Fusarium Head Blight Survey 1997-98

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Objective:

To survey wheat fields to determine the link of various production practices/situations on the incidence and severity of Fusarium Head Blight (FHB).

Methods:

One-hundred wheat fields were identified in the fall of 1997 for inclusion in the FHB survey. Fields surveyed were those already under contract with either OptiCrop or Wheat Tech; each group was responsible for selecting and scouting 50 fields. The data sheet used in the survey was based on input from a biostatistican. Data collected in the fall included: field identity, county, previous crop, planting date, variety, and percent residue cover. In the spring, one-hundred heads, 25 in four locations, were collected from each field after crop flowering and each head was rated for FHB severity according to a picture sheet developed at North Dakota State University. Other data taken in the spring were estimates of yield potential and peak flowering date. Data for 99 fields (one field was lost due to the early 1998 spring freeze) were analyzed using appropriate statistical procedures.

Results:

Ninety-nine fields in four states and 18 counties were surveyed (Table 1). Four Wheat Tech scouts and one OptiCrop scout generated the survey data. Most of the data were collected during regularly scheduled field visits, but one additional visit to each field was made in order to make FHB assessments. FHB was most severe in the southern tier counties of Kentucky and Robertson County, TN compared with the other counties surveyed. Table 2 summarizes the results of statistical

tests. FHB incidence and FHB severity were highly correlated. Significant relationships were detected between FHB incidence and corn residue, yield potential, planting date and peak flowering date. However, the variability of these associations was such that none of the relationships were very strong. Yield potential and corn residue had only a modest correlation with incidence (R-squared 0.35 and 0.28, respectively). Planting date and flowering date had extremely poor relationships with FHB incidence. All in all, the above variables could only explain about 75% of the variation in FHB incidence ratings. In other words, other factors beside yield potential, corn residue cover, planting date, and peak flowering date are at play in determining FHB levels. Weather effects, which were not accounted for by the survey, probably played the greatest role in determining FHB.

Table 1. States and Counties Involved in the FHB, 1997-98

State	County	No. Field
KY	Caldwell	2
	Christian	4
	Daviess	5
	Hardin	9
	Henderson	3
	Hopkins	1
	Larue	1
	Logan	15
	McLean	8
	Simpson	15
	Todd	9
	Trigg	1
	Warren	8
	Webster	2
TN	Robertson	7
IL	Lawrence	1
IN	Gibson	5
	Spencer	3
	Total	99

Table 2. Summary of Relationships with FHB Incidence

Parameter	P Value #	R-Square**
Severity N/A	(non-linear model)	.93
Yield Potential	<0.0001	.35
Corn Residue (99*)	<0.0001	.28
Corn Residue (81*)	<0.0001	.21
Planting Date	0.02	.06
Flowering Date	0.04	.04

*99 = all 99 fields where non-corn fields were treated as having zero corn residue.
*81 = only fields where wheat was planted following corn.
= the lower P values are the most significant.
** = The higher the R-square the better the relationship.

Conclusion:
First year data suggest that neither previous crop nor the level of corn residue in the fall are very good predictors of future FHB levels. Additional survey data are needed before definitive conclusions can be made.