

Section III: Field Crops

2010 VALENT USA TRIAL I: JEFFERSON SPRING WHEAT DATA FOR NIPSIT™ INSIDE - A NEWLY LABELED SEED TREATMENT PRODUCT FOR CEREAL GRAINS

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Protocol: RBCD at CFRF seeded May 17 2010 by Hegi Cone Seeder at 60 lbs/acre in 4 x 20 feet replicates with 4 replicates per treatment. Jefferson DNS spring wheat. Harvested August 16 by Dr. Stephen Guy using a Hegi 270 plot combine. 14 seed treatments as below were used to test efficacy of Nipsit Inside™ compared to other labeled treatments and numbered compounds.

<u>Treatments</u>	<u>Rate (fl oz/cwt)</u>
1 UTC	----
2 Raxil MD	5.0
3 Raxil MD + Poncho	5.0 + 0.750
4 Dividend XL RTA	5.0
5 Div + Cruiser	5.0 + 0.750
6 V-10116 + V-10209	0.052 + 0.150
7 V-10116 + V-10209 + Nipsit Inside TM	0.052 + 0.150 + 0.250
8 V-10116 + V-10209 + Nipsit	0.052 + 0.115 + 0.750
9 V-10304	5.00
10 V-10304	7.50
11 V-10305	1.00
12 V-10305 + Nipsit	1.00 + 0.250
13 V-10305 + Nipsit	1.00 + 0.750
14 V-10318 + Nipsit	2.42 + 0.750

Experiment 1 - Yield

LSD All-Pairwise Comparisons Test for Yield

<u>Treatment</u>	<u>lbs/80 FS</u>	<u>Bu/Acre</u>	<u>Kg/HA</u>
13	6.7950 A	64.8	3692
12	6.4775 A	61.8	3523
14	6.0975 A	58.3	3321
4	5.9450 B	56.4	3213
8	5.8775 B	56.3	3207
7	5.6675 B	54.2	3087
6	5.5800 B	53.3	3038
2	5.5775 B	53.3	3038
5	5.5750 B	53.3	3038
10	5.4100 B	51.6	2940
11	5.2875 B	50.6	2886
3	5.2575 B	50.6	2885
9	4.8025 C	45.8	2614
1	4.5700 C	43.7	2488

Alpha: 0.05

Standard Error for Comparison: 0.9075

Critical T Value: 2.018

Critical Value for Comparison: 1.8313

Experiment 2 – Wireworm Damage

Tukey HSD All-Pairwise Comparisons Test for Plant Stand per ¼ meter (wireworm *L. californicus*)

<u>Treatment</u>	<u>Mean Plant Stand per ¼ meter square at 10 DPE.</u>
12	18.500 A
13	18.500 A
11	18.250 A
7	18.000 A
8	18.000 A
4	17.750 B
5	17.250 B
7	17.000 B
10	17.000 B

3	16.750	B
9	15.750	B
14	15.750	B
2	13.750	C
1	11.500	D

Alpha: 0.05

Standard Error for Comparison: 1.5363

Critical Q Value: 5.027

Critical Value for Comparison: 5.4604

Groups A & B have stands adequate for wheat. C & D are below adequate stand and reflect wire worm injury. Some treatment replicates showed very good stand with a reduced stand in 1 treatment of the 4 replicates. Groups A & B had similar stands with C & D showing wire worm damage below economic threshold.

Experiment 3 - Aphids

Tukey HSD All-Pairwise Comparisons Test for Aphids (at anthesis per flag leaf)

<u>Treatment</u>	<u>Mean aphids per flag leaf</u>	
2	17.000	A
5	15.000	B
6	13.250	B
4	10.000	C
9	6.7500	D
11	3.7500	E
12	3.0000	E
7	2.2500	E
8	2.2500	E
3	2.0000	E
13	1.7500	E
14	1.5000	E
10	1.2500	E

Alpha: 0.05

Standard Error for Comparison: 1.7398

Critical Q Value: 5.027

Critical Value for Comparison: 6.1836

Groups C, D, E had aphid numbers well below the 16 per tiller economic threshold. Group A is above this threshold and B is borderline. Aphids (English Grain and Russian Wheat Aphid (RWA)) arrived at about anthesis causing mass aerial sprays which resulted in major loss of Coccinellids in commercial fields. The nozzle noses had a field day charging up to \$40 per acre.

Experiment 4 - Rust

Tukey HSD All-Pairwise Comparisons Test for Rust (per cent on flag leaf at anthesis)

<u>Treatment</u>	<u>Mean percent rust flag leaf anthesis</u>	
1	71.250	A
4	62.500	A
2	27.500	B
3	27.500	B
5	27.500	B

6	2.5000 C
7	2.2500 C
14	2.2500 C
8	2.0000 C
13	1.5000 C
3	1.5000 C
10	1.2500 C
11	0.0000 C
12	0.0000 C

Alpha: 0.05

Standard Error for Comparison: 4.1346

Critical Q Value: 5.027

Critical Value for Comparison: 14.696

In this trial rust was a factor in Groups A & B. Group C was essentially below the threshold for plant damage.

Experiment 5

Larvae populations per meter square at soft dough stage.

<u>Treatment</u>	<u>Mean Coccinellids per meter</u>
8	7.0000 A
5	6.7500 A
13	6.7500 A
3	6.0000 A
4	6.0000 A
6	6.0000 A
7	6.0000 A
10	6.0000 A
11	6.0000 A
12	6.0000 A
14	6.0000 A
1	5.5000 A
9	5.5000 A
2	5.0000 A

Alpha: 0.05

Standard Error for Comparison: 0.8274

Critical Q Value: 5.027

Critical Value for Comparison: 2.9407

There are no significant pair wise differences among the means. This means insecticides and other systemic chemicals do not harm feeding ladybird beetles and their larvae. Incoming English Grain aphids females kept the Coccinellidae populations fed until hard dough stage.

Experiment 6 - Fusarium

Tukey HSD All-Pairwise Comparisons Test for Fusarium white heads (tillers) per 80 sq ft

<u>Treatment</u>	<u>White heads per meter square (Fusarium Tillers)</u>
4	6.0000 A
1	4.2500 B
5	4.2500 B

2	3.7500 B
3	3.2500 B
10	3.0000 B
13	2.7500 C
8	2.0000 C
6	1.2500 C
14	1.2500 C
7	0.7500 D
9	0.5000 D
11	0.5000 D
12	0.5000 D

Alpha: 0.05

Standard Error for Comparison: 0.8238

Critical Q Value: 5.027

Critical Value for Comparison: 2.9279

There are 4 groups (A, B, etc.) in which the means are not significantly different from one another.

The treatments in Groups C & D show reduction in *Fusarium culmorum* caused white heads. Groups A & B show typical soft dough white heads due to *Fusarium*. If to do another year I would count head loss due to Wheat Stem Sawfly, which was very numerous in 2010 and removed more heads than *Fusarium*.

Experiment 7 – Plant Height

LSD All-Pairwise Comparisons Test for plant height at anthesis

<u>Treatment</u>	<u>Mean Ht.</u>	
1	31.667	A
7	31.333	AB
12	30.667	ABC
9	30.333	ABCD
13	30.333	ABCD
8	29.333	ABCDE
10	28.667	ABCDE
4	28.333	ABCDE
6	28.333	ABCDE
3	28.000	BCDE
11	27.667	CDE
14	27.667	CDE
2	27.000	DE
5	26.333	E

Alpha: 0.05

Standard Error for Comparison: 1.6762

Critical T Value: 2.048

Critical Value for Comparison: 3.4335

These data appear to be SD but note that the better yields were produced by shorter plants. Growers like high yielding spring wheat. Dr. Stephen Guy, WSU Agronomist, found that too much rain in the other locations resulted in tall DNS plants with no protein premium.

Summary:

This trial showed excellent efficacy by Nipsit in controlling wire worms, Cereal Leaf Beetle, and RWA plus other late crop aphids. No damage to predators or parasitoids occurred by insecticide treatments which resulted in very good IPM

Treatment V-10116 reduced white head formation resulting from Fusarium culmorum foot rot as last year. This treatment also reduced Leaf Rust infection resulting larger plumper grain that still made 15 per cent protein. Rust is very stressing to wheat.

Treatments 12, 13, and 14 had the best yields with Nipsit plus V-10305. Grain in the tank is the bottom line.

Section III: Field Crop Pests

WINTER BARLEY

(Valent USA 2010 Winter Barley Trial at Central Ferry Washington)

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Seeded 09/15/2009 at WSU Central Ferry using the Hegi Cone Seeder Drill on a 7 row by 20 feet pattern of 4 replicates for treatments in a RCB format for a total of 12 treatments listed below. Variety Kold winter barley. Goal: early season insect management to increase barley stand density and measurement of Treatments for crop long factors e.g. CLB, RWA, etc. compared to an untreated check. Crop was rated for insect damage again on May 15 with no economic thresholds of pests crossed. Ladybird Beetle Adults arrived around May 6 and consumed low CLB and RWA populations which did not reoccur. Harvest was done by Dr. Stephen Guy, using a Winter-Steiger Plot Combine on July 30, 2010.

<u>Treatments</u>	<u>Rates/Acre</u>
A UTC	NA
B Raxil-Allegiance	1.5 gmai/hkg + 0.01 fl oz cwt
C Raxil-Allegiance + Gaucho 600	0.260 fl oz cwt
D Raxil-Allegiance + Gaucho 600	0.800 fl oz cwt
E Dividend XL Extra	5 fl oz cwt
F Dividend XLE + Cruiser	0.250 fl oz cwt
G Dividend XLE + Cruiser	0.750 fl oz cwt
H V-10304	5.00 fl oz cwt
I V-10304	7.50 fl oz cwt
J V-10305	4.5 gmai/hkg
K V-10305 + Nipsit inside	0.250 fl oz cwt
L V-10305 + Nipsit inside	0.750 fl oz cwt

Experiment 1 - Yield

LSD All-Pairwise Comparisons Test for barley yield in lbs/acre

<u>Treatment</u>	<u>Mean Yield in lbs/acre</u>
E	3544.0 A