Idaho Spring Wheat, DNSW

Craig Rife: Hutchinson, KS, 620-727-3995
Spokane, WA General Office 800-929-9289
www.exactrix.com

Confirming a reticulated data set regarding Exactrix 2KC Weigh Master forming TAPPS....this time from Lewiston, Idaho under drought stress and extreme heat.

Larry Smith of the University of Idaho, designed the plots, observed the plots and accumulated the data at harvest. Bob Wittman and Dick Wittman provided the land, the opportunity costs and the machinery. Exactrix provided $1,000 to the Wittman Farm at McCormick Ridge, Lewiston, Idaho.

Randomized and Replicated four times in large 1/3 acre plots. Producing a greater sample size in a uniform soil area. Much better than a small research plot...no alley ways and a much larger sample size.....On Farm Testing from the STEEP program produces results that can set nitrogen management programs for your farm.

Using the 2KC Coriolis Mass Flow Weigh Master with applied NH3 accuracies of .005 irregardless of temperature or tank pressure...irregardless of bulk density shift with NH3. Truly accurate liquid NH3 application with no sinusoidal flow and port to port CV of less than 1%. A liquid streaming flow of NH3... driving into the soil up to 2 inches deeper in a reactive process at 800 degrees F forming NH4 and triple ammoniating APP/ATS and forming Tri-Ammonium Poly Phosphate Sulphate or TAPPS.

Using the Paired Row Stealth Opener with Exactrix TIO injection of NH3, 10-34-0 and 12-0-0-26S forming crystallized TAPPS for radicle and seminal root access of Dark Northern Spring Wheat. Aligned and seed zone lower and to the side, 12 inch bands with emerging plant seminal root access on average 6 inch rows. Paired row efficiency of placed TAPPS 2 inches below and 2 inches to the side of each 6 inch seed row.

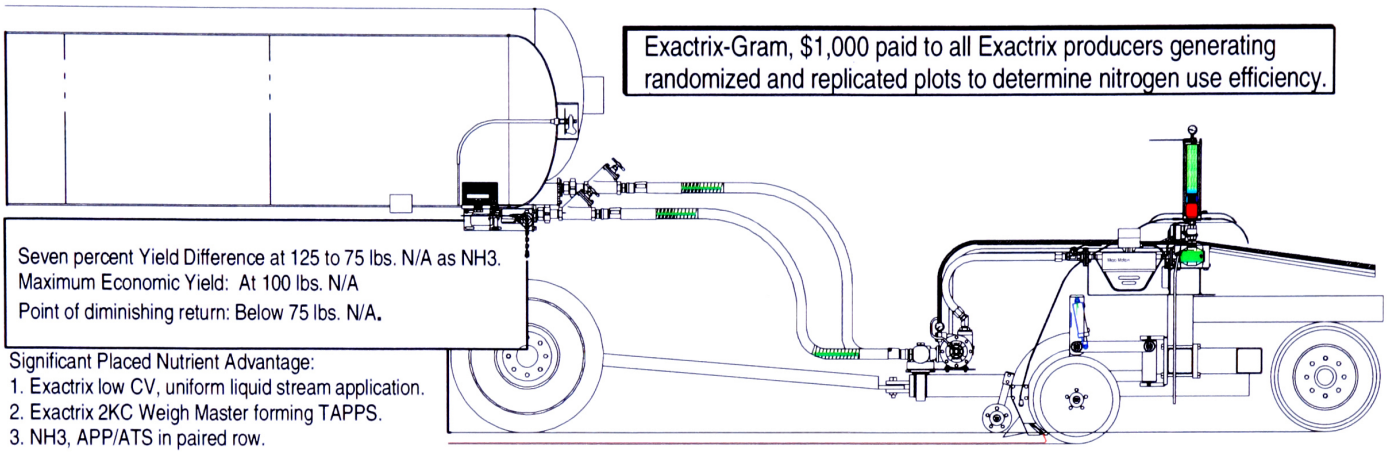
Strange But True....Confirming the Trend....from the Ohio River Valley...from the Northern Great Plains in Spring Wheat Production...from irrigated corn production of Nebraska and Kansas....from dryland Milo of Kansas.....from the Canadian Prairies in Spring Wheat rotations...it is time proven that Exactrix owners must immediately reduce nitrogen input or yield reductions can occur. Strange but true.

NH3 Nitrogen application must be reduced with Exactrix in Corn, Wheat and Cotton....Yields roll back at old standard rates.

Confirming the soil pH factor.....lower pH soils require more N....pH of 7.3 to 7.5 is considered ideal for soil bacteria supplying nitrogen from the OM. The Carbon Nitrogen cycle works when the soil life is maintained.

Guy Swanson
ASABE, ASA, ASM, WSDA Certified.
Exactrix Global Systems
Spokane, Washington.

2006 Exactrix Test Data supplied by Wittman Farms, Lewiston, Idaho and the University of Idaho, Larry Smith, Extension Educator. DNSW



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

Seven percent Yield Difference at 125 to 75 lbs. N/A as NH3.
Maximum Economic Yield: At 100 lbs. N/A
Point of diminishing return: Below 75 lbs. N/A.

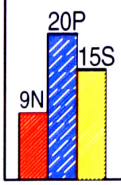
Significant Placed Nutrient Advantage:
1. Exactrix low CV, uniform liquid stream application.
2. Exactrix 2KC Weigh Master forming TAPPS.
3. NH3, APP/ATS in paired row.

Aug. 10, 06. Lewiston, Idaho.
Protein 14.0%, $5.10/Bu.
Protein 15.0%, $5.14/Bu.

Lbs. N/A applied as NH3

Exactrix Std. 125 4 randomized replications.	Lost $19.07 per acre at $37.50 for N.	**43.00 bu/A** 15.10% Pro, 52.17 lbs./Bu. test weight. $5.14/Bu. Gross Return , $221.02 . **Variable N Gross Margin $183.52.**	4.
MicroTrak Std.125 4 randomized replications.	Lost $17.78 per acre at $37.50 for N.	**43.25 bu/A** 15.73% Pro, 51.80 lbs./Bu. test weight. $5.14/Bu.Gross Return, $222.31. **Variable N Gross Margin $184.81.**	3.
Exactrix, 20% 100 4 randomized replications.	MEY 45.25 bushels per acre at $30 for N.	**45.25 bu/A** 15.33% Pro, 52.85 lbs./Bu. test weight. $5.14/Bu.Gross Return, $232.59 **Variable N Gross Margin $202.59**	1.
Exactrix, 40% 75 4 randomized replications.	MRP 42.25 bushels per acre at $22.50 for N	**42.25 bu/A** 14.82% Pro , 53.23 lbs./Bu. test weight. $5.10/Bu. Gross Return, $215.48. **Variable N Gross Margin $192.98**	2.

APP/ATS, crystallized with NH3.
Banded TAPPS.



Drought stress conditions after June 16, 06. The spring wheat plant could not support the additional tillers and test weight was sub-standard. Yield potential dropped 40% due to extreme temperatures.

Range: 3.0 bu./a. or 7%
Plot CV: 5%.
All plots were reviewed several times during the growing season. Harvest data is considered excellent with repeatable data and trends.

The soil pH is below 7 and trending to 6.2 pH.
Acid soils...the soil bacteria colony is shrinking... requiring 20 to 25% more applied N as compared to 7 to 7.5 pH soils.

Weigh scales at truck axles were used to weigh each of 16 total plots of 15,000 square feet....Roughly 1/3 acre. Proteins and test weights were certified at a grain terminal based on a government certified test instrument. Plots were 45 feet wide and 500 feet long and cut with a 30 foot header proceeding down the center of each plot leaving 7.5 feet on each side.

Bushels per Acre 30 40 50 60 70 80

Exactrix at a 40% reduction from the 20% reduction allowed a $7.50 reduction in risk and a lost additional return of $9.61 of income....An excellent Marginal Return Point and the best of all management strategies....since $7.50 could have been invested in another input that could have brought a $15.00 return in dryland farming. Just one years worth of data that can be utilized to some degree in future planning....However very similar to other Exactrix Test Plots in Corn and Wheat across the US and Canada.

A total of 16 plots randomized and replicated four times at three rates of Exactrix N, 75, 100 and 125 pounds N per acre.
Also comparing MicroTrak pressure reducing NH3 application to Exactrix pressure increasing system with liquid stream flow.

Hank variety of DNSW following Soft White Winter Wheat. Larry Smith, University of Idaho, CE, supervised plot design, harvest & accumulation of data.

Right to the bottom line...$20 to $40 per acre additional net.

University of Idaho Extension
Nez Perce County
1239 Idaho Street
Lewiston, ID 83501
Phone: 208/799-3096
Fax: 208/799-3054
email: nezperce@uidaho.edu
http://extension.ag.uidaho.edu/nezperce

August 10, 2006

Bob Wittman
33428 McCormack Ridge Road
Lapwai, ID 83540

Fertilize Applicator/Rate Comparisons for Yield, Test Weight (Bushel Weight), and Protein

Wittman Farm
2006 Fertilize Applicator/Rate Comparisons
Microtrack – Exactrix

Treatment rate	Yield bushel/acre	Yield bushel/acre	Percent Protein	Test Weight bushel weight
Exactrix -20%	45.25	45.25	15.33	52.85
Microtrack Standard	43.25	---	15.73	51.80
Exactrix Standard	43.00	43.0	15.10	52.17
Exactrix -40%	42.25	42.25	14.82	53.23

Hello, Bob:

After running the numbers for yield comparison among the treatments, I came up with a significant difference in the test weight (bushel weight) and trends for other comparisons.

For yield:

The Exactrix only comparison provided an advantage to the Exactrix less 20% treatment over other treatments.

The Exactrix and Microtrack comparisons provided an advantage to the Exactrix less 20% over other treatments.

For protein:

The Microtrack standard edged out other treatments

For test weight/bushel weight:

The Exactrix less 40% provided the highest and statistically significantly (5%) better bushel weight than other treatments

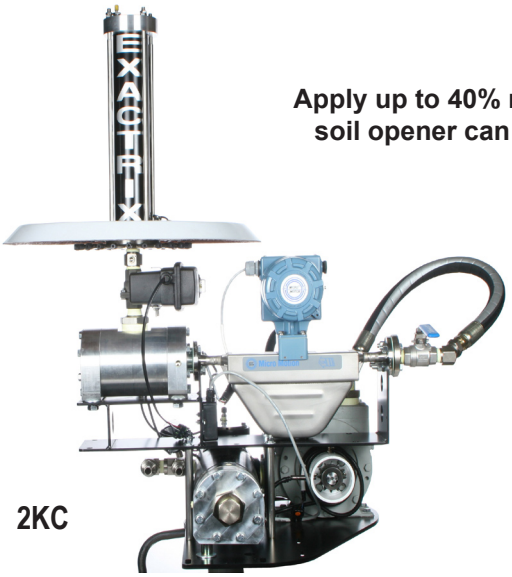
Summary comments: Overall, Exactrix treatments have performed better (except for protein percentage) and should demonstrate overall positive returns $ when you make the calculations to determine the profitability of each treatment. In the meantime, there are six (6) attachments of information for your viewing and files.

Please contact me if you have questions or need more information.

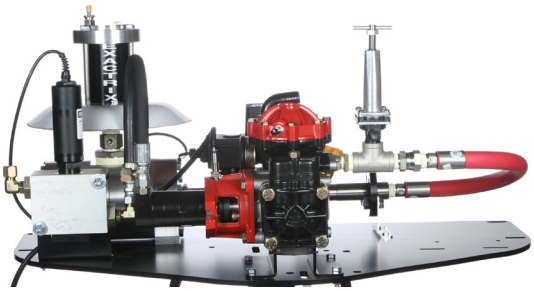
Larry J. Smith

Best regards,
Larry J. Smith- Extension Educator

Apply up to 40% more crop usable Nitrogen and Phosphate with all Exactrix systems. Any soil opener can apply NH3, APP, ATS with Exactrix Direct Injection Liquid NH3 systems.



2KC



2KP

2 KC Weigh Master

Flexicoil 5000 Seeding Spring Wheat

Bob Wittman

Winchester, ID May 8,2006

Exactrix TAPPS Formulation

Paired Row Stealth Opener

2" Internal Bottom Outlet Valve

Bob Standing In Test Plot

Stealth Opener

June 16, 2006 Test Plots

Flexicoil 5000 Microtrak

Pressure Reducing NH3 Line Nest

Electronic Scales

Larry Smith, U of I, CE

Checking Data

Bob Brown Flagging Plots

500 Foot Length

Todd Wittman Reviews With Larry

Plot Stand View

Dead Heading

Drought Stress DNSW

Sucker Heads / Drought Stress

Low Test Weight, Lower Heads Lost

16 Total Plots

Wittman Farms Test Plots, harvest Aug. 6, 06, Sixteen total Plots, Randomized and Replicated 4 x's

Replicate #1,.... 168 feet wide x 500 feet in length.	Yield	Protein	Test Weight
Microtrak, Flex 5000, 33 ft., Pressure Reducing NH3, 120 lbs. N/A	44.00	14.90	52.10
Exactrix, Flex 5000, 45 ft., Liquid NH3, 120 lbs. N/A, Std.	46.00	15.10	53.10
Exactrix, Flex 5000, 45 ft., Liquid NH3, 100 lbs. N/A, 20%.	49.00	14.70	53.60
Exactrix, Flex 5000, 45 ft., Liquid NH3, 75 lbs. N/A, 40%.	45.00	14.20	54.40
Replicate #2,.... 168 feet wide x 500 feet in length.			
Exactrix, Flex 5000, 45 ft., Liquid NH3, 120 lbs. N/A, Std.	44.00	13.40	52.40
Exactrix, Flex 5000, 45 ft., Liquid NH3, 100 lbs. N/A, 20%.	45.00	15.00	52.90
Exactrix, Flex 5000, 45 ft., Liquid NH3, 75 lbs. N/A, 40%.	44.00	14.90	53.20
Microtrak, Flex 5000, 33 ft., Pressure Reducing NH3, 120 lbs. N/A	41.00	16.00	51.70
Replicate #3,.... 168 feet wide x 500 feet in length.			
Exactrix, Flex 5000, 45 ft., Liquid NH3, 100 lbs. N/A, 20%.	43.00	15.00	52.80
Exactrix, Flex 5000, 45 ft., Liquid NH3, 75 lbs. N/A, 40%.	41.00	14.40	53.50
Microtrak, Flex 5000, 33 ft., Pressure Reducing NH3, 120 lbs. N/A	43.00	15.90	51.40
Exactrix, Flex 5000, 45 ft., Liquid NH3, 120 lbs. N/A, Std.	40.00	16.00	52.00
Replicate #4,.... 168 feet wide x 500 feet in length.			
Exactrix, Flex 5000, 45 ft., Liquid NH3, 75 lbs. N/A, 40%.	39.00	14.82	53.23
Microtrak, Flex 5000, 33 ft., Pressure Reducing NH3, 120 lbs. N/A	45.00	15.73	51.80
Exactrix, Flex 5000, 45 ft., Liquid NH3, 120 lbs. N/A, Std.	42.00	15.10	52.17
Exactrix, Flex 5000, 45 ft., Liquid NH3, 100 lbs. N/A, 20%.	43.00	15.33	52.85

Test Wittman, Plot Layout, 8/28/04

DNSW, Lewiston, Idaho, Aug. 6, 06 14% protein $5.10, 15% protein $5.14	Yield	Protein	Test Weight	Variable N @$.30 Gross Margin	MEY	MRP	Variable N @$.40 Gross Margin	MEY	MRP
Exactrix 20% reduced at 100 lbs. N/A	45.25	15.33	52.85	1. $202.59	Yes		1. $192.59	Yes	
Microtrak standard at 120 lbs. N/A	43.25	15.73	51.80	3. $184.81			3. $174.31		
Exactrix standard at 120 lbs. N/A	43.00	15.10	52.17	4. $183.52			4. $173.02		
Exactrix 40% reduced at 75 lbs. N/A	42.25	14.92	53.23	2. $192.98		$7.50= $9.61	2. $185.38		$10.00= $7.21

N....Reviewed, Randomized, Replicated proving Reticulated data from North America.

Economic evaluation using High, Standard and Low pricing for DNSW.

Two cost scenarios for nitrogen as NH3 at 30 cents and nitrogen as NH3 priced at 40 cents.

Wittman Farms Test Plots, harvest Aug. 6, 06, Sixteen total Plots, Randomized and Replicated 4 x's.

The data was summed and the average yields taken as the mean along with protein and test weight.

Variety is Hank DNSW. Seeded into 1/3 acre plots with field equipment.

Data compared to other DNSW producers and Exactrix owners.

DNSW, Lewiston, Idaho, Aug. 6, 06 14% protein $5.10, 15% protein $5.14	Yield	Protein	Test Weight	Variable N @$.30 Gross Margin	MEY	MRP	Variable N @$.40 Gross Margin	MEY	MRP
Exactrix 20% reduced at 100 lbs. N/A	45.25	15.33	52.85	1. $202.59 232.58 $30.00 N	Yes		1. $192.59 $40.00 N	Yes	
Microtrak standard at 120 lbs. N/A	43.25	15.73	51.80	3. $184.81 222.30 $37.50 N			3. $172.30 $50.00 N		
Exactrix standard at 120 lbs. N/A	43.00	15.10	52.17	4. $183.52 221.02 $37.50 N			4. $171.02 $50.00 N		
Exactrix 40% reduced at 75 lbs. N/A	42.25	14.92	53.23	2. $192.98 215.48 $22.50 N		$7.50= $9.61	2. $185.48 $30.00 N		$10.00= $7.11

DNSW, Lewiston, Idaho, 7 yr. avg. 14% protein $4.10, 15% protein $4.14	Yield	Protein	Test Weight	Variable N @$.30 Gross Margin	MEY	MRP	Variable N @$.40 Gross Margin	MEY	MRP
Exactrix 20% reduced at 100 lbs. N/A	45.25	15.33	52.85	1. $157.33 187.33 $30.00 N	Yes		1. $147.33 $40.00 N	Yes	
Microtrak standard at 120 lbs. N/A	43.25	15.73	51.80	3. $141.55 179.05 $37.50 N			3. $130.55 $50.00 N		
Exactrix standard at 120 lbs. N/A	43.00	15.10	52.17	4. $140.52 178.02 $37.50 N			4. $129.05 $50.00 N		
Exactrix 40% reduced at 75 lbs. N/A	42.25	14.92	53.23	2. $150.72 173.22 $22.50 N		$7.50= $6.61	2. $143.22 $30.00 N		$10.00= $4.11

DNSW, Lowest Price. 14% protein $3.10, 15% protein $3.14	Yield	Protein	Test Weight	Variable N @$.30 Gross Margin	MEY	MRP	Variable N @$.40 Gross Margin	MEY	MRP
Exactrix 20% reduced at 100 lbs. N/A	45.25	15.33	52.85	1. $112.09 142.09 $30.00 N	Yes		1. $102.09 $40.00 N	Yes	
Microtrak standard at 120 lbs. N/A	43.25	15.73	51.80	3. $98.30 135.80 $37.50 N			3. $85.80 $50.00 N		
Exactrix standard at 120 lbs. N/A	43.00	15.10	52.17	4. $97.52 135.02 $37.50 N			4. $85.02 $50.00 N		
Exactrix 40% reduced at 75 lbs. N/A	42.25	14.92	53.23	2. $108.47 130.97 $22.50 N		$7.50= $3.62	2. $100.97 $30.00 N		$10.00= $1.12

Producers with soil pH of 7 to 7.3 take note that the soils in this group of data sets are Acid soils in the 6.2 to 6.5 pH range. Therefore nitrogen rates are elevated 20% as compared to neutral soils of the Great Plains.

The soil life or soil bacteria colony is reduced and more N is required.

The Proven Yield Method is non functional with a flat yield curve...The Economic Method of determining N rate is now employed. Data indicates 12% of the budget should be dedicated to nutrients...Acid soils may require a 15% budget allowance