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Looking back at the 2003 growing season

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Abstract

Now looking back at the 2003 growing season, who would have thought that it would turn out the way it did? I think that we all got challenged in many unexpected ways and we definitely learned a lot. One thing for sure, many do often underestimate "mother nature" but after the 2003 growing season, I think that we all can agree that no management practice can match "her" power. Another thing that we learned was that different seasons have different pests and pathogens. The interactions between a host, the environment, and a pathogen or pest couldn't have been clearer than in 2003.

Keywords

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Comments

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INTEGRATED CROP MANAGEMENT

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It all started in April, where reasonably warm weather and lack of topsoil moisture encouraged many growers to get their corn planted early. Then a wet and cool period followed, delaying soybean planting. The majority of the soybean acreage (60-70 percent) was first planted in the last 10 days of May. June and July were cold and wet, and many soybean fields were struggling with canopy closure. Corn pollination was close to being perfect and the soybean plants were flowering for a long period of time. From the end of July until the second week of September, temperatures increased significantly, but there was less than 1 inch of precipitation for many parts of the state during the six-week period. Harvest conditions were nearly perfect; the harvest started in mid-September and was nearly complete 4 weeks later. Based on the USDA estimates, the average corn and soybean yields for Iowa were 159 bushels per acre and 34 bushels per acre, respectively.

The corn yield was a great surprise for many of us and credit can be given to the corn breeders who successfully have been developing hybrids that can tolerate late season drought. There is no doubt that this is a major reason corn yields were so high in a growing season like 2003. Yielding 159 bushels per acre without rain for 6 weeks is amazing. In addition, the early planting, the "reasonably" cool and wet conditions during pollination, and the lack of major corn diseases and pests also contributed to the high corn yields.

Soybean yields on the other hand, were not that impressive and were the lowest since 1993. Some may think that such yields were disappointing. However, when you look at the conditions the soybean plants experienced in 2004, I think we all can agree that we were lucky - it could have been even worse. The worst drought conditions and the lowest yields were observed in southwest and northwest Iowa, on average close to 6 inches below in precipitation as compared to the 20-year average for June, July, and August.

So, why were our soybean yields that low? Well, there are many reasons for that. One thing is for sure: compounded stresses have a more pronounced impact on yield than a single stress. In the end of June and middle of July, excessive rain saturated our soils and the cooler air and soil temperatures beset the waterlogged soybean crops. The saturated soils resulted in deteriorated root systems and nodules on these soybean plants, and

Phytophthora root rot and other root rot diseases were observed in many fields.

The drought during seed filling was probably the most important reason for our low yields. Despite the large number of pods per plant, many pods were not filled and seeds were small. This year, there were more than 4,000 seeds per pound compared to 2,200 seeds per pound in a normal year. No significant differences in soybean seed composition were observed this year. By using the [CROPGRO-soybean model](#) [1], we were able to estimate that the average yield loss from drought alone was around 15 percent in central Iowa.

The delayed planting cost us on average 5 to 7 percent in yield. Early-planted soybeans were ahead in development and were nearly done filling the seeds when the drought and the aphids first showed up. However, a few areas in Iowa got rain in the second week of September, and had late-planted soybean yields higher than those for early-planted soybeans. Soybean development was delayed because of the late planting and seed filling was therefore, not completed when it rained in September.

Soybean aphids also showed up in June in northeast Iowa. However, it was not until the end of July and beginning of August that they became a problem in the rest of the state. Observations varied. Few fields were sprayed and I have heard many reports on 6 to 8 bushel yield increases from one insecticide application. However, I have also heard about none to 19 bushels per acre yield benefit due to one insecticide application. In addition to the soybean aphids, Charcoal rot and stem canker were also found late in the season, which are not pathogens that we "normally" see in Iowa.

Looking ahead to 2004, the biggest concern right now is soil moisture. Despite the 4 inches of rain in early November, a lot of precipitation is needed between now and planting, to fill up our subsoil for the next growing season. A white Christmas may therefore be on the wish list for many of us this year.

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[1] <http://webgro.ae.iastate.edu>

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