

The 2009-2010 wheat season in Indiana

Weather throughout Indiana in the 2009-2010 wheat growing season was very unusual. Harvest of corn and soybeans was significantly delayed in the fall of 2009 due to wet and rainy conditions, resulting in delayed seeding and significantly reduced acreage of winter wheat, along with significant soil compaction in wet areas of fields that were seeded to wheat. Wheat in some fields achieved little growth and tillering prior to going dormant for winter. Luckily the winter was not severely cold, so wheat generally survived well. February to mid-April was cold with frequent rains and very wet soil conditions, causing delayed topdressing of wheat, and much of the N that was applied, was lost due to leaching through the soil. Also, due to cold conditions and low available N, early spring growth of wheat was slow. At mid-April weather conditions abruptly changed to unusually warm temperatures, but the frequent rains continued throughout the remaining wheat growing season and through the wheat harvest season, causing the wheat to develop rapidly to maturity. At mid-April, wheat throughout Indiana was 1 week later than normal in stage of growth, but wheat matured 1 week earlier than normal. This rapid plant development was likely due to elevated rates of photosynthesis because with no or little stress due to limited soil moisture, stomata stayed open longer into the day, increasing accumulation of photosynthate daily – and many nights during this period temperatures were low enough so that not an unduly amount of photosynthate was lost to respiration. However, tillering was likely lower than normal due to late fall seeding together with cold conditions in early spring before mid-April, when the daylight became long enough to cause plants to go into the reproductive stage. Thus, generally throughout Indiana grain development was good - good test weight, plump, well-developed - but grain yields were average, likely due to reduced plant development during the fall and early spring.

Fusarium head blight (head scab) which develops profusely in warm and humid conditions, was the primary disease of concern, and it was present in most areas of the state, but severity of the disease varied widely. Other fungal diseases including glume blotch and leaf blotch were moderately severe, and more so in southern IN. Powdery mildew developed early in the season on susceptible varieties, but declined with onset of warm conditions. Leaf and stem rusts developed late and were not severe.

The season, as described above, is reflected in the wheat performance summaries at the four locations, Wanatah, Atlanta, Lafayette and Evansville, in the following Tables of performance data. The effect of a second topdress of N on two of the four replications at Lafayette is very apparent. Also, the unusually large statistical coefficients of variability and correspondingly large least significant differences of treatment (wheat varieties) means for yield at all locations, reflect the effects of soil compaction and limited N availability due to low temperatures and leaching – even though experimental sites in fields at the respective test locations were carefully selected for soil and topography uniformity.

Herb Ohm, Purdue University, hohm@purdue.edu , Ph: 765-494-8072