

## No-till HRS Wheat Response to Nitrogen Application Methods, Juanita, 2008

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The objective of this study was to compare HRS wheat performance with nitrogen (N) applied as anhydrous ammonia through an Exactrix™ system compared to surface application of ammonium nitrate (AN). An Exactrix system delivers anhydrous ammonia through high-pressure. The field study was conducted by the NDSU Carrington Research Extension Center in cooperation with Kevin Black in a commercial wheat field near Juanita, ND. Experimental design was a randomized complete block with four replications. Spring soil analysis of the trial area indicated 2.3% organic matter, 7.7 pH, 28 lbs./A nitrate-N, and 7 ppm phosphorus. 'Howard' was direct-seeded into soybean stubble with 60 lbs./A of 11-52-0 applied in-furrow on April 28. Anhydrous ammonia at 82 lbs./A was applied with an Exactrix™ system during crop seeding. AN was broadcast on April 30 at N rates of 52, 82, and 112 lbs./A. Wheat plant population was measured at the 1- to 2-leaf stage on May 23. The trial was harvested with a plot combine on August 19.

Plant lodging did not occur in the trial. Plant height generally increased with N compared to the untreated check (Table). Plant stand, test weight and seed size were generally similar among N treatments and the untreated check. All N treatments generally improved seed yield and protein compared to the untreated check. The equal and high rate of broadcast N generally improved yield and protein compared to the rate of Exactrix N.

**Table. No-till wheat response to N application methods, Juanita, 2008.**

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|--|---------|---------|--------|-------|-------------|-----------|---------|
| N application  |         | Plant   |        | Seed  |             |           |         |
| Method   | Rate    | Stand   | Height | Yield | Test Weight | Number/lb | Protein |
|  | lb N/ac | plt/A   | cm     | bu/A  | lb/bu       |           | %       |
| Exactrix N   | 82      | 687929  | 78     | 45.2  | 60.2        | 14264.36  | 12.6    |
| untreated check  | 0       | 636135  | 75     | 38.5  | 61.1        | 14210.66  | 11.3    |
| broadcast N  | 52      | 628167  | 84     | 52.2  | 59.8        | 14540.94  | 13.0    |
| broadcast N  | 82      | 614887  | 84     | 56.3  | 59.2        | 14367.5   | 13.9    |
| broadcast N  | 112     | 737067  | 86     | 61.1  | 58.7        | 14952.25  | 14.3    |
| Exactrix N   | 82      | 753004  | 84     | 50.8  | 59.1        | 13843.12  | 12.3    |
| mean   |         | 676,198 | 82     | 10.1  | 59.7        | 14363     | 12.9    |
| C.V. (%)   |         | 19.9    | 4.3    | 50.7  | 3.1         | 3.2       | 3.3     |
| LSD (0.05)   |         | NS      | 5      | 7.8   | NS          | NS        | 0.6     |