

Rating Wheat Varieties for Hessian Fly Resistance. McGregor, TX, 2017.

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Summary: The relative resistance to Hessian fly was rated among 26 standard and new wheat varieties grown in a replicated trial at the Texas A&M AgriLife Farm at McGregor, TX as part of the Texas A&M AgriLife Wheat Variety Evaluation Program. The Hessian fly infestation at this site was high as the highest infestation averaging 4.1 Hessian fly per tiller. Duster and Gallagher have shown resistance to Hessian fly at this site in the 2015 and 2016 trials, and again had very few Hessian flies in the 2017 trial. Using Duster as a reference, SY Flint, SY Llano, Zenda, SY Grit, WB 4303 and TAM 401 also had few Hessian flies and could also be considered resistant in this trial. Comparing the average rank for varieties which have been evaluated at this site for 2-3 years, WB 4303, Gallagher, Duster and SY Grit have consistently hosted few Hessian flies, suggesting they have resistance to Hessian fly at this location. Results for Greer, considered to have resistance to Hessian fly in Oklahoma, have been variable at this location.

Objectives: Hessian fly is an occasional insect pest of wheat in the Texas Blacklands. Once plants are infested with Hessian fly larvae, there are no means of killing the larvae to avoid crop loss. The most effective means to reduce the risk of infestation is to plant varieties with genetic resistance to Hessian fly. However, the resistance to Hessian fly of new varieties is often unknown. Also, formerly resistant varieties can become susceptible as virulent Hessian fly biotypes increase. For this reason, the resistance level can change over time and differ among regions. Local field trials are the best means to determine which wheat varieties provide resistance to the local Hessian fly population. The objectives of this study were to compare Hessian fly infestations among standard and new wheat varieties and identify those varieties with resistance to Hessian fly in the northern Blacklands.

Methods and Materials: Wheat varieties were evaluated for yield and adaptability by the Texas A&M AgriLife Wheat Variety Testing Program at the Texas A&M Research Farm near McGregor, TX. These plots are naturally infested with Hessian flies and provided an opportunity to rate their resistance to Hessian fly. The plots were planted November 21, 2016 with four replications per variety. Hessian fly infestations were sampled by collecting wheat plants at harvest from each of three replications for each variety. Samples were returned to the lab and all of the tillers from five plants from each replication were examined for Hessian fly puparia. The number of Hessian fly per plant and the number of tillers per plant were recorded and the average number of Hessian fly puparia per tiller was calculated.

Results and Discussion: The average number of Hessian fly puparia per tiller for each of the 26 varieties is shown in the Figure. The greatest Hessian fly infestation was an average of 4.1 per tiller as recorded for Iba and represented a high level relative to previous years. This high

infestation was unexpected as the trial was planted in late November. Little Hessian fly damage (stunted tillers, lodging) was evident at harvest.

Duster and Gallagher have shown resistance to Hessian fly at this site in the 2015 and 2016 trials, and again had very few Hessian flies in the 2017 trial. Using Duster as a reference, SY Flint, SY Llano, Zenda, SY Grit, WB 4303, and TAM 401 also had few Hessian flies and could be considered resistant in this trial. The low number of Hessian fly in WB 4458 should be viewed with caution since this variety was rated as susceptible to Hessian fly in the 2014 and 2015 trials at this location.

Comparing the average rank for varieties which have been evaluated at this site for 2-3 years, WB 4303, Gallagher, Duster and SY Grit have consistently hosted few Hessian flies, suggesting they have resistance to Hessian fly at this location (Table). Results for Greer, considered to have resistance to Hessian fly in Oklahoma, have been variable in these trials. Cedar, Gallagher, Greer, Doans and TAM 401 ranked in the top five entries for yield at the McGregor location. Based on this and previous trials, Cedar is rated moderately susceptible and Doans is rated as susceptible to Hessian fly.

Yields results from the 2017 trial are reported in the Texas Wheat Variety Trial Results on-line at <http://varietytesting.tamu.edu/wheat/#varietytrials>.

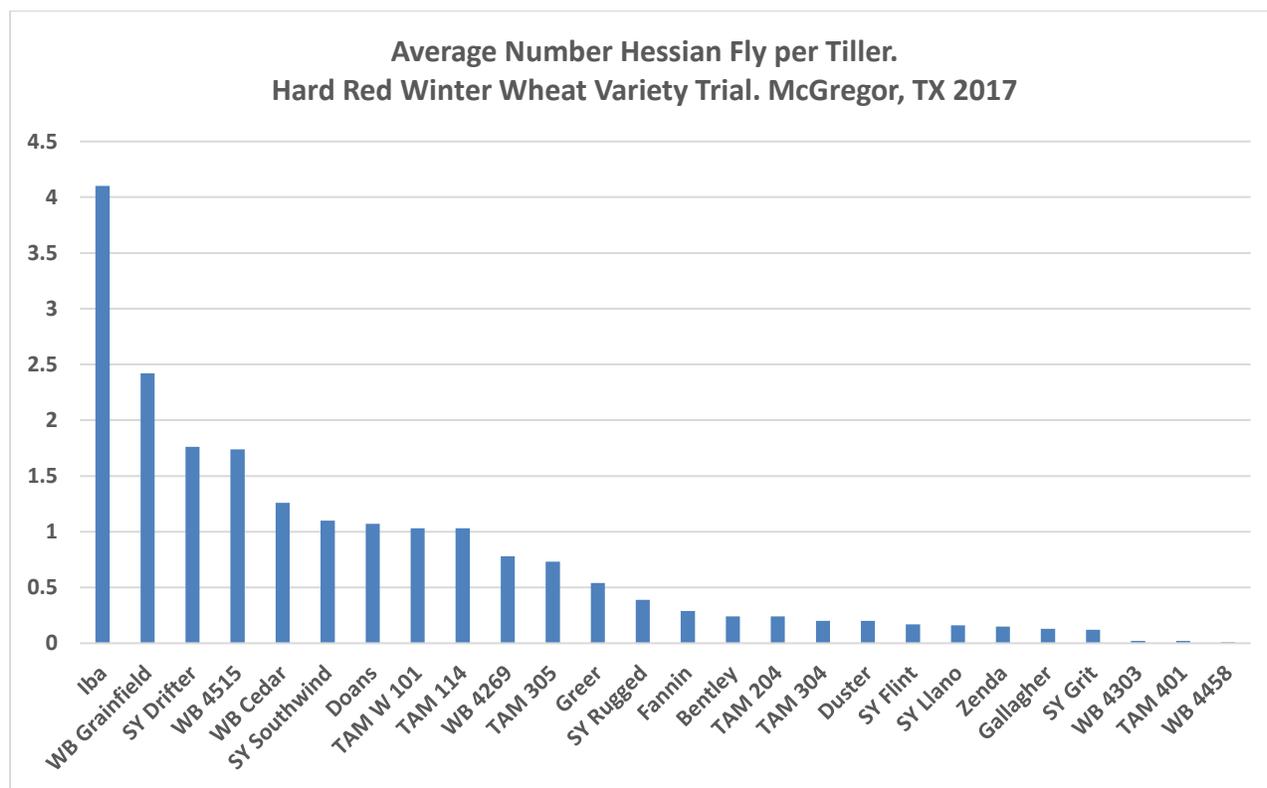


Table. Ranking of five varieties for resistance to Hessian fly. McGregor, Tx. 2015-2017.

| Variety | Rank 2015 | Rank 2016 | Rank 2017 | Average Three-Year Rank |
|-----------|-----------|-----------|-----------|-------------------------|
| Duster | 1 | 3 | 9 | 4.3 |
| Gallagher | 4 | 2 | 5 | 3.7 |
| Greer | 14 | 1 | 15 | 10 |
| SY Grit | -- | 7 | 4 | 5.5 |
| WB 4303 | -- | 5 | 2 | 3.5 |

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