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Damping off ‘*Fusarium* spp., *Pythium* spp., *Rhizoctonia solani*’ Wallace, Department of Entomology and Plant

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**Effects of seed treatments on stand establishment and yield of soybeans planted at various seeding rates in Bixby, 2019.**

The objective of this trial was to assess the effects of seed treatments and seeding rates on stand establishment and yield at early and late planting dates. Seed treatments were a fungicide (Apron Maxx) and a combination of fungicide and insecticide (CruiserMaxx Vibrance). The trial was located at the Mingo Valley Research Station in Bixby, OK in a field of Wynona silty clay loam previously cropped to soybeans. The herbicide Prowl H2O at 2 pt/A was incorporated into the soil prior to the planting dates of 20 June and 2 Jul. The herbicide Boundary 6.5E at 2 pt/A was applied pre-emergence after each planting date. Seed treatments were applied using a rotary drum in a total slurry volume of 8 fl oz /100 lb seed. The experimental design was a randomized complete block with 5 replications. Plots consisted of two, 25-ft long rows spaced 30-in. apart. Stand counts were taken about 14 days after each planting date. Rainfall during the cropping period totaled 3.98 in. for July, 6.78 in. for Aug., 3.83 for Sep, and 7.63 in. for Oct. Plots received sprinkler irrigation as needed to promote crop development. Plots were harvested with a small-plot combine on 15 Nov and yields were adjusted to 13% moisture. Data were analyzed by analysis of variance using the GLIMMIX procedure of SAS 9.4 and means were separated with the LINES option where indicated by a significant treatment and/or planting date effects (P≤0.05).

Compared to the 30-yr average, rainfall was 7.3 in. above normal during the cropping period of Jul through Oct. Average monthly temperature was near normal for Jul and Aug, 7°F above normal in Sep, and 3°F below normal in Oct. Early and late planting dates were intended to be in May and June, respectively. However, excessive rain in May and early June prevented timely planting. The early planting date received 1.6 inches of rain 3 days after planting on 20 June and emergence was only fair, averaging 59 to 65% of the seed planted for each seeding rate (Table 1). Seed treatment effects were similar for all seeding rates. CruiserMax increased plant population by 14% and while ApronMaxx also increased plant stand, the 9% increase was not statistically significant. Seeding rate but not seed treatment produced yield responses. The high seeding rate out yielded the lower seeding by 3.5 bushels. Seed treatments had no effect on yield.

**Table 1.** Plant stand and yield responses to seeding rate and seed treatment for the early (**20 June**) planting date.

|  |  |  |
| --- | --- | --- |
|  | Seeding rate (1000 seeds/A) |  |
| Treatment and rate/cwt seed | 61.0 | 80.1 | 95.8 | 116.7 | averagez |
|  | Plant stand (1000 plants/A) |  |
| Non-treated check | 34.8 | 54.2 | 52.8 | 64.0 |  51.4 bx |
| CruiserMaxx Vibrance 2.49F 3.2 fl oz | 41.2 | 54.7 | 58.2 | 79.7 |  58.4 a |
| ApronMaxx+Moly RTA 0.16F 5 fl oz | 42.7 | 50.7 | 58.4 | 71.2 |  55.8 ab |
| averagey |  39.6 cx |  53.2 b |  56.5 b |  71.6 a |  |
|  | Yield (bu/A) |  |
| Non-treated check |  36.7 |  40.5 |  40.6 |  38.4 |  39.0 ax |
| CruiserMaxx Vibrance 2.49F 3.2 fl oz |  36.6 |  39.3 |  38.5 |  40.4 | 38.7 a |
| ApronMaxx+Moly RTA 0.16F 5 fl oz |  36.2 |  38.0 |  36.4 |  41.1 | 37.9 a |
| averagey |  36.5 bx |  39.3 ab |  38.5 ab |  40.0 a |  |

z Averaged over seeding rate.

y Averaged over treatment.

x Values in a column or row followed by the same letter are not statistically different at P=0.05.

Over 2 inches of rain was received with the first week after planting for the late planting date on 2 July. Emergence again was fair averaging from 65% to 73% over the planting rates. Plant populations were increased stepwise for each seeding rate. Seed treatments performed similarly over the seeding rates (Table 2). Cruiser Maxx increased plant populations by an average of 22%. ApronMaxx increased populations by 5% but the response was not statistically significant. Yields were similar for each of the seeding rates, but seed treatments did not have a beneficial effect on yield. Seed treatment with CruiserMaxx generally increased plant population and was more effective than ApronMaxx, but increases in plant population did not produce corresponding yield responses.

**Table 2.** Plant stand and yield responses to seeding rate and seed treatment for the late (**2 July**) planting date.

|  |  |  |
| --- | --- | --- |
|  | Seeding rate (1000 seeds/A) |  |
| Treatment and rate/cwt seed | 61.0 | 80.1 | 95.8 | 116.7 | averagez |
|  | Plant stand (1000 plants/A) |  |
| Non-treated check | 41.2 | 44.8 | 59.6 | 72.9 |  54.6 bx |
| CruiserMaxx Vibrance 2.49F 3.2 fl oz | 50.3 | 67.9 | 69.6 | 79.5 | 66.8 a |
| ApronMaxx+Moly RTA 0.16F 5 fl oz | 41.8 | 52.6 | 60.1 | 73.9 | 57.1 b |
| averagey |  44.4 dx |  55.1 c |  63.1 b |  75.4 a |  |
|  | Yield (bu/A) |  |
| Non-treated check | 42.3 | 35.7 | 37.4 | 37.9 |  38.3 ax |
| CruiserMaxx Vibrance 2.49F 3.2 fl oz | 34.3 | 37.8 | 36.5 | 31.5 |  35.0 b |
| ApronMaxx+Moly RTA 0.165F 5 fl oz | 38.1 | 35.9 | 38.8 | 37.9 |  37.7 ab |
| averagey |  38.3 ax |  36.5 a |  37.6 a |  35.7 a |  |

z Averaged over seeding rate.

y Averaged over treatment.

x Values in a column or row followed by the same letter are not statistically different at P=0.05.