FUSARIUM HEAD BLIGHT SURVEY 1999-2000

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SURVEY OBJECTIVE:

Survey wheat fields to assess possible relationships between Fusarium head blight (FHB) and various independent variables, including: level of corn residue in the fall, wheat variety, planting date, crop head density, and crop stage and date when FHB was rated.

METHODS:

Seventy wheat fields, representing 18 counties and five states, were selected for scouting (Table 1). Fields surveyed were those already under contract with either Opti-Crop or Wheat Tech. Each group was responsible for scouting 35 fields. Data recorded from each field in the fall included County and State, planting date, variety, and percent residue cover. Residue cover was determined using a standardized procedure recognized by NRCS. Fields not in corn prior to wheat being planted were recorded as having zero corn residue. In the spring, starting around the late milk stage of crop development, 25 heads were collected from four locations in each field surveyed. Individual heads were then assessed for the severity of FHB. Consistency among the various scouts rating FHB was achieved using a pictorial disease rating aid developed at North Dakota State University. Other field data recorded included: stage of plants when rated, rating date and head density. Data were subjected to linear regression analysis.

RESULTS:

Three survey fields were lost in the spring due to various reasons. Thus, data were only collected for 67 of the 70 original fields. Overall, FHB incidence and severity across the 67 fields surveyed were extremely low. For example, average field severity for FHB, which is a fairly good indicator of maximum yield lost due to FHB, was only 0.22% across all fields surveyed. This compares with an overall field severity of 2.7% reported from the 1998-99 survey. The fields surveyed represented 23 different soft red winter wheat varieties. The three most commonly encountered varieties were Pioneer 2552 (17 fields), Pioneer 2568 (7 fields) and Ester (6 fields). The overall incidence and severity of FHB in these varieties were similar.

The only independent variable to be significantly related to FHB incidence, severity, and/or field severity in 1999-2000 was crop head density. However, extremely low r^2 values ranging from 0.08 - 0.15, indicate extensive variability exists in the relationships. This suggests that other factors, such as weather, are much more influential than is crop head density in the development of local FHB epidemics. The independent variables <u>not</u> significantly related to FHB incidence, severity or field severity in this survey include: % corn residue cover in the fall, planting date, and rating date.

TABLE 1. LOCATIONS OF WHEAT FIELDS SURVEYED FOR FUSARIUM HEAD BLIGHT (FHB) DURING 1998-99.

State	County	No. Fields	State	County	No. Fields
Indiana	Posey	6	Missouri	Dunklin	2
	Spencer	10		Mississippi	8
	Warrick	4		New Madrid	1
				Scott	1
Kentucky	Christian	4	Tennessee	Robertson	2
	Daviess	6			
	Henderson	3			
	Logan	5			
	McLean	4	**TOTAL FIELDS SURVEYED 67**		
	Simpson	1			
	Todd	6			
	Trigg	1			
	Warren	3			

TABLE 2. RELATIONSHIPS BETWEEN FUSARIUM HEAD BLIGHT (FHB) INCIDENCE[1], SEVERITY[2], AND FIELD SEVERITY[3] AND VARIOUS DEPENDENT VARIABLES FROM 91 WHEAT FIELDS EVALUATED DURING 1999-2000.

	X Variable			
Y Variable for FHB	% Surface corn residue (fall)	Planting date	Head density (Plants/ft^2)	Plant stage when Rating date rated
FHB Incidence	NS	NS	0.001 (0.15)[4]	NS NS
FHB Severity	NS	NS	0.02 (0.08)	NS NS
FHB Field Sev.	NS	NS NS	0.02 (0.08)	NS

[1]Incidence is percent of heads with any FHB.
[2]Severity is the surface area affected of diseased heads only.
[3]Field severity is avg surface area affected across all heads evaluated (i.e., diseased and non-diseased).
[4]P value (r^2); NS = P>0.05

CONCLUSION:

Survey data from 1999-2000 are consistent with data from the previous two survey years. Specifically, when weather conditions are not conducive to FHB development, other production factors, such as tillage, planting date, etc., are of little consequence. Experience indicates that the same situation exists when weather conditions are highly favorable for FHB. For example, when conditions are highly favorable to FHB, sufficient fungal inoculum to incite an epidemic will be present due to the widespread sources of FHB inoculum statewide. This situation, in large part, is thought to be due to the high number and widely scattered nature of corn fields (e.g. major source of FHB inoculum) throughout the wheat-producing areas of Kentucky.