

Wheat (*Triticum aestivum* 'Seward')
 Target diseases: *Pythium* spp.
Fusarium spp.
Rhizoctonia spp.
Bipolaris sorokiniana

R.O. Ashley, and D. Twist
 Dickinson Research Extension Center
 Dickinson, ND 58601
 Dunn County Extension Service
 Killdeer, ND 58640

NuFarm HRWW seed treatment performance on Pythium trial, New Hradec, ND, 2007- 2008.

This experiment was conducted in a field located near New Hradec, ND (NE ¼ Sec 2, T140N, R97W, Stark County, ND). The previous crop was spring wheat in 2007. Prior to seeding, seed was treated with Allegiance or three experimental fungicide treatments singularly or in various combinations and rates. Untreated seed was used for the untreated check and an untreated check treated only with dye was included. Plots were seeded with a drill equipped with Cross-slot openers on 2 Oct 2007 at the rate of 100 pls m⁻². A blended fertilizer of 29-19-6 was placed in a separate band at the rate of 193 lbs/acre was applied through the drill during the seeding operation. A post emergent herbicide and foliar fungicide application of 12oz/a Husky + 2 oz/a of Propanoizol + AMS + Surfactant was applied 4 Jun 2008. Emergence was visually estimated at appropriate times. Plant counts were made on 15 May 2008. Root and crowns from each plot were sampled at the soft dough stage and evaluated for root color, root mass, and lesions on the subcrown internode. In addition to the visual analysis root and crown samples of this trial were submitted to the NDSU Plant Diagnostic Laboratory, Fargo for analysis of soil-borne pathogens. Harvest was with a Massy Ferguson 8 XP combine on 6 Aug 2008. Grain yield, and test weight were adjusted to a 12% moisture basis. All data was statistically analyzed using SAS Statistical Software.

Rainfall was well below normal for Oct through May and Jul with Jun near normal which affected winter survival and development of the crop. No significant differences were detected any of the characteristics analyzed. Tissue analysis for root and crown disease pathogens indicated that over 70% of the sample submitted had *Fusarium graminearum* present. *Pythium* spp, *Rhizoctonia* spp. and *Bipolaris sorokiniana* were not detected.

| Treatment | ----- Emergence ¹ ----- | | | --- 15 May --- | |
|----------------------------|------------------------------------|--------|--------|--------------------|--------|
| | 9 DAP | 14 DAP | 21 DAP | Density | Vigor |
| | ----- % ----- | | | no m ⁻² | |
| UTC1 Naked Seed | 0 | 18.8 | 93.8 | 57.6 | 5.0 |
| UTC2 (CF Clear, Water) | 0 | 18.8 | 91.3 | 62.8 | 6.0 |
| NUP 07121 low rate | 0 | 17.5 | 91.3 | 60.1 | 5.5 |
| NUP 07121 medium rate | 0 | 17.5 | 92.5 | 69.7 | 6.5 |
| NUP 07121 high rate | 0 | 18.8 | 91.3 | 65.4 | 6.5 |
| NUP 07121 low + NUP 07117 | 0 | 20.0 | 95.0 | 75.2 | 7.3 |
| NUP 07121 med + NUP 07117 | 0 | 17.5 | 91.3 | 66.1 | 6.3 |
| NUP 07121 high + NUP 07117 | 0 | 18.8 | 93.8 | 58.9 | 5.3 |
| NUP 07117 plus NUP 07267 | 0 | 17.5 | 93.8 | 65.9 | 6.0 |
| NUP 07117 | 0 | 20.0 | 91.3 | 70.2 | 7.0 |
| Allegiance | 0 | 18.8 | 93.8 | 60.0 | 5.5 |
| Mean | 0 | 18.5 | 92.6 | 64.7 | 6.1 |
| CV% | - | 13.3 | 2.3 | 13.1 | 18.0 |
| LDS .05 | NS | NS | NS | NS | NS |
| SE | 0 | 1.2348 | 1.0704 | 4.2306 | 0.5449 |
| Rep F Prob | - | 0.6263 | 0.0151 | 0.3927 | 0.9143 |
| Trt F Prob | - | 0.8189 | 0.1125 | 0.1301 | 0.1196 |

¹Emergence visually evaluated 9 days after planting, 14 days after planting and 21 days after planting.

---Soft dough root evaluation ---

| Treatment | Mass ¹ | Color ² | SCI ³ |
|----------------------------|-------------------|--------------------|------------------|
| UTC1 Naked Seed | 1.9 | 1.8 | 2.1 |
| UTC2 (CF Clear, Water) | 1.9 | 1.8 | 2.8 |
| NUP 07121 low rate | 1.9 | 1.8 | 2.3 |
| NUP 07121 medium rate | 2 | 1.9 | 2.2 |
| NUP 07121 high rate | 2 | 1.8 | 2.3 |
| NUP 07121 low + NUP 07117 | 2.1 | 1.8 | 2.2 |
| NUP 07121 med + NUP 07117 | 2 | 1.8 | 2.2 |
| NUP 07121 high + NUP 07117 | 2 | 1.9 | 2.2 |
| NUP 07117 plus NUP 07267 | 2 | 1.8 | 2.1 |
| NUP 07117 | 2 | 2.0 | 2.1 |
| Allegiance | 2 | 1.9 | 2.0 |
| Mean | 2 | 1.9 | 2.2 |
| CV% | 9.1 | 9.2 | 21.4 |
| LDS .05 | NS | NS | NS |
| SE | 0.0903 | 0.0852 | 0.2375 |
| Rep F Prob | 0.0197 | 0.0112 | 0.0229 |
| Trt F Prob | 0.9366 | 0.5700 | 0.6563 |

¹Root mass 1 – 4; 1 = few roots, 4 = many roots.

²Root color 1 – 4; 1 = white, 4 = dark.

³Subcrown internode rating, 1-4. 1 = less than 25% of the internode infected, 2 = 25 – 50% of the internode infected, 3 = 51-75% of the internode infected, multiple lesions, and 4 = 75-100% of the internode infected, lesions coalesced.

| Treatment | ----- Harvest ¹ ----- | | ----- Grain ² ----- | | |
|----------------------------|----------------------------------|--------------------|--------------------------------|---------|---------|
| | Height | Density | Test weight | Yield | Protein |
| | mm | no m ⁻² | lb/bu | bu/acre | % |
| UTC1 Naked Seed | 667.5 | 184.0 | 53.8 | 15.5 | 19.4 |
| UTC2 (CF Clear, Water) | 671.9 | 377.3 | 54.5 | 17.6 | 18.9 |
| NUP 07121 low rate | 681.8 | 217.0 | 55.4 | 15.8 | 19.2 |
| NUP 07121 medium rate | 699.4 | 224.5 | 53.8 | 17.4 | 19.0 |
| NUP 07121 high rate | 698.8 | 221.0 | 54.0 | 15.1 | 19.2 |
| NUP 07121 low + NUP 07117 | 698.8 | 213.3 | 53.6 | 14.9 | 19.5 |
| NUP 07121 med + NUP 07117 | 696.3 | 223.5 | 55.4 | 17.8 | 18.8 |
| NUP 07121 high + NUP 07117 | 718.8 | 227.5 | 53.8 | 15.2 | 19.5 |
| NUP 07117 plus NUP 07267 | 717.5 | 213.8 | 55.1 | 17.4 | 19.0 |
| NUP 07117 | 728.1 | 227.5 | 54.2 | 16.0 | 19.4 |
| Allegiance | 693.8 | 217.8 | 54.5 | 16.0 | 19.4 |
| Mean | 697.5 | 231.5 | 54.4 | 16.2 | 19.2 |
| CV% | 5.5 | 42.2 | 2.9 | 13.0 | 2.9 |
| LDS .05 | NS | NS | NS | NS | NS |
| SE | 19.0135 | 48.8599 | 0.7785 | 1.0579 | 0.2784 |
| Rep F Prob | 0.0046 | 0.4067 | <0.0001 | 0.0158 | 0.0018 |
| Trt F Prob | 0.4652 | 0.4365 | 0.7104 | 0.4121 | 0.5856 |

¹ Plant height measured from ground surface to top of head at maturity

² Grain yield, test weight, and protein adjusted on a 12% moisture basis.