IDAHO WINTER WHEAT

The New Anhydrous Ammonia,
NH3e breaks record in Idaho Hard Red Winter Wheat.

TAPPS reviewed with Nitrogen varied.

(A nitrogen trial turns into a phosphate trial.) Wittman Farms, Lewiston, Idaho, Dick, Todd and Bob Witt-man. University of Idaho, Cooperative Extension, Larry Smith, Lewiston, Idaho. Exactrix Global Systems, Spokane, Guy Swanson. Assisting and observing with the plots, Bob Brown and Dick Lloyd, Lewiston, Idaho.

Dick Lloyd, Bob Brown, Larry Smith and Todd Wittman.

TAPPS.....7 gallons of APP/ATS applied with Exactrix liquid NH3 and crystallized between paired rows, 2 inches below and 1.5 inches to the side of the seed rows
Seed Row, N,P and S applied at a 50 pound nominal rate of 16-2-0-14S in the seed row using Flexicoil Paired Row Stealth Opener.
Seeding rate, 1.26 million seeds per acre of HRWW, Eddy variety.(Seeding Rate) 90 pounds per acre seed rate at 14,000 kernels per pound.
Harvest Date, July 25, 07,
Seeding date, October 2006

Climate, PNW with a 70% Winter Rainfall, early July heat and wind at 100 degrees F moved the maturity ahead.
Rainfall Year, 25% below normal....normal 20 inch to 22 inch rainfall....following a dry 20% below normal rainfall year in 2006.

System, No-till
Rotation, Five Years explained: 2007 HRWW following 2006 spring canola, 2005 Soft White Winter Wheat, 2004 Soft White Winter Club Wheat, 2003 Spring Columbia Peas.

Landscape, Rolling slopes.

Plots were 3 to 5% slope angle facing to the north and well drained with no signs of standing water.

Changing altitude from 850 feet to 4,000 feet in ten miles. Varying rainfall patterns and soil depths.

Soil depth, At least 6 feet of depth in the plot area. Loess deposits of the Cascade volcanoes.

Soil pH = 6.0-6.1
OM = 4.3 – 4.8

Trials, Randomized and Replicated 3 times with 9 total plots at 400 feet in length and applied 45 feet wide. Following Steep II criteria. Field Soil Test Data, Data taken and available prior to seeding....Soil lab recommendations made. Nitrogen Rates adjusted to .6 of nominal and then adjusted downward in 25% increments. Soil lab recommendation was 150 pounds N. Adjustment at .6 of soil lab recommendation was made for Exactrix uniform application at 90 pounds N/A as a good mean average rate of application.

Trials, Randomized and Replicated 3 times with 9 total plots at 400 feet in length and applied 45 feet wide. Following Steep II criteria.
Field Soil Test Data, Data taken and available prior to seeding....Soil lab recommendations made. Nitrogen Rates adjusted to .6 of nominal and then adjusted downward in 25% increments. Soil lab recommendation was 150 pounds N. Adjustment at .6 of soil lab recommendation was made for Exactrix uniform application at 90 pounds N/A as a good mean average rate of application.

The plots started at 110 pounds N/A at NH3 in 25% increments down to 83 pounds N/A and then down to 62 pounds N/A as NH3. N from APP/ATS and 16-20-0-14S was held constant at 12 pounds N/A.

All N sources included....Actual total N/A applied in the plots was 75 pounds N/A in the best trial when including the 12 pounds N/A from other sources. Second best was totalized at 95 pounds N/A. Last place was totalized at 122 pounds N/A.

Examining Yield, Protein and Test Weight.

Super Ammoniated APP/ATS applied and crystallized in lineal uniform bands with Nitrogen as direct injection liquid NH3 at time of seeding. Nitrogen as NH3 was varied using the Exactrix 2KC Weigh Master application technology at 1 % CV and no sinusoidal flow.

62 pounds N produced 89.10 bushels per acre at a test weight of 63.50 pounds per bushel with a protein of 10.60% @ $6.66 per bushel.....$593.40...N adjusted $593.40.

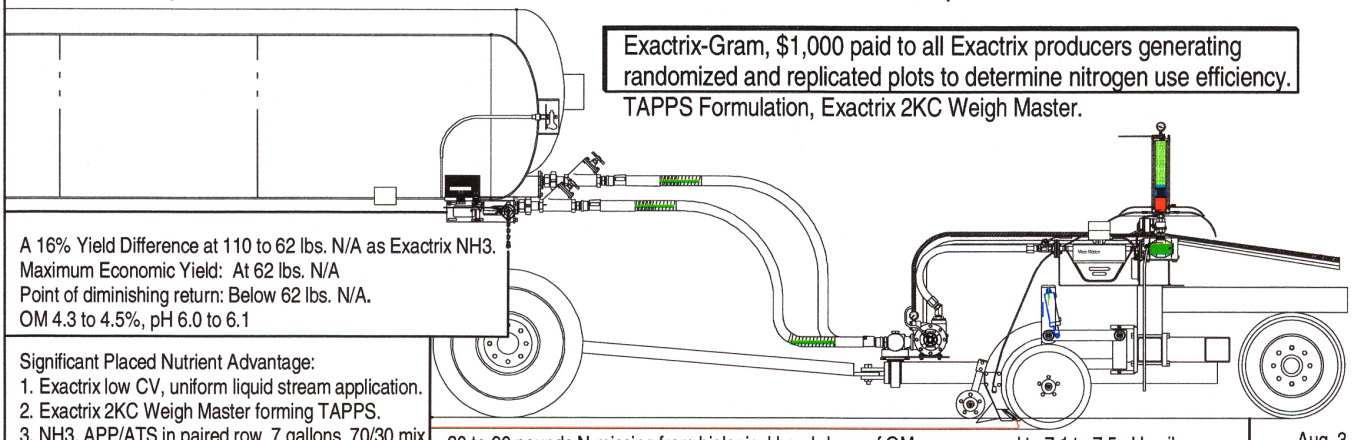
83 pounds N produced 83.50 bushels per acre at a test weight of 63.27 pounds per bushel with a protein of 11.03% @ $6.82 per bushel.....$569.47...N adjusted $563.17.

110 pounds N produced 76.60 bushels per acre at a test weight of 62.73 pounds per bushel with a protein of 11.77% @ 6.90 per bushel.....$528.54....N adjusted $514.14.

2007 Exactrix Test Data supplied by Wittman Farms, Lewiston, Idaho and the University of Idaho, Larry Smith, Extension Educator. 45 foot Flexicoil with Paired Row Stealth openers on 12 inch.

HRWW

Exactrix-Gram, $1,000 paid to all Exactrix producers generating randomized and replicated plots to determine nitrogen use efficiency.
TAPPS Formulation, Exactrix 2KC Weigh Master.



A 16% Yield Difference at 110 to 62 lbs. N/A as Exactrix NH3.
Maximum Economic Yield: At 62 lbs. N/A
Point of diminishing return: Below 62 lbs. N/A.
OM 4.3 to 4.5%, pH 6.0 to 6.1

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. 7 gallons, 70/30 mix.
4. 50 pounds, 16-20-0-13S in row.

30 to 60 pounds N missing from biological breakdown of OM as compared to 7.1 to 7.5 pH soils.
Missing N is reflected in lower proteins and phosphate response. Hydrogen Toxicity indicated at 6.0 pH.

Aug. 3, 07
Lewiston, Idaho.

Lbs. N/A applied as NH3

12.5 bu.

Exactrix 110
3 randomized replications.
Total N, 125 pounds.

76.6 bu/A 11.77% Pro, 62.73 lbs./Bu. test weight.
$6.90/Bu. Gross Return, $528.54
Variable N Gross Margin $514.14 **3.**

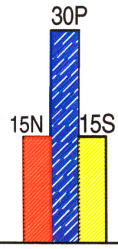
Exactrix 83
3 randomized replications.
Total N, 98 pounds.

83.5 bu/A 11.03% Pro, 63.27 lbs./Bu. test weight.
$6.82/Bu.Gross Return, $569.47.
Variable N Gross Margin $563.17 **2.**

Exactrix, 62
3 randomized replications.
Total N/A, 77 pounds

89.1 bu/A 10.60% Pro, 63.50 lbs./Bu. test weight.
$6.66/Bu.Gross Return, $593.20
Variable N Gross Margin $593.20 **1.**

APP/ATS, crystallized with NH3. 7 gallons APP/ATS, 70/30 mix, banded TAPPS. 50 pounds16-20-0-13S, in row.



Drought stress conditions after June 20, 07. The winter wheat plant could not support the additional tillers, however test weight was good. Yield potential dropped 10% to 25% due to extreme temperatures.

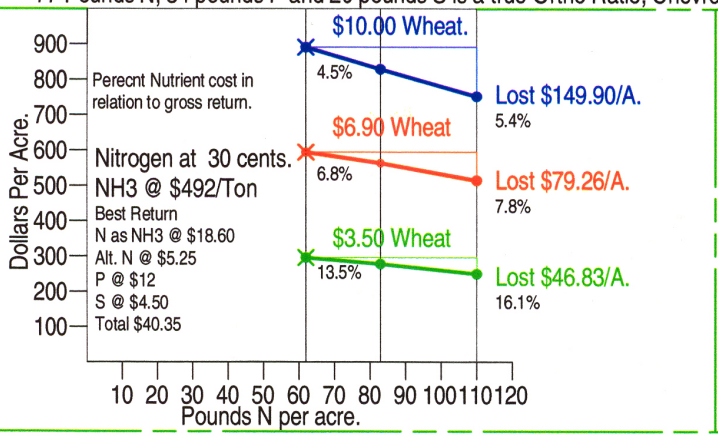
Range: 12.5 bu./a. or 16%
Plot CV: 7.63%.
The plots showed excellent stands. No lodged wheat or sprayer track problems. Excellent weed control from a 5 year rotation.

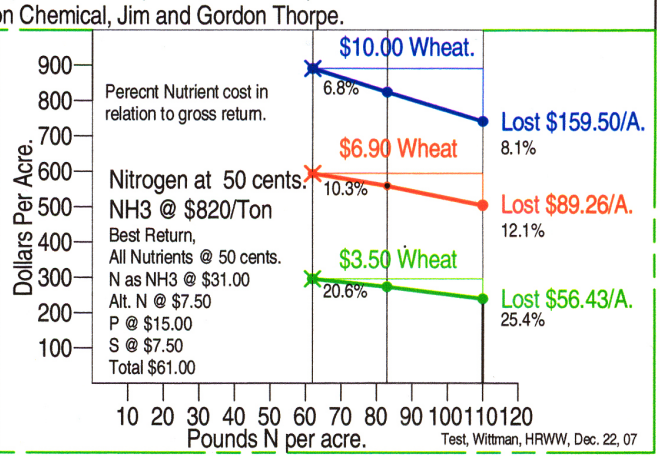
The soil pH is below 7 and trending to 6.1 to 6.0 pH.
Acid soils...the soil bacteria colony is shrinking... requiring 20 to 25% more applied nutrients as compared to 7 to 7.5 pH soils.
OM increasing to 4.5% since biological breakdown is restricted by adverse hydrogen content of the soil.

Weigh scales at truck axles were used to weigh each of 9 total plots,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 400 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

Soil Laboratory recommendation was 155 pounds N per acre, 100 bushel per acre goal, following spring cannola in a 5 year rotation.
89.1 bushels per acre achieved at .5 of soil laboratory recommendation. 77 pounds N, 30 pounds P and 15 pounds S is a modified Ortho Ratio.
77 Pounds N, 34 pounds P and 20 pounds S is a true Ortho Ratio, Chevron Chemical, Jim and Gordon Thorpe.





Test, Wittman, HRWW, Dec. 22, 07

Economics Reviewed.

Harvest Wheat Prices August 3, 07
Adjusting N cost at 30 cents per pound N as NH3 at current wheat prices in $6.66 to $6.90 range.
Best Trial Case, 89.1 bu./A at $6.66 per bushel, **62 pounds N. $593.40**
Second Best, 83.5 bu./A at $6.82 per bushel, **83 pounds N.** N Negative $6.30 at $569.47 gross or adjusted to **$563.17, $30.23 per acre negative return.**
Last Place, 76.6 bu/A. at $6.90 per bushel, **110 pounds N.** N Negative $14.40 at $528.54 gross or adjusted to $514.14, **$79.26 per acre negative return.**

Lower Wheat Prices,
Adjusting the Wheat Price at 50% or roughly $3.50 per bushel. A likely price over the last five years.
Best Trial Case, 89.1 bu./A., 62 pounds N at $3.33 per bushel. **$296.70**
Second Best, 83.5 bu./A., 83 pounds N at $3.41 per bushel, $284.73 less $6.10 for N.$278.63, **$18.07 per acre negative return.**
Last Place, 76.6 bu./A., 110 pounds N at $3.45 per bushel, $264.27 less $14.40 for N is $249.87, **$46.83 per acre negative return.**

Higher Wheat Prices,
Adjusting the Wheat price at 133% or roughly $9.00 per bushel. A fair price in relation to the price of nutrients.$ 9.00 per bushel wheat is relative compared to $5.00 corn.
Best Trial Case, 89.1 bu./A., 62 pounds N at $8.86 per bushel. **$789.22**
Second Best, 83.5 bu./A., 83 pounds N at $9.07 per bushel, $757.40 less $6.10 for N $751.29, **$37.97 per acre negative return.**
Last Place, 76.6 bu./A., 110 pounds N at $9.18 per bushel, $702.95 less $14.40 for N is $688.55, **$100.66 per acre negative return.**

The Wheat Price Aug 3, 07

Barge freight and terminal handling is normally around 44 cents per bushel from Lewiston, ID to Portland, OR passing through 4 Snake River Dams and 4 Columbia River Dams to Portland.
Genesee Union, an upland elevator 20 miles off the Snake River seaport, shows about 63 cents per bushel less Portland price at the country elevator.
Hauling direct from the field to the Lewiston, Idaho seaport terminal saves about 19 cents.
Agriculture is about Transportation and Water....so producers can adjust prices based on Portland delivered prices and deduct the freight.

Based on Portland prices Friday Aug. 3, 07.	Friday, Dec. 21, 07
US Number 1, HRWW, Falling numbers 300 or better.	US Number 1, HRWW, Falling numbers 300 or better.
Ordinary protein, $6.66	Ordinary Protein $10.54.
10% protein, $6.66	10% protein $10.54.
11% protein, $6.82	11% protein $10.74
11.5% protein, $6.90	11.5% protein $10.87
12% protein, $6.90	12% protein $10.87.
13% protein, $7.02	13% protein $10.99
13% protein, Montana Origin,$7.02	13% protein, Milling Quality Montana Origin $10.99

Two years Exactrix test plot data.....in 2006 spring wheat and 2007 winter wheat.

In 2007....Yields are increased.....when nitrogen is reduced..... and placed phosphate is made more efficient.

Exactrix Process Management has a niche in improving profit and reducing risk.
Two dry years in a row....no soil moisture reserve...7 years data required.

Notes, Terms, Points of Interest.

Notes and Points of Interest..the 9 inch band spacing... There is also a variety trial at the Wittman Farm....The variety trials were done a bit differently at 150 pounds N as NH3...TAPPS was not formulated....but there was a dual placement

approach.....The typical pressure reducing application for the variety trials were done with a 9 inch band spacing **Flexicoil seeder** using an Anderson shank type opener. There was no intent to compare the **9 inch Flexicoil seeder** to the 12 inch **Flexicoil seeder** or to review nutrient process efficiency..the purpose of the variety trials was simply to find the best variety which turned out to be Eddy.

The Nitrogen rate Plots are 12 inch band spacing..... The N trials that join the variety trials were done with the Exactrix equipped **Flexicoil seeder that can formulate** TAPPS. The Exactrix TAPPS formulation trials were done with a 12 inch band spacing using a Paired Row, Flexicoil Stealth opener. Previous Wittman Exactrix hard red spring wheat trials in 2006 indicated about 30% to 40% more efficiency of N using the Exactrix equipped seeder in 20% below normal rainfall.. Thus the N rate with the Exactrix seeder started at 110 pounds N and was reduced to 83 and 62 pounds hoping to produce a yield curve for N. You can view the 2006 trials www.exactrix.com/ISW.pdf .

The purpose of the nitrogen trial was to compare internally using the same seeder and TAPPS application to find the correct N rate. The goal was to find the yield curve for applied N. The next step would be a VR site specific application in the upcoming crop years using Legacy 6000 mapping and control....The purpose of the plots is to discover the correct algorithm for TAPPS application and Exactrix process management.

You will note that the N rate starting point was based on the soil lab recommendation....then using a .6 factor of the soil lab recommendation with the Exactrix Flexicoil seeder. Rather than 150 pounds N as the starting point..... the starting point was established at 110 pounds N...reduced to 83 pounds N per acre or a reduction of 25%....reducing again to 62 pounds N or a reduction of 25% from the 83 pound N rate. The assumption being that an applied N yield curve could be produced. Go to Corn Yield Summery (www.exactrix.com/CYS.pdf)

The complete Nitrogen yield curve was never established...but close. This is not unusual for TAPPS. A lower Nitrogen rate was required at 50 pounds N. Trials in Nebraska, Kansas, and Colorado have shown that the starting point to develop a yield curve with TAPPS is about 50% less than the soil lab recommendation. Go to www.exactrix.com/Bange.pdf and you will discover only 8% of the gross margin is required for nutrient input. Only 8% is all that is required for good yields and a big net margin.



TAPPS Formulation, paired row, Flexicoil, Stealth opener

Conclusive results.

Exactrix TAPPS application requires that N be reduced at least 40% if yields and net returns are to be increased...this is a general review of all trials with TAPPS in corn and wheat.

Yields will go up when N is reduced allowing P and S to perform. Over-application of N does result in too much top growth and not enough root system to support the top growth.

When N is reduced placed P and S can perform. The over-application of N masks the critical balance of nutrients. Allowing P and S to perform in a balance of 27-12-0-7S or the Ortho Ratio developed by Chevron Chemical, Jim and Gordon Thorpe. The Ortho Ratio is a consistent and persistent performer in wet and dry conditions.

TAPPS reviewed....In wet conditions N is stabilized and roots proliferate with placed P and S...in dry conditions N, P and S are in a balanced ratio.... developing deeper and better roots.

Balance of nutrients indicates that N should never be applied as a single product. NH3, Solution 32, or Urea should never be applied as a single product unless the agronomist is trying to mask the problem. All top dressing approaches are known for shallow roots and low N efficiency. Nutrients must be placed with root pattern geometry to get best returns.... N,P and S must be side dressed into the growing crop if yield potential is greater than planned....A second trip is always considered to develop the best returns under wet conditions. Side dressing winter wheat with single disc openers is possible if yield potential is going higher using a balance of N,P and S.

Applying at a 2.2 to 1 ratio of N to P and 3.8 to 1 ratio of N to S is time proven...applying more N will reduce yields with TAPPS....over-concentration of the nutrient band with nitrogen is not economically efficient and is considered toxic. Harapiak and Beaton have proven this nitrogen interference problem. Go www.exactrix.com/NP.htm There is an over concentration point using old fashioned non uniform application and sinusoidal flow techniques.



Questions: When conditions move to 20% above normal rainfall should producers side dress winter wheat with single disc openers? If the yield potential is much greater than planned should side dress TAPPS be considered as the plant breaks dormancy? At $6.50 wheat is side dress economical? What is the correct wheat price to consider side dress in wet years? Can nutrients be timed correctly?

At lot of questions surface when the nutrient prices increase so significantly and commodity prices do not make the same move. 10 cent N and $3.00 wheat has been a traditional standard in the previous decade...if N is 30 cents then wheat needs to be $9.00 per bushel....But if wheat is $9.00 per bushel it becomes even more important to reduce N....because N hurts yield when it is over applied. Reverse Thinking needs to be applied with Exactrix TAPPS application.

A good technique with Exactrix TAPPS applications is to spend no more than 12% or the gross income on nutrients. Lower pH soils may require more nutrient...higher pH soils may require less nutrient.
Producers spending more than 12% of the gross income for nutrients need to review their application process.

Comments on the Trials.

The rotation is No-till Spring Canola. The rotation is at least four years. Garbanzo Beans are in the rotation...the rotations are normally followed closely with very good weed control. To review the 2006 test plots at Wittman Farms go www.exactrix.com/ISW.pdf

The plots were excellent. Weed Control was very good, No hail...No down wheat, no sprayer track issues. 400 feet in length. Electronic scaled with an experienced team. The combines were equipped with a yield monitor...no protein monitor on the combine. The electronic scales were located a the four corner axle points of the truck. Larry Smith and Bob Brown followed standard procedures and Todd Wittman handled the harvest combine.

Terms:

TAPPS, Tri-Ammonium Poly Phosphate Sulfate, Super ammonization on APP/ATS. Banded and mixed at two common injection points with APP/ATS injected first and NH3 driven into the APP/ATS to assure crystallization of the two materials. To formulate TAPPS the application system must apply uniformly port to port at low 1% CV and no sinusoidal delivery in the lineal streaming band. Forming crystalline TAPPS requires special attention to the injection point and the mixing of the two materials. Not to be confused with dual placement which does not mix the two materials....intimate contact of the two materials is required to make the crystals of TAPPS, circa FFF, Larry Murphy. Proposed but never achieved until recently using Exactrix process management.

APP, Ammonium Poly Phosphate or 10-34-0, 11-37-0 built from super phosphoric acid and NH3 and manufactured in TVA or Shell reactors in 50 to 100 mile radius actual area of use. In the Great Plains mobile reactors produce APP at rail sidings for large Coops using water, and rail cars of super phosphoric acid and NH3. APP allows Zn and other micro nutrients to be mixed and blended into the polymer. APP is normally used in a 60 day period from date of manufacture.

ATS, Ammonium Thio-Sulfate. 12-0-0-26S, built at regional refineries as a by-product of removing sulfur from energy products. TKI is the primary supplier. Thio-Sul is trademarked by TKI and is also referred to as ATS. The material is not only a sulfur source, ATS is listed as a nitrogen stabilizer by NRCS and plant food organizations. Thio-Sul has been known for over 40 years to stabilize nitrogen. ATS is marketed strongly as a nitrogen stabilizer where such products as N-serve are marketed. ATS mixes well with APP. Homogenous blends are easily adjusted to the crop requirement.

Micro Nutrients. Ammoniated Zinc is normally mixed with TAPPS at concentrations of no more than 1 pound Zinc to 20 pounds P. Higher levels of Zinc can be applied but the 20 to 1 ratio must be maintained. Boron is a viable micro-nutrient to improve seed set in canola. The advantages of liquid application of micro-nutrients is so little is required compared to dry applications.

Low CV application, supplying nutrients into multiple bands with very little variance at each port outlet. A mathematical calculation that measures risk and repeatability. Each 1 % of CV means 1% is lost or not used. Pressure reducing NH3 systems have CV applications of 30% to 50%. Low CV application, allows application of nutrients to be reduced since each band is very close to being exactly the same. Not to be confused with the per acre rate....the band rate is the ultimate rate. Nutrients are reduced because the old methods of application were so inaccurate that the applied nutrient algorithm established for soil test labs was based on high CV application and lack of timing.

High Nutrient Cost... Nutrient costs should never exceed 12% or the gross income....if nutrient cost goes above 12% of the gross income per acre.... the application process must be reviewed and new techniques of application, timing and root pattern geometry must be reviewed. Exactrix irrigated corn producers in Nebraska and Kansas typically spend between 8% to 12% of the gross income for nutrients in 2007.

Proven Yield Method...A means to develop a nutrient recommendation based on what the crop needs to make good average yields. The Proven Yield Method no longer applies with Exactrix application since the nutrient cost has tripled and may double again. Process management, timing and geometry reduce nutrient requirement. The Proven Yield Method was based on high CV application and low nutrient cost in relation to the commodity irregardless of the timing.

Economic Method.... Reduces risk to lowest levels and allows good returns. A means to generate a nutrient recommendation without taking excessive risk. The economic method has been utilized for many years by dry land producers. Now recommended by UNL for winter wheat production.

Nitrogen Price.....Green Markets Review June 2007... Varies from $800 US dollars per US Ton in Medicine Hat, Alberta Canada at 48.8 cents per pound N..... to $450 per ton in Dodge City, Kansas at 27.4 cents per pound N. Wide variations in nitrogen pricing are due to lack of competition, transportation, and long term contracts.

At 48 cent N...nitrogen as NH3 will be manufactured with wind making hydrogen. The technique may be portable Haber Bosch plants coming to the hydrogen or transporting hydrogen from wind farms to the Haber Bosch plant. The energy companies and the lack of competition on a local basis is the problem as the supply of low cost hydrogen goes away.

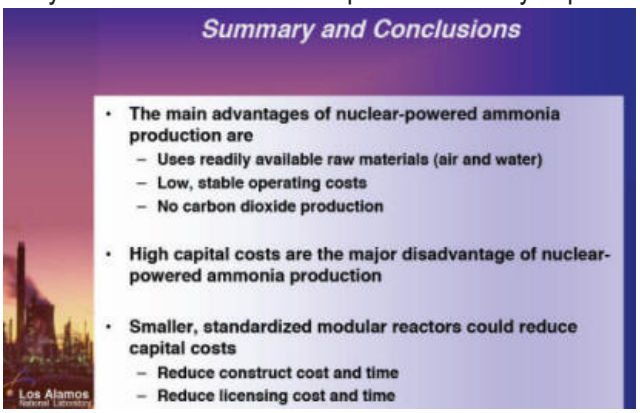
The energy companies and the lack of competition on a local basis is the problem as the supply of low cost hydrogen goes away. The byproduct oxygen is also a big question as wind farms gear up with hydrolysis techniques to make clean hydrogen and oxygen. Will the oxygen be used to reform the hydrogen with atmospheric nitrogen to make NH3? About 6.6 billion people want to know.

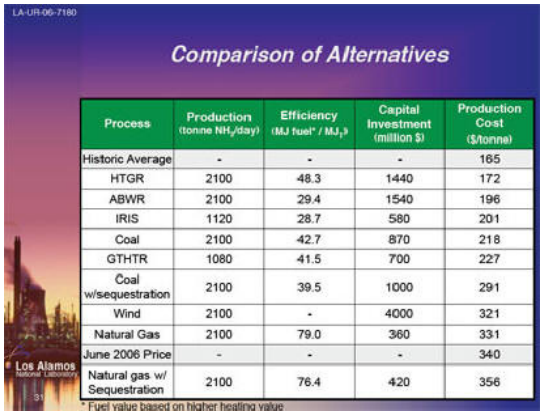
Environmental aspects of CO2 expulsion into the atmosphere may cancel out the need for a hydrocarbon source to make NH3.

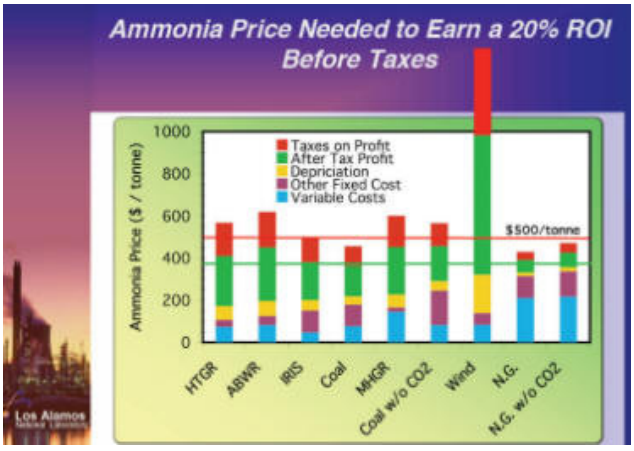
Presently 42% of the NH3 is imported. 17% comes from Canada and 25% from Trinidad, Tobago. Domestic production of NH3 is a priority long term and a matter of national security. As the Ethanol industry expands the NH3 manufacturing business becomes the lynch pin of reliable and low cost ethanol which is so called carbon neutral.

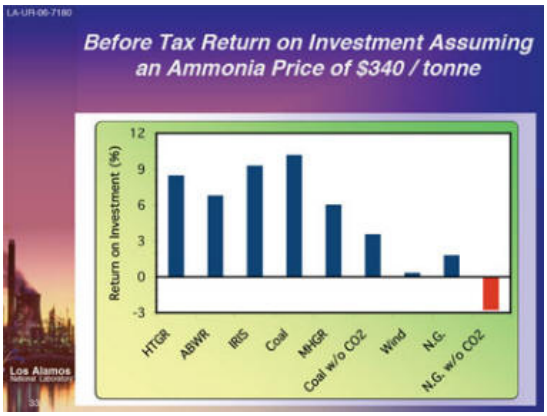
The NH3 manufacturing business will be switching to the environmental solution to keep CO2 out of the atmosphere. The diminishing supply of low cost hydrocarbons will produce higher food costs and a need for process management. Less carbon will go into the atmosphere as NH3 plants move away from hydrocarbons. Coal is an option and it is being utilized at Coffeeville, KS and Beulah, ND. Transportation becomes a major problem with coal fired plants making NH3.

Nuclear power could also be considered as a means to develop low cost NH3 with steam reformation. Hydro power is not likely to build NH3 since transportation is very important.









Diesel Fuel Price...$3.50 a gallon at the farm - Jan 2008 Go here for more details
Hedge your nitrogen and diesel fuel costs.

Phosphate Price.... Green Markets pricing in June indicated 35 cents for each pound of P in 11-52-0.....APP or 10-34-0 pricing is 39 cents per pound of P for the same time period. Considering APP as being about twice as efficient as 11-52-0 when superammoniated as TAPPS....10-34-0 is a bargain due to the application technique and the formulation.

Super Phosphoric acid was about the same price as 11-52-0 at 35 cents per pound of P....so no need to try to handle 0-70-0 and meter it uniformly with the current economics...Super phosphoric acid is a very difficult material to meter and handle considering a difference of 4 cents. But Super Phosphoric acid has it's place in direct application, but not many acres are applied.

11-52-0 has never been a good choice for super ammonization since it is so heavily loaded with calcium and is the bottom of the barrel at the Phosphate plant. Dry 11-52-0 can not be delivered in an even uniform lineal band. Super ammonization of 11-52-0 may form a good portion of non available rock phosphate due to ammonization precipitate and high calcium in the carrier.

Noting that homogenous versions of dry P include 16-20-0-14S. This is a good choice if you absolutely must use a dry P source. Producers should not attempt use dry Zinc MNS with dry P....dry Zn is cost prohibitive as dry zinc does not perform as a homogenous blend....A homogenous APP/ATS blend of ammoniated Zinc is at least 4 times more competitive.

Sulfur Price.....ATS or Thio-Sul as 12-0-0-26S is manufactured in Billings, Montana, and Coffeeville, Kansas by TKI. The pricing is 28 cents to 30 cents per pound of S. Thio-Sul blends well with 10-34-0 and makes a homogenous blend. A typical blend is 70% APP and 30% ATS. Thio-Sul should never be used in the seed row. Exactrix recommends that ATS be adjusted upward for oil seed production. ATS is typically applied for band stabilization at 10% of the NH3 flow.....somewhere between 2 and 3 gallons per acre of ATS is typical with 7 gallons of APP. Sulfur must be adjusted upward in low CEC soils.

Avail.... Can be mixed with APP/ATS to improve the polymer content. Avail may have some value for overwinter stored APP to raise the polymer content.

Rotational Band Loading.... Allows P to become more available to the plant over time..Go to www.exactrix.com/CRF.htm. Rotational Band Loading in No-till is a powerful management tool.

Sinusoidial Flow.... Dry fertilizers are delivered in a sine wave flow and also a higher port to port CV than Exactrix 2KC and 2KP, TAPPS Formulators go to www.exactrix.com/TF.htm . Exactrix delivery systems of liquid APP and NH3 have no sine wave flow. Go to www.exactrix.com/Sine.htm

Bob & Dick Wittman reports
Fall 2006 nutrient cost.
N as NH3 or 82-0-0, 22 cents per pound of N.
P as APP or 11-37-0*, 44 cents per pound of P. N valued at 22 cents.
S as ATS or 12-0-0-26S, 37 cents per pound of S. N valued at 22 cents.

*11-37-0 is utilized in warmer climates, 10-34-0 preferred in colder climates.
Reacted in Shell and TVA reactors. 12 sites in the state of Washington
Reacted in mobile reactors on the Great Plains.

Fall 2007 nutrient costs on the Great Plains
N as NH3 or 82-0-0, 30 cents per pound of N.
P as APP or 10-34-0, 40 cents per P and N.
S as ATS or 12-0-0-26s, 30 cents per pound of S and N.

Larry Smith, University of Idaho, Reports and Comments

07-30-2007

WITTMAN FARM, EXACTRIX, PERCENT SEED PROTEIN
EDDY H.R.W.W, HARVEST 2007

FERTILIZE TREATMENT	PERCENT SEED PROTIEN REP. 1	REP. 2	REP. 3	AVERAGE
62 LBS. N	10.80	10.40	10.60	10.60
83 LBS. N	11.10	11.00	11.00	11.03
110 LBS. N	11.90	11.90	11.50	11.77
AVGS	11.27	11.10	11.03	11.13

LSD(5%)= 0.37
CV= 1.47%

LSD SUMMARY TABLE:

FERTILIZE TREATMENT	AVERAGE PERCENT	
62	10.60	A
83	11.03	B
110	11.77	BC

Comments: the CV of 1.47 is quite low, lending credibility to results. The 110 LBS. N treatment provided significantly higher seed protein than both the 83 and 62 LBS. N treatments (5% significance level). Additionally, the 83 LBS. N treatment provided significantly higher seed protein than the 62 LBS. N treatment(5% significance level).

07-30-2007

WITTMAN FARM, EXACTRIX, SEED YIELD EVALUATION - EDDY, H.R.W.W, HARVEST 2007

FERTILIZE TREATMENT	SEED YIELD - BUSHELS / ACRE Rep I	Rep 2	Rep 3	AVERAGE
62 LBS N	89.50	88.30	89.50	89.10
83 LBS N	82.30	83.50	84.70	83.50
110 LBS N	79.20	85.30	65.30	76.60
AVGS	83.67	85.70	79.83	83.07

LSD(5%)= 14.37
CV = 7.63%

LSD SUMMARY TABLE:

FERTILIZE TREATMENT	AVG. SEED YIELD	
110 LBS N	76.60	A
83 LBS N	83.50	A
62 LBS N	89.10	A

Comments: the CV of 7.63% is low, thus lending good credibility to our results. There were no statistical seed yield differences ((5% significance level) between treatments.

07-30-2007

WITTMAN FARM, EXACTRIX, TEST WEIGHT EVALUATION -
EDDY H.R.W.W, HARVEST 2007

FERTILIZE TREATMENT	TEST WEIGHT - LBS / BUSHEL REP. 1	REP. 2	REP. 3	AVERAGE
62 LBS. N	63.50	63.60	63.40	63.50
83 LBS. N	63.30	63.10	63.40	63.27
110 LBS. N	62.70	62.50	63.00	62.73
AVGS	63.17	63.07	63.27	63.17

LSD(5%)= 0.42
CV= 0.29%

LSD SUMMARY TABLE:

FERTILIZE TREATMENT	AVG. TEST WEIGHT	
110 LBS N	62.73	A
83 LBS N	63.27	B
62 LBS N	63.50	B

Comments: the CV of 0.29 is quite low, lending good credibility to results. The 110 LBS N treatment provided significantly lower test weight (5% significance level) than the 83 lbs. and the 62 lbs. treatments, respectively.