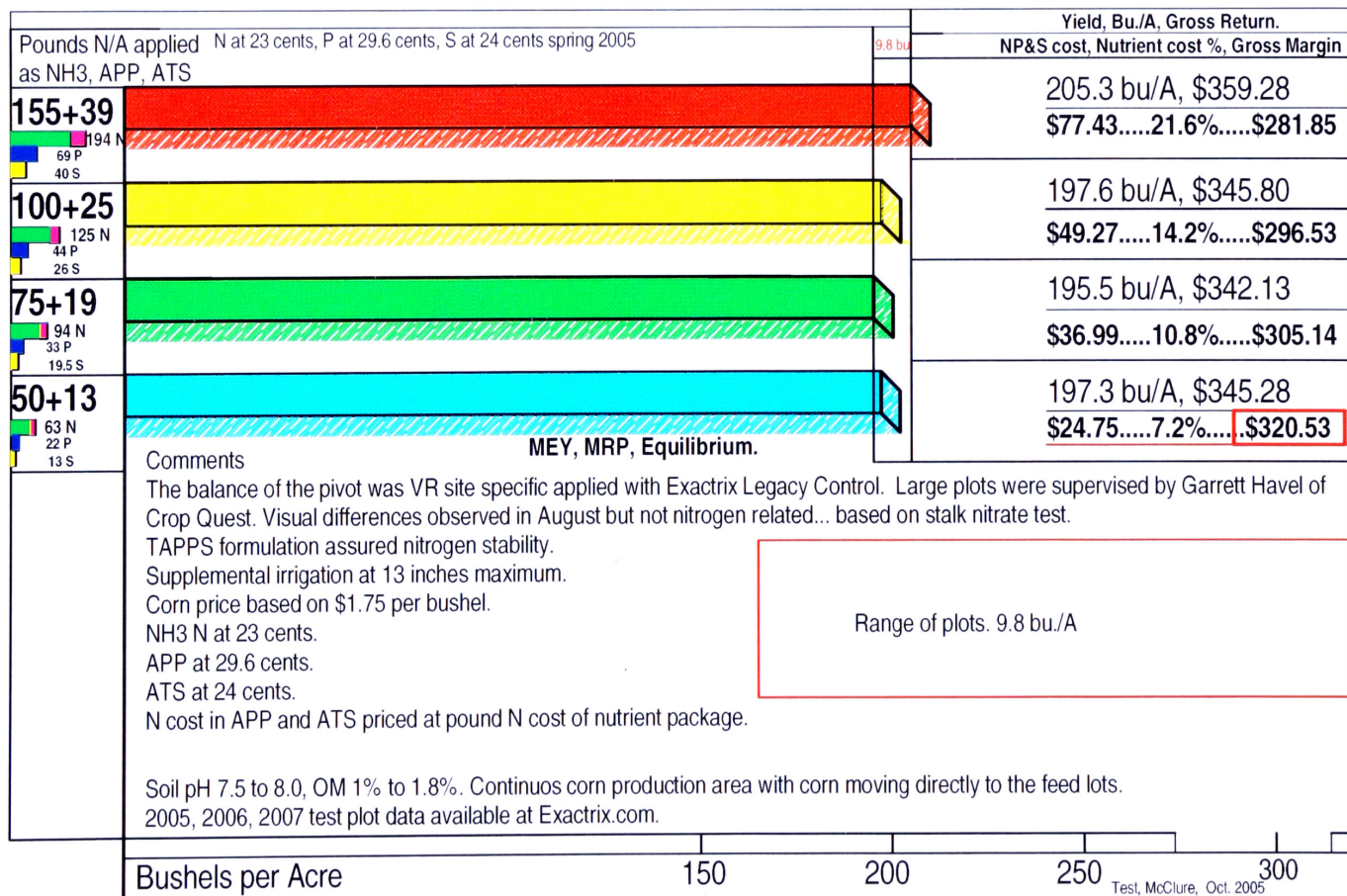
Joel McClure, Hugoton, KS. Garrett Havel, Crop Quest, Professional Agronomist.

Center Pivot, Corn on Corn in strip tillage on 20 inch centers.

Very Large 1.86 acre plots. Improved sample size based on 1/2 mile lengths. Randomized and Replicated 3 times. Weigh Wagon checked.

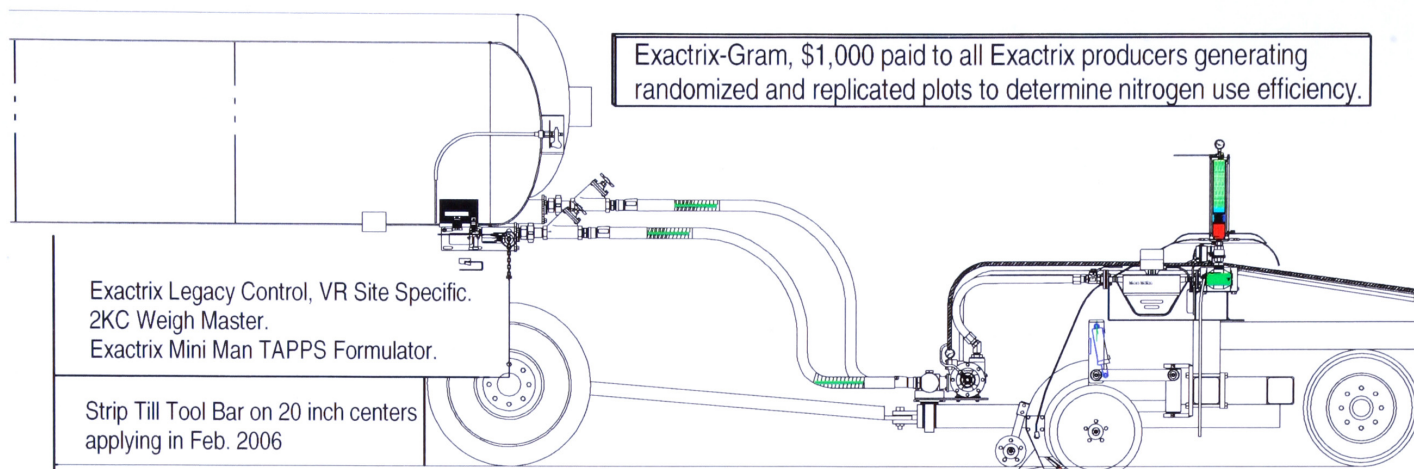
....the best net return for risk involved is 63 pounds N per acre, 22 pounds P per acre and 13 pounds S per acre.

The Marginal Return Point and the Maximum Economic Yield is 63 pounds N, 22 pounds P and 12 pounds S plus Zn in a nutrient band placed on 20 inch centers directly under the plant. Bands placed at least 30 days ahead of planting using a strip till tool bar from DMI.



2006, Stacked Rotation

Strip Till, 20" Corn on Corn.



Joel McClure, Hugoton, KS. Garrett Havel, Crop Quest, Professional Agronomist.

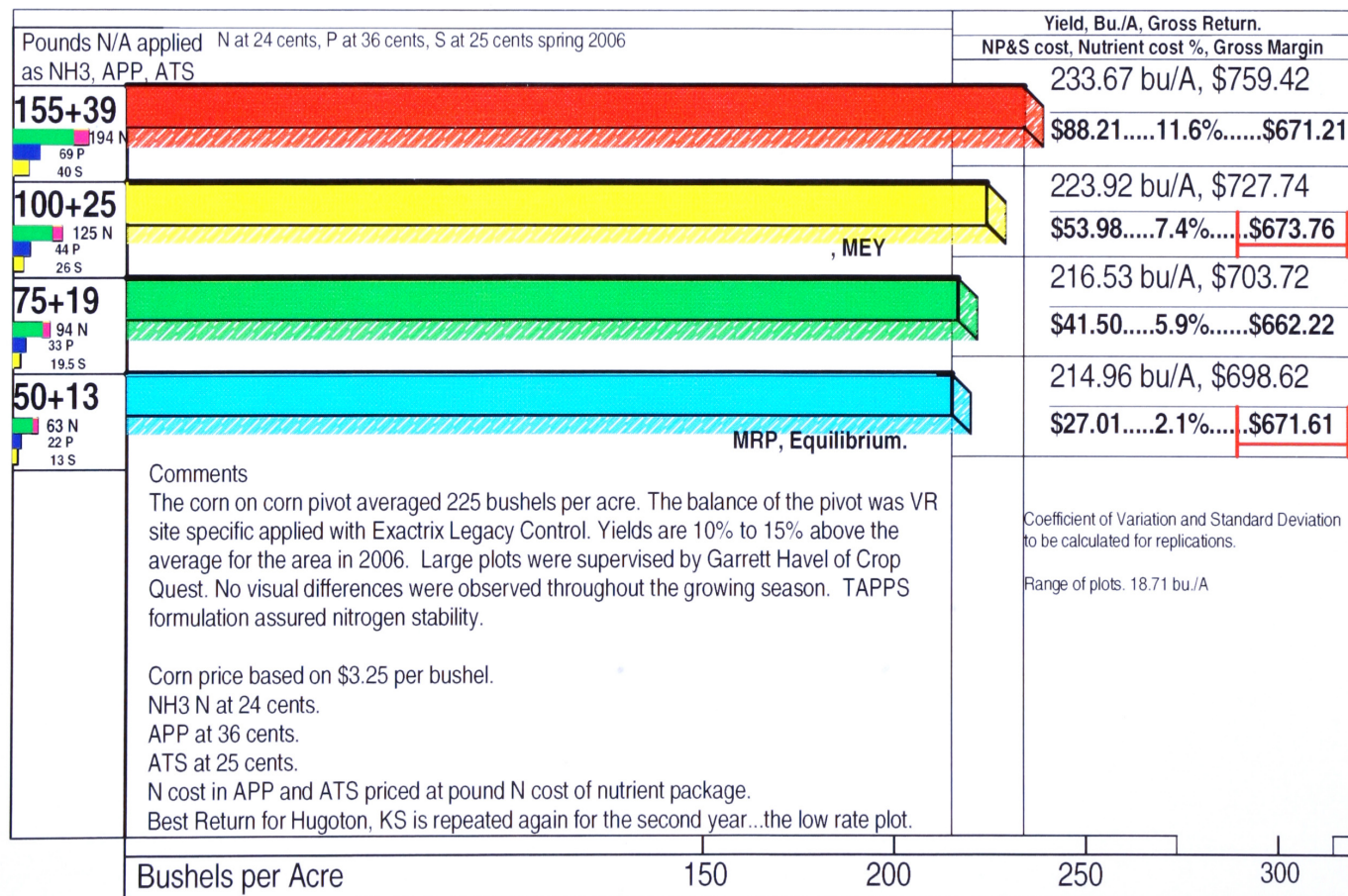
Center Pivot, Corn on Corn in strip tillage on 20 inch centers.

Very Large 1.86 acre plots. Improved sample size based on 1/2 mile lengths. Randomized and Replicated 3 times. Weigh Wagon checked.

Stacked Plots. All rates applied are the same rates applied the previous year on the same plot.

Using GPS coordinates low rate plots were located and low rates were again applied on the same plot.

The Stacked Plots prove that for two years in a row.....the best net return for risk involved is 63 pounds N per acre, 22 pounds P per acre and 13 pounds S per acre.



Soil pH 7.5 to 8.0, OM 1% to 1.8%. Continuous corn production area with corn moving directly to feed lots.
2005 test plot data available at Exactrix.com. Preliminary data

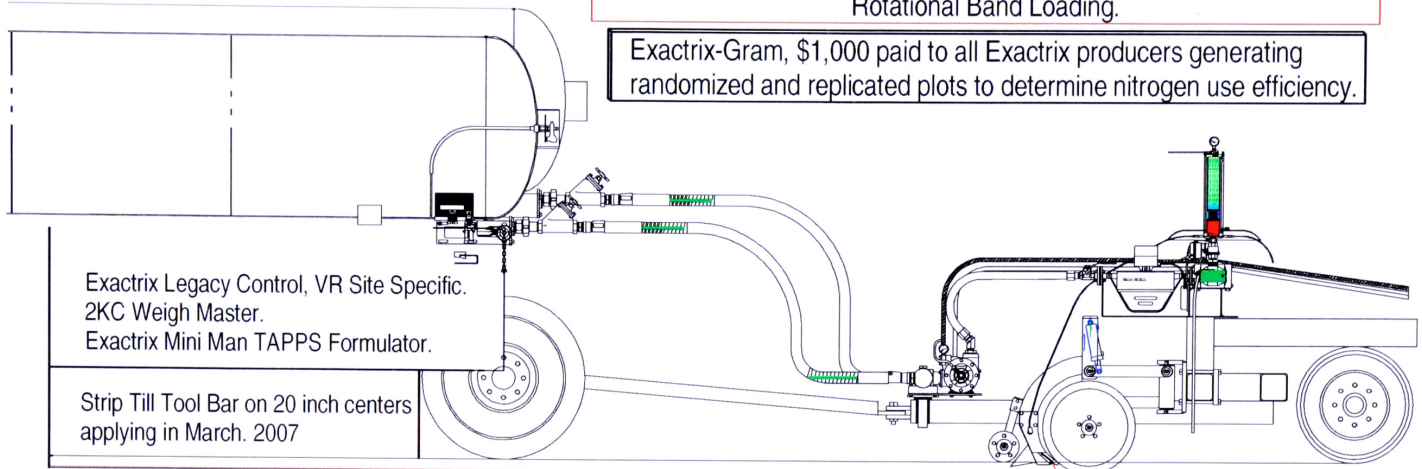
Test, McClure, October 2006

2007, Stacked Rotation

3rd. Year, Strip Till, 20" Corn on Corn.

Low rate on rate, high rate on high rate, 2005, 2006, 2007.
Rotational Band Loading.

Exactrix-Gram, \$1,000 paid to all Exactrix producers generating randomized and replicated plots to determine nitrogen use efficiency.

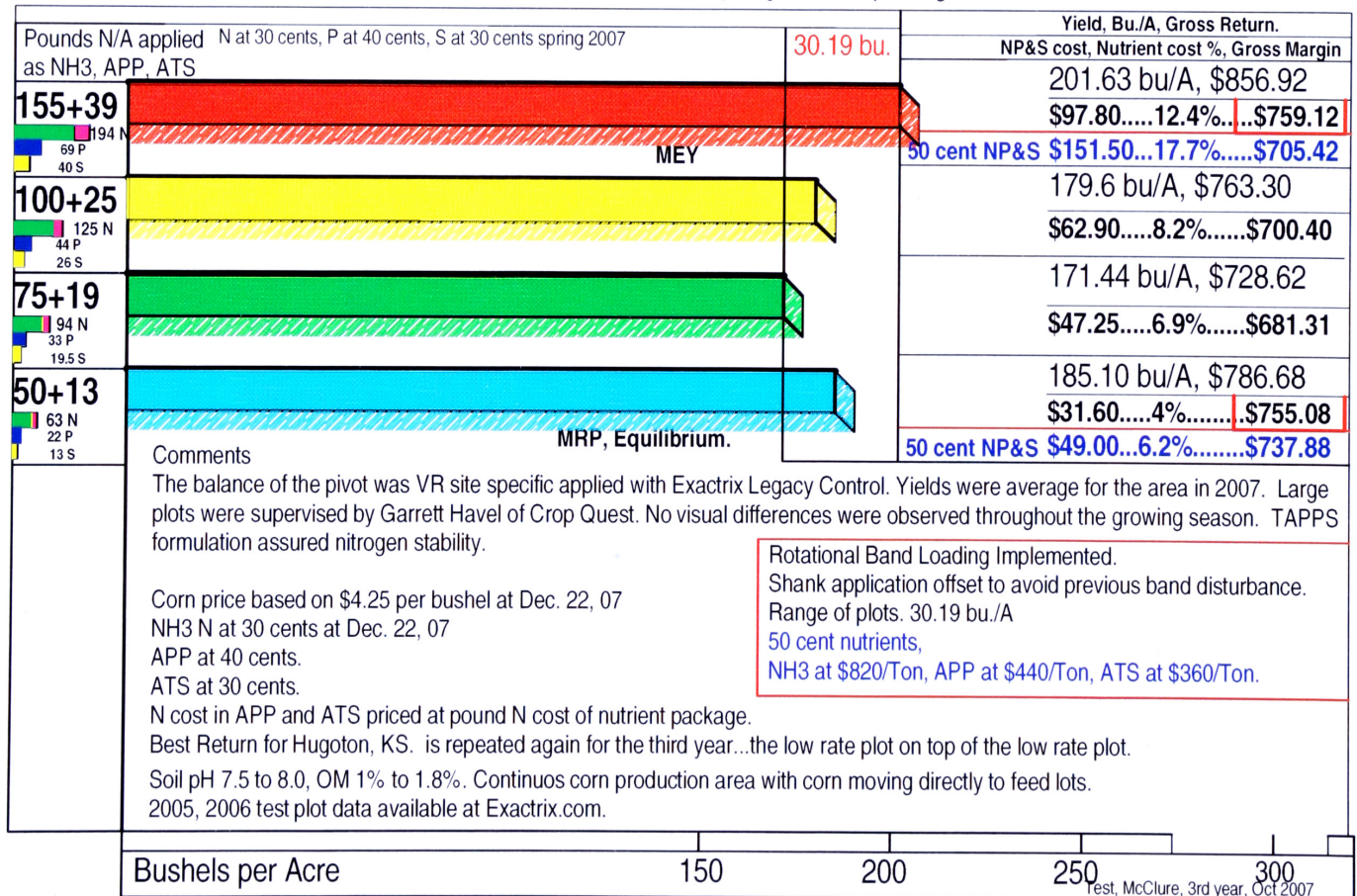


Joel McClure, Hugoton, KS. Garrett Havel, Crop Quest, Professional Agronomist.
Center Pivot, Corn on Corn in strip tillage on 20 inch centers.

Very Large 1.86 acre plots. Improved sample size based on 1/2 mile lengths. Randomized and Replicated 3 times. Weigh Wagon checked.
Stacked Plots. All rates applied are the same rates applied the previous year on the same plot.

Using GPS coordinates low rate plots were located and low rates were again applied on the same plot with a 6 inch previous band side offset.
The Stacked Plots prove that for three years in a row.....the best net return for risk involved is 63 pounds N per acre, 22 pounds P per acre and 13 pounds S per acre. The Marginal Return Point at \$31.60 per acre nutrient cost is bankable at lowest risk, corn on corn.

A nutrient investment of \$66.20 per acre produced and additional \$4.04 per acre at Maximum Economic Yield. The 3,000 acre irrigated corn producer Joel McClure could bring \$12,120 of additional net return with another \$198,600 investment in nutrients. A 6% return on the investment could be produced at MEY. The MEY is hardly worth the effort considering all the extra handling of the nutrients and the fact that other inputs bring much better returns. A 6% return on the investment is not bankable when competing for other operating line investments.

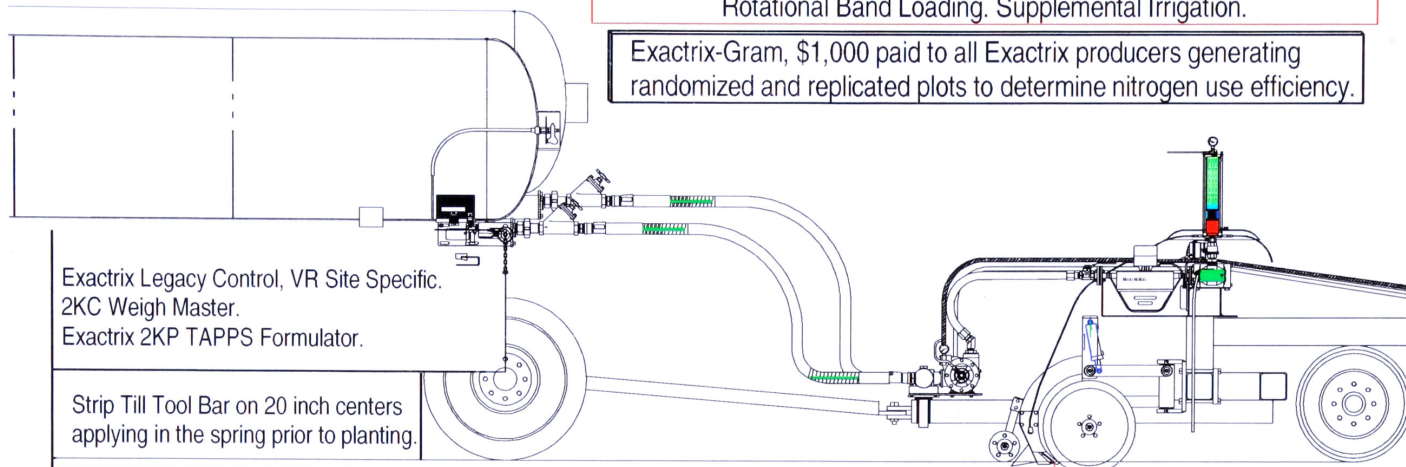


2005, 2006, 2007, Stacked Rotation

Strip Till, 20" Corn on Corn, Averaged.

Low rate on rate, high rate on high rate, 2005, 2006, 2007.
Rotational Band Loading. Supplemental Irrigation.

Exactrix-Gram, \$1,000 paid to all Exactrix producers generating
randomized and replicated plots to determine nitrogen use efficiency.



Exactrix Legacy Control, VR Site Specific.
2KC Weigh Master.
Exactrix 2KP TAPPS Formulator.

Strip Till Tool Bar on 20 inch centers
applying in the spring prior to planting.

Joel McClure, Hugoton, KS. Garrett Havel, Crop Quest, Professional Agronomist.

Center Pivot, Corn on Corn in strip tillage on 20 inch centers.

Very Large 1.86 acre plots. Improved sample size based on 1/2 mile lengths. Randomized and Replicated 3 times. Weigh Wagon checked.

Stacked Plots. All rates applied are the same rates applied the previous year on the same plot.

Using GPS coordinates low rate plots were located and low rates were again applied on the same plot with a 6 inch previous band side offset.

The Stacked Plots prove that for three years in a row.....the best net return for risk involved is 63 pounds N per acre, 22 pounds P per acre and 13 pounds S per acre.

The Marginal Return Point and the Maximum Economic Yield after three years is 63 pounds N, 22 pounds P and 12 pounds S plus Zn in a nutrient band placed on 20 inch centers directly under the plant. Bands placed at least 30 days ahead of planting using a strip till tool bar from DMI.

Pounds N/A applied N at 30 cents, P at 40 cents, S at 30 cents spring 2007 as NH3, APP, ATS		19 bu.	Yield, Bu./A, Gross Return. NP&S cost, Nutrient cost %, Gross Margin	
155+39			213.53 bu/A, \$907.50	\$97.80.....10.7%.....\$809.32
100+25			200.42 bu/A, \$851.79	\$62.90.....7.4%.....\$788.89
75+19			194.49 bu/A, \$826.58	\$47.25.....5.7%.....\$779.33
50+13			198.85 bu/A, \$845.11	\$31.60.....3.7%.....\$813.51
			50 cent NP&S	\$49.00.....5.8%.....\$796.11
Comments		MEY, MRP, Equilibrium.		
The balance of the pivot was VR site specific applied with Exactrix Legacy Control. Large plots were supervised by Garrett Havel of Crop Quest. No visual differences were observed throughout the growing season. TAPPS formulation assured nitrogen stability. Supplemental irrigation at 13 inches maximum. Corn price based on \$4.25 per bushel at Dec. 22, 07 NH3 N at 30 cents at Dec. 22, 07 APP at 40 cents. ATS at 30 cents. N cost in APP and ATS priced at pound N cost of nutrient package. Best Return for Hugoton, KS. is averaged for three years...the low rate plot on top of the low rate plot.		Rotational Band Loading Implemented. Shank application offset to avoid previous band disturbance. Range of plots. 19 bu./A 50 cent nutrients, NH3 at \$820/Ton, APP at \$440/Ton, ATS at \$360/Ton.		
Soil pH 7.5 to 8.0, OM 1% to 1.8%. Continuous corn production area with corn moving directly to the feed lots. 2005, 2006, 2007 test plot data available at Exactrix.com.				
Bushels per Acre		150	200	250 300
		Test, McClure, 3 year Average, Oct 2007		

Not included in the plots obviously...the Variable Rate Program across the landscape was practiced outside of the test plots. Variable rate averaged 110 pounds N, 70 pounds P as Ammonium Poly Phosphate 10-34-0, and 13 pounds S as Ammonium Thio-Sulfate, 12-0-0-26S.

Zn was held constant with a third metering system using Legacy 6000 control. The Mid-Tech peristaltic pump injects Zinc into the flow of APP and ATS. Thus Zn costs were reduced.

The Soil....Low CEC of 3 to 4, Sandy Soils, 7.6 pH, 7 to 18 ppm P is typical in M1, Variability noted in soil depth, pH and OM at 1% to 1.5% depending on rotation.

High temperature in July and August with strong winds are typical....200 bushel average yields are achievable in continuous corn on corn three years in a row.

Limited water...not full irrigation....14 ppm sodium per 1 inch of water.

Variable Rate Plots looked very promising. Crop Quest does the prescription circa Garrett Havel.

More study is required....P and S may be higher due to low soil test P. More testing on P and S required.

Manure does not seem to work long term...the manure just disappears in two years when surface applied at 20 tons per acre.

The Soil Micro Flora are very active at the 7.3 to 8.2 soil pH and the higher soil temperatures when water is included with supplemental irrigation.

The Machinery and Methods.

Strip-Till TAPPS, DMI on 20 inch centers.....24 openers at 40 feet.

Single Disc Bourgault, Side Dress TAPPS, for corn, sunflower, milo production on 20 inch centers, 24 banding openers at 20 inch.

Deere 750 at 20 feet on 7.5 inch rows with Exactrix Wing Injection formulating TAPPS for wheat production.

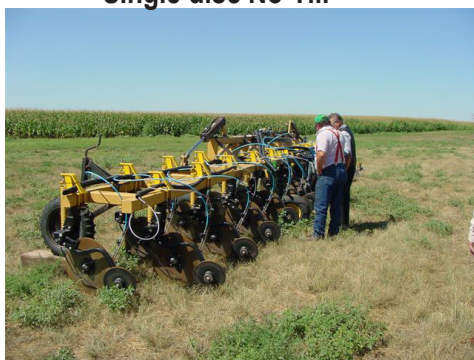
Three different application methods moving the Exactrix TAPPS formulator to each different machine.

Metering and Formulation...2KC TAPPS Formulator with 2KC Weigh Master...Legacy Control and VR site specific.... Exactrix Electronic Pressure gauges...Exactrix system is current.

Strip Till



Single disc No-Till



Wing Injection No-Till



A Big Management Change in 2008.

Joel will move away from Strip-Till in 2008. The sandy soils perform best without tillage. Weed control is better in Milo since the strip tillage can hurt weed control in Milo. The cows will not be on the pivots.



The goal is to use the Bourgault 20 inch single disc tool bar at 40 feet applying TAPPS with pre-plant indexing to the side about 5 inches. Joel can side dress on 20 inch centers since his tractor and trailer are set up for with the correct tires and gauge centers for side dress 20 inch. Joel did side dress some of crop this year.

Joel can cover about 150 to 180 % more acres per day with the single disc, side dress tool bar compared to strip-till...plus the weather will not be near as great a factor with single disc application. Horsepower and costs are greatly reduced with the high speed, No-tillage single disc Bourgault tool bar.

