

**Iron and nitrogen with Certainty or Velocity on control roughstalk bluegrass and phytotoxicity to creeping bentgrass**  
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**Objective:**

Determine the effects of iron and nitrogen tankmixed with Certainty and Velocity on control of roughstalk bluegrass and safety to creeping bentgrass.

**Rationale:**

Roughstalk bluegrass (*Poa trivialis*) is weed problem on golf courses, home lawns and athletic fields from the Midwest to the Mid-Atlantic states. Herbicide control is important since management of roughstalk bluegrass does not seem practical to date. Certainty and Velocity have recently been labeled to selectively control roughstalk bluegrass in creeping bentgrass fairways, but they can cause damage to the creeping bentgrass.

**Materials and Methods:**

Treatments were initiated in June 2007 at the W.H. Daniel Turfgrass Research and Diagnostic Center, West Lafayette, IN, on a stand of 'Laser' roughstalk bluegrass. Soil type was a Starks-Fincastle silt loam (Fine-silty, mixed, mesic Aeric Ochraqualfs) with a pH of 7.2 and organic matter content of 3.8%. The area was established in August 2004 at 98 kg ha<sup>-1</sup>. Treatments were arranged in a randomized complete block design with three replications. Treatments are listed in Table 1. All applications were applied in 814 L ha<sup>-1</sup> water with a CO<sub>2</sub>-pressurized backpack sprayer using a three-nozzle (TeeJet XR8001.5VS, Spraying Systems Co., Wheaton, IL) boom at 207 kPa. Throughout the experiment, turf received 196 kg N ha<sup>-1</sup> yr<sup>-1</sup> and was irrigated to ensure optimal growth. Turf was mowed three times per week at 1.25 cm and clippings were returned. Percent cover of roughstalk bluegrass was rated visually every two weeks. Phytotoxicity to creeping bentgrass was rated weekly. This study will be repeated in 2008.

**What we know so far:**

Roughstalk bluegrass:

- High rates of Certainty and Velocity decreased cover to 6% and 1% at 8 and 12 WAIT (weeks after initial treatment), respectively, whereas low rates of Certainty and Velocity reduced cover to 19% and 12% respectively (Table 3).
- Velocity decreased cover to 1% regardless of rate compared to 13% by Certainty 12 WAIT (Table 3).
- Velocity provided consistent and effective control regardless of rate by 4 and 12 WAIT, while Certainty applied at the low rate resulted in 25 and 23% cover, respectively, compared to the high rate which resulted in 4 and 1% cover, respectively (Table 3).
- FeN had no effect on roughstalk bluegrass control after (Table 2).

Creeping bentgrass:

- Addition of FeN decreased phytotoxicity regardless of herbicide or rate 2, 3, and 4 WAIT (Table 4).

- Low rates of Certainty resulted in less phytotoxicity than high rates of Certainty, while rate had no effect on phytotoxicity caused by Velocity applications 2 and 4 WAIT (Table 4).
- Certainty resulted in more phytotoxicity than Velocity regardless of rate at 2 and 4 WAIT (Table 4).
- Velocity tankmixed with FeN resulted in less phytotoxicity than Velocity without FeN by 2 and 4 WAIT (Table 4).
- By 6 WAIT, phytotoxicity was within acceptable levels.

**Table 1.** Herbicide list

| Herbicide                     | Rate                                 | Application Dates      |
|-------------------------------|--------------------------------------|------------------------|
| Check                         | --                                   | --                     |
| FeN <sup>ab</sup>             | FeN + FeN + FeN                      | 6/15, 6/29, 7/12       |
| FeN                           | FeN + FeN + FeN + FeN                | 6/15, 6/29, 7/12, 7/27 |
| Certainty 75 WDG <sup>c</sup> | 0.25 + 0.25 + 0.25 oz/A              | 6/15, 6/29, 7/12       |
| Certainty 75 WDG              | 0.25 + 0.25 + 0.25 oz/A + FeN        | 6/15, 6/29, 7/12       |
| Certainty 75 WDG              | 0.50 + 0.50 + 0.50 oz/A              | 6/15, 6/29, 7/12       |
| Certainty 75 WDG              | 0.50 + 0.50 + 0.50 oz/A + FeN        | 6/15, 6/29, 7/12       |
| Velocity 80 SP                | 0.65 + 0.65 + 0.65 + 0.65 oz/A       | 6/15, 6/29, 7/12, 7/27 |
| Velocity 80 SP                | 0.65 + 0.65 + 0.65 + 0.65 oz/A + FeN | 6/15, 6/29, 7/12, 7/27 |
| Velocity 80 SP                | 0.98 + 0.98 + 0.98 + 0.98 oz/A       | 6/15, 6/29, 7/12, 7/27 |
| Velocity 80 SP                | 0.98 + 0.98 + 0.98 + 0.98 oz/A + FeN | 6/15, 6/29, 7/12, 7/27 |
| Velocity 80 SP                | 1.3 + 1.3 + 1.3 + 1.3 oz/A           | 6/15, 6/29, 7/12, 7/27 |

<sup>a</sup>FeN = 0.023 lbs Fe/1000ft<sup>2</sup> and 0.045 lbs N/1000ft<sup>2</sup>

<sup>b</sup>All applications were made on a 2 week interval

<sup>c</sup>All Certainty treatments included MON 0818 surfactant at 0.25% v/v

**Table 2.** ANOVA for percent cover of roughstalk bluegrass and phytotoxicity of creeping bentgrass in 2007.

| ANOVA              | Roughstalk bluegrass |        |         | Creeping bentgrass |        |        |        |
|--------------------|----------------------|--------|---------|--------------------|--------|--------|--------|
|                    | 4 WAIT               | 8 WAIT | 12 WAIT | 2 WAIT             | 3 WAIT | 4 WAIT | 6 WAIT |
| Herbicide (H)      | NS                   | NS     | **      | **                 | **     | **     | NS     |
| Rate (R)           | **                   | NS     | **      | **                 | **     | **     | NS     |
| H x R              | **                   | NS     | **      | **                 | NS     | **     | NS     |
| IronNitrogen (FeN) | NS                   | NS     | NS      | *                  | **     | **     | NS     |
| H x FeN            | NS                   | NS     | NS      | *                  | NS     | **     | NS     |
| R x FeN            | **                   | NS     | NS      | NS                 | NS     | **     | NS     |
| H x R x FeN        | NS                   | NS     | NS      | NS                 | NS     | NS     | NS     |

**Table 3.** Percent cover<sup>v</sup> of roughstalk bluegrass as influenced by Velocity and Certainty in 2007.

|                  |                     | 4 WAIT | 8 WAIT | 12 WAIT |
|------------------|---------------------|--------|--------|---------|
| Herbicide (H)    |                     |        |        |         |
|                  | Velocity            | 11     | 1      | 1 b     |
|                  | Certainty           | 15     | 4      | 13 a    |
| Rate (R)         |                     |        |        |         |
|                  | Low                 | 19 a   | 0      | 12 a    |
|                  | High                | 6 b    | 4      | 1 b     |
| H x R            |                     |        |        |         |
|                  | Velocity Low        | 14 ab  | 1      | 1 b     |
|                  | Certainty Low       | 25 a   | 8      | 23 a    |
|                  | Velocity High       | 7 b    | 0      | 1 b     |
|                  | Certainty High      | 4 b    | 1      | 1 b     |
| R x FeN          |                     |        |        |         |
|                  | FeN Low             | 26 a   | 6      | 17      |
|                  | FeNHigh             | 5 b    | 0      | 1       |
|                  | No FeN Low          | 13 b   | 3      | 7       |
|                  | No FeN High         | 7 b    | 1      | 2       |
| Other treatments |                     |        |        |         |
|                  | FeN applied 3 times | 52     | 35     | 33      |
|                  | FeN applied 4 times | 65     | 47     | 38      |
|                  | Untreated check     | 65     | 48     | 50      |

**Table 4.** Phytotoxicity to creeping bentgrass as influenced by Velocity and Certainty in 2007.

|                    |                     | 2 WAIT | 3 WAIT | 4 WAIT | 6 WAIT |
|--------------------|---------------------|--------|--------|--------|--------|
| Herbicide (H)      |                     |        |        |        |        |
|                    | Velocity            | 8.5 a  | 6.2 a  | 8.3 a  | 9.0    |
|                    | Certainty           | 6 b    | 5.6 b  | 5.6 b  | 9.0    |
| Rate (R)           |                     |        |        |        |        |
|                    | Low                 | 7.7 a  | 6.3 a  | 7.1 a  | 9.0    |
|                    | High                | 7.2 b  | 5.5 b  | 6.8 b  | 9.0    |
| H x R              |                     |        |        |        |        |
|                    | Velocity Low        | 8.3 a  | 6.5    | 8.2 a  | 9.0    |
|                    | Certainty Low       | 7.0 b  | 6.0    | 6.0 b  | 9.0    |
|                    | Velocity High       | 8.3 a  | 5.8    | 8.3 a  | 9.0    |
|                    | Certainty High      | 5.7 c  | 5.2    | 5.2 c  | 9.0    |
| IronNitrogen (FeN) |                     |        |        |        |        |
|                    | FeN                 | 7.6 a  | 6.2 a  | 7.1 a  | 9.0    |
|                    | No FeN              | 7.3 b  | 5.6 b  | 6.8 b  | 9.0    |
| H x FeN            |                     |        |        |        |        |
|                    | Yes Velocity        | 8.8 a  | 6.5    | 8.5 a  | 9.0    |
|                    | Yes Certainty       | 6.3 c  | 5.8    | 5.7 c  | 9.0    |
|                    | No Velocity         | 8.2 b  | 5.8    | 8.0 b  | 9.0    |
|                    | No Certainty        | 6.3 c  | 5.3    | 5.5 c  | 9.0    |
| R x FeN            |                     |        |        |        |        |
|                    | FeN Low             | 7.8    | 6.7    | 7.2 a  | 9.0    |
|                    | FeN High            | 7.3    | 5.7    | 7.0 a  | 9.0    |
|                    | No FeN Low          | 7.0    | 5.8    | 7.0 a  | 9.0    |
|                    | No FeN High         | 6.7    | 5.3    | 6.5 b  | 9.0    |
| Other treatments   |                     |        |        |        |        |
|                    | FeN applied 3 times | 8.7    | 8.7    | 9.0    | 9.0    |
|                    | FeN applied 4 times | 9.0    | 9.0    | 8.7    | 9.0    |
|                    | Untreated check     | 9.0    | 8.3    | 9.0    | 9.0    |