DATE: November 9, 1995

A PROGRESS REPORT OF THE 1995 - 1996 M-P-A TREATMENT TO DRY LAND WINTER WHEAT. (In pre-plant aqua ammonia application)

TITLE: ***Effect of M-P-A WT™, a combination of humic acid, bio-growth stimulants & micro nutrient fertilization, on yield, quality, and nutrient utilization of wheat. (Pre-plant aqua ammonia -2yr of 3yr study)***

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Product Manufacturer: Northwest Agricultural Products, Inc.
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Cooperator: Knapp
Knapp Farms,
Lincoln County
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SIGNIFICANT ACCOMPLISHMENTS:

Field plot work completed for year 2of 3 for the method of applying treatment in the preplant of aqua ammonia. All data except mineral concentration and plant uptake analyzed.

FUNDING HISTORY:

Year Initiated: 1995
Funding for 1995 - 1996, this donor: $2,500

OBJECTIVE: How additions of micro-nutrients and plant growth stimulants (M-P-A WT™), coupled with aqua ammonia and thio-sol, placed at pre-planting time (prior to the actual planting time), by the method of "Culkins 36' cultiweeder".

EXPERIMENTAL DESIGN

GENERAL INFORMATION ABOUT TEST PLOT

- Location: T 23 N. R 35 E. Sec14, 6 miles West of Harrington, Lincoln County, Washington State.
- Application date (Pre-plant): July 18, 1995
- A Culkins 36' cultiweeder was used:
- Plot size: 120 acres, - 40acres treated & 80 acres untreated
- Crop: Winter Wheat Variety: Eltan
- Planting Date: September 12, 1995
- Seeding Rate: 60 pounds an acre
- Conditions at Planting
  - Air temperature –79º F
  - Wind direction & Speed- 5-10 North
  - Soil Temperature was 69º F
  - Soil Moisture -55% moisture capacity
- Average Rain Fall for this topographical region: 12-14 inches.
- The study is in the middle of a drought, previous crop year - brought 9.86 inches of moisture.
- Actual Rainfall for 1995 crop: 17.65 inches. *(above average)
- Tillage: Conventional tillage
- The ground selected at Knapp Farms was table ground - flat.
- Soil type was sandy loam.
- The field was seeded North to South.

DESCRIPTION OF PLOTS

The test field was divided into two plots. The treated plot, Plot (A) contained 40 acres. The control plot, Plot (B), contained 80 acres.

TOTAL TEST AREA: 120 /ac	WEST	
	TREATMENT 40 ACRES	PLOT (A)
	CONTROL 80 ACRES	PLOT (B)
	EAST	

TREATMENT DESIGN

Plot No	Treatment/Control	Treament Description
Plot A	TREATED	Three (3) Quarts M-P-A WT™ / acre
Plot B	CONTROL	No M-P-A WT™ / acre
Plots A & B	Treated & Control	1. 60 pounds of Nitrogen per acre using aqua-ammonia 2. 10 pounds of Sulfur per acre using 12-0-0-26 3. Spring Top-dress: 10#'s of N derived from Urea.

Pesticides were used throughout all plots which included: Three quarters of a pint of MCP ester, 1 quart per of Spreader 90 by United Agri Products 100 gallons of spray solution, Banvil SGF at 6 oz per acre, Amber at 0.28 oz per acre and 10 #'s of Urea per acre.

THE EVALUATED VARIABLES

1. Root Mass
2. Number of Tillers per Plant
3. Plant Color
4. Yield
5. Grain Test Weights

APPARATUS

1. **John Deere 16 inch Deep furrow**
   a. Spacing 16 inches
   b. Depth: 3 inches
   c. Speed: 3.4
2. **Harvester**
   a. John Deere 6602 used on plots A & B.
3. **Injection Set up: Calkins cultivator 12" spacing**
   a. Depth: 4"
   b. Speed: 4-5
   c. Nozzle/Injector type: Blumhardt
   d. Pressure: 30 +
4. **Pak Tank - The holding vessel for the solutions used for treatment.**
   a. The type of tank used was a 1000/gal Backpacker.
   b. It was a 1000 gallon split tank/splits were 700-300.
   c. The tank was pulled behind tractor in front of cultivator.
   d. The vessel had constant agitation via a by-pass valve from the pump.
   e. Volume: 40/gal. of aqua & 10/gal. of thio-sol
   f. Spacing 12"

RESULTS

YIELDS:

TREATMENT	SAMPLE DESCRIPTION	YIELD (BU/ACRE)
Plot (A) M-P-A WT™	Three 0.635 acre plots were measured and cut out of the treated plot.	79.6 bu/ac 83.1 bu/ac 75.4 bu/ac Average Yield = 79.4 bu/ac
Plot (B) CONTROL	Three 0.635 acre plots were measured and cut out of the control plot	71.3 bu/ac 73.2 bu/ac 69.7 bu/ac Average Yield = 71.4 bu/ac

The yield difference between the treated and the control was 8.07 bushels of wheat per acre. The data is presented below in Figure 1.

ROOT MASS:

Though no empirical data was collected, visual comparisons of the root system throughout the length of the trial showed that the root mass of the treated plants was larger than that of the untreated plants.

TILLERS PER PLANT

No data was collected.

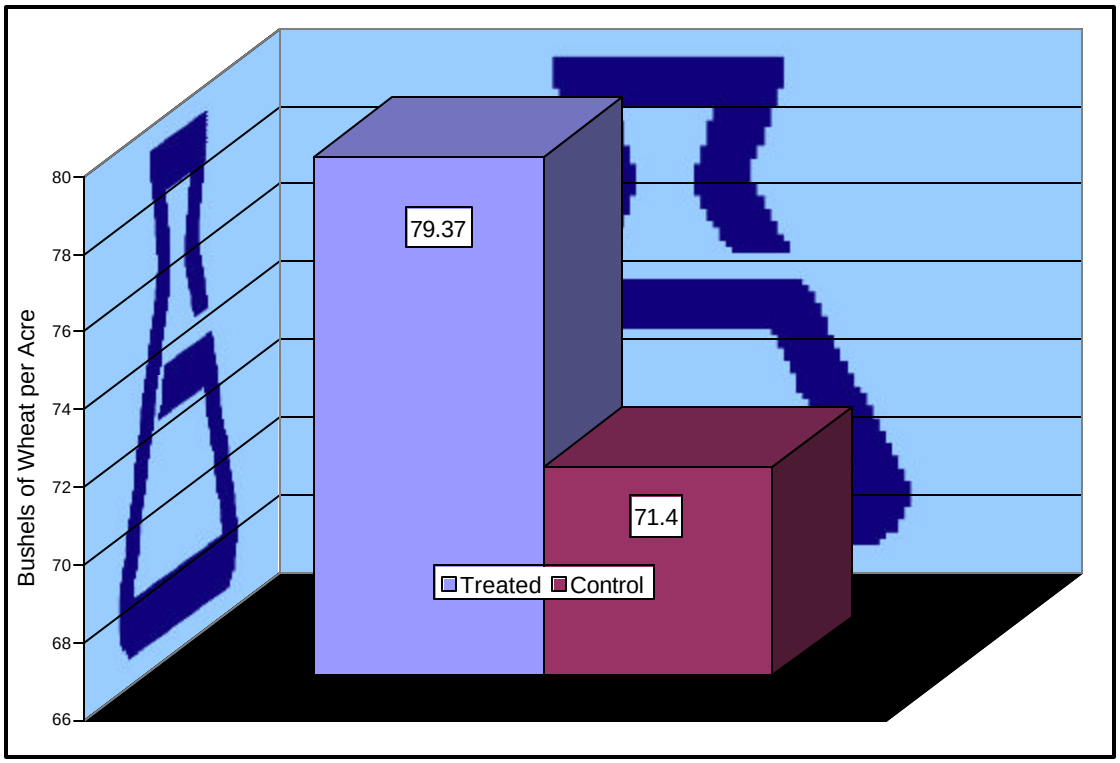

Figure 1. The yields, in bushels of wheat per acre, of the control and M-P-A WT™ treated plots. The values are the average of three samples. The treated plants received three quarts of M-P-A WT™ per acre added to the aqua-ammonia during pre-plant fertilization.

COLOR DIFFERENCES:

The control and treated plots were evaluated visually several times over the season. The treated plants were consistently darker green than the untreated plants.

TEST WEIGHT

Plots A & B both were tested for test weight. Both plots were graded as number 1

DISCUSSION:

The inclusion of M-P-A WT™ in the aqua ammonia at pre-plant fertilization of Eltan dry land winter wheat resulted in an increase of yield from 71.4 bushels per acre to 79.37 bushels per acre. The quality of the grain in both the controls and treated plots was graded at number one. The plants in the treated plots appeared greener and somewhat larger throughout the whole growing season.