Summary of Wheat Diagnostic Analysis, 2015-16
Funded by Michigan Wheat Program
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Thirty three samples, from fifteen counties, were submitted to the lab for diagnostic evaluation. These samples were submitted by MSUE educators, agribusiness professionals, and growers. Each sample was examined for signs of disease and abiotic issues. Fourteen samples were tested with ELISA tests for four specific pathogens. A list of diagnoses, and the incidence, is included below; note that some samples had multiple diagnoses. The distribution of the sample origins is also shown below.

Rust was more prevalent in 2016 than in recent years. Both leaf rust, and stripe rust were diagnosed; stripe rust was identified on wheat received in mid-May through June. In some cases rust was quite severe. Other diseases detected on wheat in 2016 included tan spot (Drechslera sp.), eye spot, take-all, and bacterial mosaic (*Clavibacter michiganensis* subsp. *tessellarius*).

It is important to note that Dennis Pennington facilitated sample collection in several situations. Dennis was able to make field visits and follow up with growers as needed to further investigate problem fields when lab analysis wasn't able to fully address the problem. Additionally, lab diagnostic work supported some of his efforts to work with growers having production issues. In some instances we do not find pathogens or insect pests associated with a sample and abiotic factors are considered. This was the case for three wheat samples; we were not able to identify a specific causal factor, but suspected that cultural or environmental factors were involved.

Again this year, many of the wheat samples submitted had symptoms caused by nutritional deficiencies and/or high or low soil pH levels. When wheat samples were submitted with symptoms suggestive of a nutrient deficiency a subset of the samples was forwarded for nutrient testing. Where possible soil and/or tissue from both "good" and "bad" areas of the field were submitted. This greatly enhanced diagnostic testing and the value of the results. Through nutrient testing, low or deficient levels of boron, zinc, sulfur, and in one case phosphorus were diagnosed in various wheat samples.

Incidence of Diagnosis

Diagnosis	Number of Samples
Powdery mildew	1
Tan spot	1
Leaf rust	2
Stripe rust	4
Eye spot	1
Take all	1
Pythium sp.	1
Wheat streak mosaic virus	1
Bacterial mosaic	1
Nematodes	3
No pathogen found	3
No viruses detected	12
Nutrient deficiency	13

Geographic Distribution of Samples