DATE: November 9, 1994

A PROGRESS REPORT OF THE 1994 - 1995 M-P-A WT™ TREATMENT TO DRY LAND WINTER WHEAT. (TRIPLE SHOOTER)

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. . (Triple shooter - 1yr of 3yr study)***

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SIGNIFICANT ACCOMPLISHMENTS:

Field plot work completed for year 1 of 3 for the method of **triple shooting**. All data except mineral concentration and plant uptake analyzed.

FUNDING HISTORY:

Year Initiated: 1994
Funding for 1994 - 1995, this donor: $2,500

OBJECTIVE: How additions of micro-nutrients and plant growth stimulants (M-P-A WT™), coupled with phosphate using ammonium poly phosphate commonly called "10-34-0", placed at triple shooting time or pre-plant time, by the method of "triple shooter" via injection ( ) inches.

EXPERIMENTAL DESIGN

DESCRIPTION OF TEST PLOT

- Location: T 22 N. R 36 E. Sec 8, five miles south of Harrington, in the county of Lincoln, Washington State.
- Crop: Winter Wheat Variety: Madson/Ltan
- Planting Date: September 14, 1994
- Application date (Pre-plant): July 10, 1994
- Seeding Rate: 60 pounds per acre
- The field was seeded North to South.
- Triple Shooting was used:
- Total Plot size: 335 acres
- Weather Conditions
  - Air temperature at planting – 84º F
  - Wind direction & Speed at planting: Out of the North
  - Soil Temperature at planting was 77º F
  - Soil Moisture at planting - Dry.
- Average Rain Fall for this topographical region: 12-14 inches.
- The study is in the middle of a drought, previous crop year brought 9.96 inches of moisture.
- Actual Rainfall for 1994 crop: 9.73 inches. *(below average)
- Tillage: Conventional tillage
- Field
  - The topography of the soil was rolling throughout the field.
  - Soil type was sandy loam.
  - No rock piles, ground was divided by waterway.

DESCRIPTION OF TEST AREAS

	WEST	
TOTAL TEST AREA:	TREATMENT 110 ACRES	PLOT (A)
335/ac	CONTROL 225 ACRES	PLOT (B)
	EAST	

The test field was divided into two plots. One plot (A) consisting of 110 acres was designated for the treatment area. The Second plot (B) consisting of 225 acres also, was designated for the control or non-treatment area.

APPARATUS

1. **John Deere 16 inch Deep furrow**
   a. Spacing 16 inches
   b. Speed: 3.4
   c. Depth: 3 inches

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 was a 1000 gallon Backpacker.
   b. It was a 1000 gallon split tank & the splits were 700-300.
   c. The tank was pulled behind a tractor in front of cultivator.
   d. The vessel had constant agitation via a by-pass valve from the pump.
   e. Volume: 40/10 gallon
   f. Spacing 12"

TREATMENT DESIGN

Plot No:	Treatment/Control	Treatments
Plot A	TREATED	Three (3) quarts M-P-A WT /ac
Plot B	CONTROL	No M-P-A WT™ / ac
Plots A & B	Treated & Control	1. 10 pounds of Phosphate using 10-34-0 per acre (M-P-A added here) 2. 12 pounds of Sulfur using 12-0-0-26 per acre 3. 60 pounds of Nitrogen using Aqua ammonia per acre

Pesticides were used throughout all plots which included; Three quarters of a pint of MCP Ester, 4/10 of an ounce of Finesse by Dupont, and 1 quart of Spreader 90 by United Agri Products per 100 gallons.

Prior to Seeding on 06/03/94 the grower fertilized using the triple shoot method using a Culkins cultiweeder.

THE EVALUATED VARIABLES

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

RESULTS

YIELDS:

Plot A - Treated	0.635 acres were measured and cut out of the 110 acre plot	Yield: 56.72 bu/ac
Plot B - Control	0.635 acres were measured and cut of the 225 acre plot.	Yield: 48.4 Bu/Ac

The yield difference between the treated versus the control was 6.35 bushels of wheat per acre.

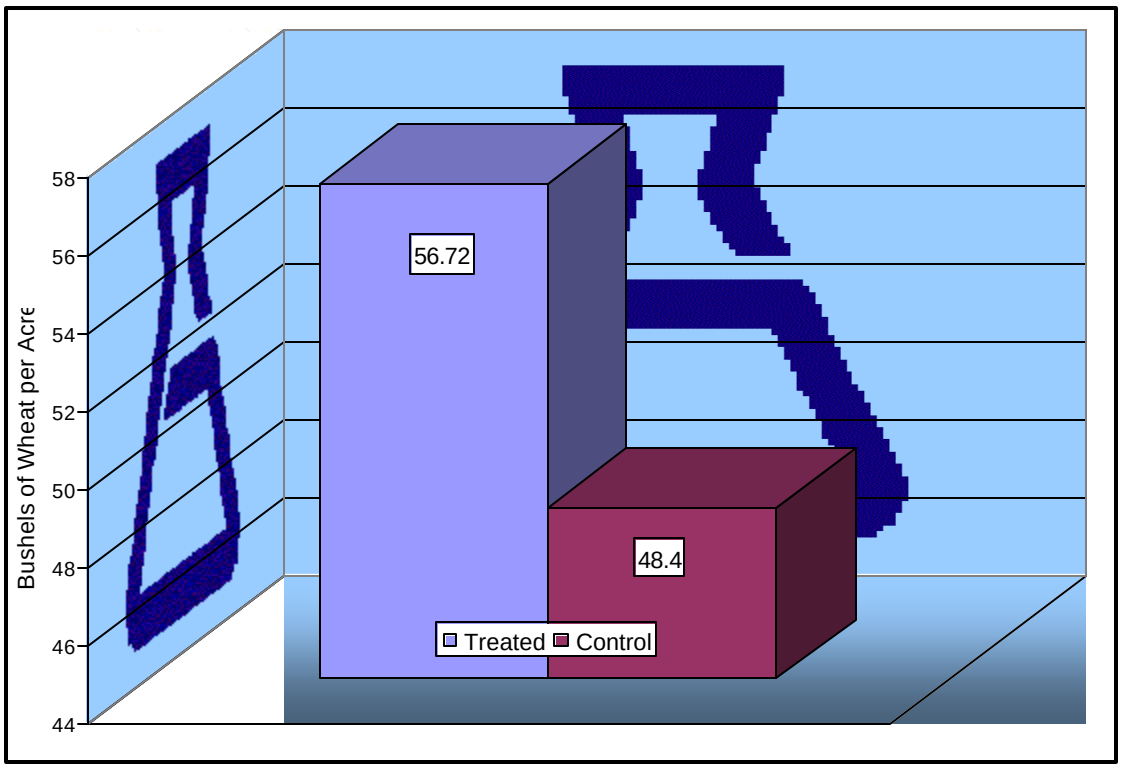

Figure 1. The yields, in bushels of wheat per acre, of the control and treated plots. The values are of a single harvest sample. The treated plants received three quarts of M-P-A WT™ per acre added to the regular planting-time fertility program

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

The number of tillers was counted at stooling on October 20, 1994. Three sites were randomly chosen in each of the control and treatment plots. Twenty (20) plants were chosen at each location and the tillers counted per plant.

Average Number of Tillers per Plant (See Figure 2.).
Treated (Plot A): Average number of tillers = 6.3. [1].
Control (Plot B): Average number of tillers = 5.1.

The values are shown in Figure 2.

[1] The treated grain was observed to germinate faster than the control

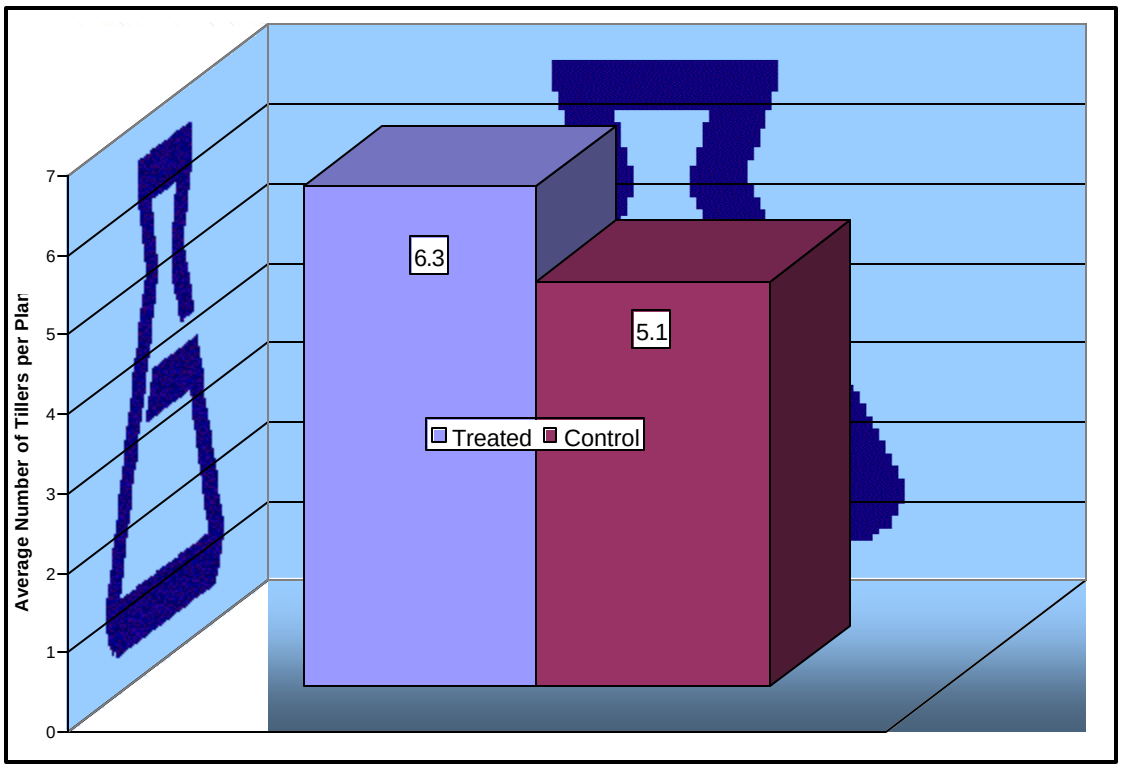

Figure 2. Differences in average number of tillers per plant. Treated received three (3) quarts of MPA WT™ per acre whereas the Control received none.

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

At mid-season, the numbers of stems were greater than of the control. The yield difference between the treated versus the control was 6.35 bushels of wheat per acre.