Soybean Disease Situation And The Potential For Economic Return Of Foliar Fungicide Application

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Recently I was reading an article on the Plant Management Network (HYPERLINK "http://www.plantmanagementnetwork.org/pub/php/news/2012/TimelyFungicideApplication/"http://www.plantmanagementnetwork.org/pub/php/news/2012/TimelyFungicideApplication/) regarding the timely use of foliar fungicides to achieve maximum effect on soybean. The article stated that the recent mild winter has resulted in an increased disease risk that growers should take into consideration when making fungicide use decisions. I am sure that some parts of the country probably do have an increased disease risk as a result of the mild winter, but I do not believe Kentucky is among them.

In most years, foliar, pod and stem (FPS) fungal diseases of soybean (Fig. 1) are held in check by planting adapted varieties (mostly MG 4 varieties), avoiding extremely early planting dates (full season crops) or planting late (doublecrop soybean), crop rotation, limited- sporadic rainfall and high temperatures during the summer months, and timely harvest. Typically, measurable yield losses caused FPS diseases – the targets of foliar fungicides – are limited to certain environments like river-bottoms, fields prone to extended periods of dew or fog, and continuous soybean fields. Early maturing varieties (mainly group 3) are often impacted by damaging levels of FPS diseases, especially when planted early. The same is true for crops that are not harvested on time. However, FPS diseases are usually not that destructive in Kentucky.

True enough, the winter of 2011-12 was very mild, even by Kentucky's standards. However, if anything, the mild conditions probably enhanced residue breakdown, thereby reducing fungal survival in weed and crop residue, due to increased microbial activity. Moreover, early planting may have been somewhat more common this year, but the higher-than-normal temperatures and limited rainfall in April to early-May likely negated the increased risk to FPS diseases normally associated with early planting. I simply cannot reconcile how the mild winter might have increased the potential for soybean FPS fungal diseases to occur in Kentucky. I will concede that the mild winter may have potentially increased the risk of insect-vectored virus diseases, such as bean pod mottle virus (transmitted by bean leaf beetles) and soybean mosaic virus (aphid-transmitted); however, these viruses are not controlled by foliar fungicides. Of course, the mild winter did favor survival of the soybean rust pathogen in the deep South, but our winter, although mild, was still too cold to allow soybean rust to survive the winter in Kentucky.

Fig. 1. Common soybean foliar, pod, and stem diseases caused by fungi. A) Cercospora leaf blight; B) anthracnose and pod and stem blight; C) frogeye leaf spot; D) Septoriabrown spot

Photo credit: D. Hershman

CONCLUSION

I do not believe that the mild winter of 2011-12 has resulted in greater than normal potential for FPS fungal diseases to occur in Kentucky soybeans. Dry, and now extremely hot and dry, weather across most of the state has kept fungal diseases in check up to now. The soybean crop is very stressed and if some relief does not come soon, yields will be seriously hurt by icant reductions in late season disease. It is anyone's guess how the rest of the season will play out, but it is my opinion that it may be difficult to recover the costs associated with applying a fungicide this season unless July and August turn wet. Many doublecrop fields are still not planted due to exceptionally dry soil conditions. However, doublecrop soybeans do not generally respond well to foliar fungicides even in a season with decent moisture. Δ

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Table 1. Impact of selected foliar fungicide treatments applied to soybean under drought condition (UKREC, Princeton, KY – 2007).

Treatment and rate/A	Growth stage(s) sprayed	8 Oct Defoliation (%)	17 Oct Defoliation (%)		17 Oct: Brown spot/Cercospora leaf blight complex (% leaf area)		Yield[x] (bu/A)
Non-Treated……	-	50.7 NS[y]	79.3	a[z]	18.6	a	24.5 NS
Topguard 1.04SC 7.0 fl oz + Headline 2.09EC 6.0 fl oz	R3	42.1	62.9	b	4.1	b	25.3
Folicur 3.6F 3.1 fl oz + Headline 2.09 EC 4.7 fl oz + Induce 0.125%.....	R3	45.7	65.0	ab	4.1	b	26.8
Headline 2.09 EC 6.0 fl oz + Induce 0.125%.....	R3	46.4	72.1	ab	5.7	b	23.8

[z]Means within the same column followed by the same letter are not significantly different, Student-Newman-Keuls test ($P \leq 0.05$).

[y]NS=no significant differences with the column of data.

[x]Yields were adjusted to 13% moisture.

NOTE: Topguard® and Folicur® are triazole fungicides; Headline® is a strobilurin. Imputed tress tolerance has not been reported for crops treated with triazole-only fungicides.