

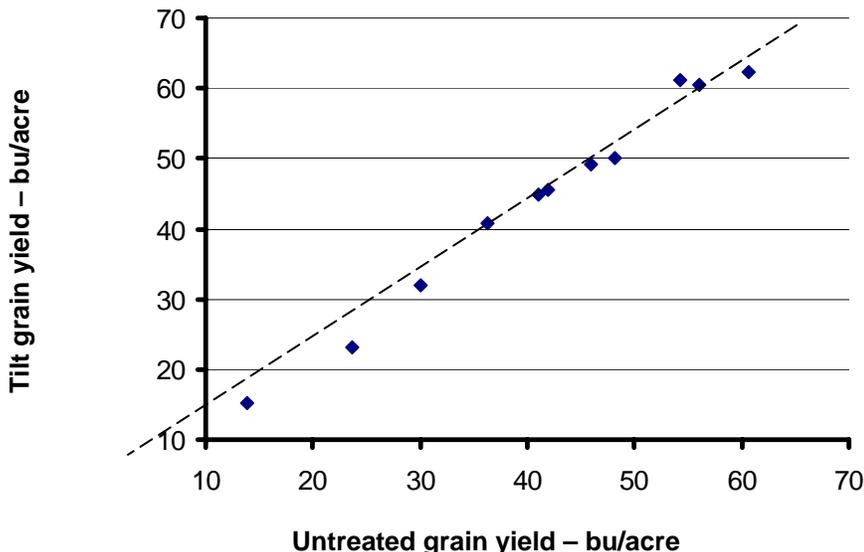
## Early Season Foliar and Seed Applied Fungicide Review for 1998 – 2006.

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Fungicide products have been tested and reported in the Western Dakota Crops Day Proceedings as well as in annual reports during the past several years. Sixty-five percent of the wheat grown in southwest North Dakota is grown in fields where the previous crop was either spring wheat, winter wheat or durum. Wheat following wheat, including durum, will have a greater incidence and severity of tan spot (*Pyrenophora tritici-repentis*) than wheat following non-host crops in a rotation sequence. The data reported and compared here are from fields with an intensive wheat history. Results will be different when wheat follows a non-host crop.

**Do early season foliar applied fungicides improve grain yields?** In fields with a history of intensive wheat culture and where Tilt (propiconazole) was applied at the 4 – 5 leaf stage in the trial, 8 of 11 trials (Figure 1) conducted in southwest North Dakota between the years of 2000 – 2006 showed grain yields that were significantly higher than the untreated check in the same trial. The three trials that did not show significant increase in yield of Tilt protected plants compared to untreated plants were in trials where the average grain yield was less than 35 bushels per acre. Generally grain yields were about 3.5 to 7 bushels per acre higher with the early season foliar fungicide application. Early season fungicide applications protect the plant from an early infection of tan spot but early fungicide applications do not protect the plant from infections that occur from about flag leaf emergence on. In southwestern North Dakota weather conditions are often hot and dry by the time heading begins so fungicide applications made at flag leaf and later for the control of Septoria and Scab may be unnecessary. Producers should scout their wheat crop at least once a week as well as stay informed on current crop development, infection levels, and weather conditions. Growers may find up-to-date information on disease development as well as infection periods at the NDSU Small Grains Disease Forecast website <http://www.ag.ndsu.nodak.edu/cropdisease/cropdisease.htm>. Producers may also visit with their county extension agent for assistance in accessing the information contained on this website.

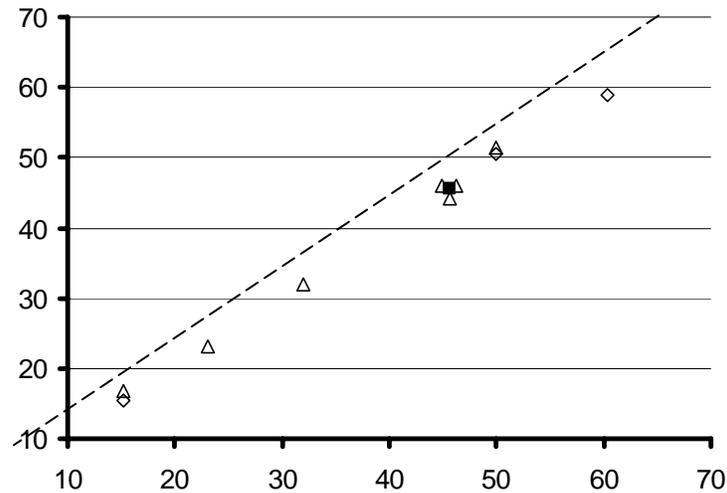
Figure 1. North Dakota early season foliar fungicide applications, comparison of Tilt (propiconazole H) and untreated wheat grain yields 2000 – 2006.



Grain yield points lying above the dashed line (---) yielded more than the untreated check. Grain yield points lying on or below the dashed line yielded the same as or less than the untreated check in the same trial.

**Are other products similar to Tilt (propiconazole) in effectiveness for early season foliar fungicide applications?** Tilt, other formulations of propiconazole, and products with other modes of action do an effective job in controlling tan spot when labeled for such use. Figure 2 shows a comparison in grain yields between Tilt and three other commonly used products in early season foliar fungicide applications. Results indicate that grain yields of wheat protected by early season applications of Quilt, Stratego, and Headline were similar to those of Tilt.

Figure 2. Early season foliar fungicide applications, comparison of foliar applied products, Quilt (g), Stratego (>) and Headline (.) to Tilt (propiconazole) in southwest North Dakota in same trial 2000 – 2005.



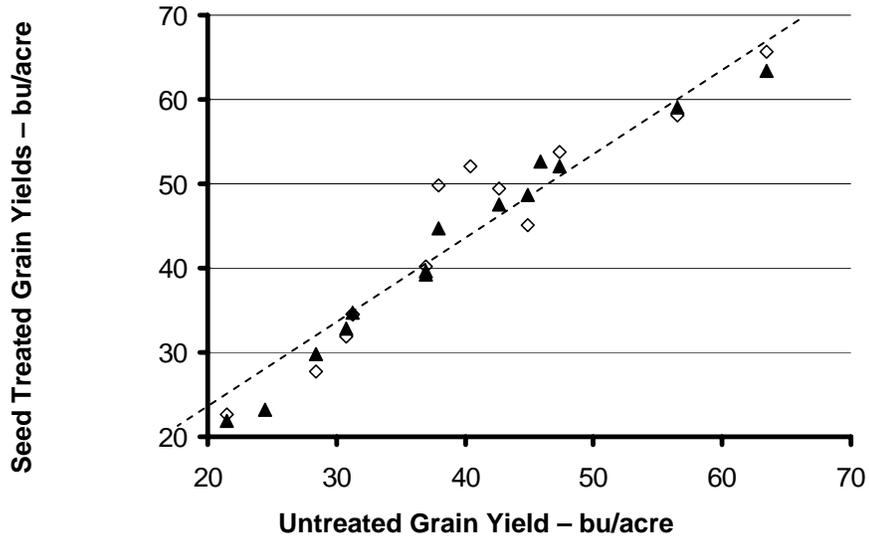
Grain yield points lying on dashed line (---) yielded the same as the Tilt treatment in the same trial.

In trials where the previous crop was not wheat, early season applied foliar fungicides did not increase grain yields. Tan spot infections did not start until later in the season and severity of infection was never as high as it was when wheat followed wheat.

**Do seed applied fungicides for the control of seed- and soil-borne diseases improve grain yields?** In trials conducted in southwest North Dakota over the past nine years in fields with two commonly used products in intensive wheat rotations, grain yields of fungicide protected seed produced grain yields that were higher about 70% of the time (Figure 3). Seed treatments used in these trials provide some protection from soil-borne diseases such as pythium, fusarium foot and crown rot, and common root rot. These treatments also provide some protection from seed-borne diseases such as loose smut.

As with any fungicide application, complete coverage of the seed at the recommended rate is required for control of diseases listed on the label. Failure of products to provide the expected results can be traced back to poor or no coverage of the seed with the fungicide. Well adjusted application equipment operated by an experienced operator can efficiently and effectively treat seed as it is augered into the grain drill.

Figure 3. Southwest North Dakota comparison of seed applied fungicides, Raxil MD (◊) and Dividend XL (>) treated seed grain yields to untreated check grain yields, 1998 – 2006.



Grain yield points lying above the dashed line (---) yielded more than the untreated check. Grain yield points lying on or below the dashed line yielded the same as or less than the untreated check in the same trial.