LETTERS TO THE EDITOR

Comments on Fungicide Treatment of Wheat Seed

Mathre et al. (10) have concluded that the use of mercury or nonmercury compounds is unnecessary to protect wheat (Triticum aestivum L.) from seed and seedling decay in Montana. Contrary to this position, I had thought that the vitalizing effects of mercury seed treatment on germination and emergence was well established (see for example the series of papers by J. E. Machacek: “Cooperative Seed Treatment Trials, 1950-1959,” published annually in the Plant Disease Reporter 1951-1960). This effect is accentuated when the seed is old (17), of low vigor (16), heavily infected with pathogenic fungi (1, 15), or experiences adverse environmental conditions at sowing (4).

In their introduction Mathre et al. state that: “the effectiveness and value of cereal seed treatments for controlling seed and seedling decay have varied depending on the year and location of the tests.” After quoting one report recording significant increases in stand and yield of wheat over a 4-year period of mercury seed treatment (12) they then refer to three papers (7, 9, 11) where no response was observed in crops grown from treated seed. It is worth examining these three papers critically.

Line et al. (9) and Roane and Starling (11) used a single variety of wheat and recorded their results over a single growing season. Only Line et al. (9) provided some details of the treated seeds history and on this information it may be assumed that the seed would show little or no response to mercury seed treatment. The juxtaposition of the third reference to Koehler (7) with the previous two references is misleading. Koehler did show that “disease-free” seed would not benefit from treatment; however he also carried out other tests. In the case of oats (Avena sativa L.): “in six years of experimentation ... ethyl mercury chloride has fairly consistently given better stands and yields” over untreated and conventionally treated seed. Similar trends could be observed with wheat and barley (Hordeum vulgare L.).

The experimental details and results are then presented:

1) A single variety of wheat of indeterminate vigour is treated and sown in 38 soils from Montana cereal fields. In 9 of these soils, emergence was improved by an average of 13% (because the soil was heavily infested with damping-off fungi?); overall there was a statistically significant 2.8% increase in emergence from mercury-treated seed.

The second part of the Mathre et al. study concerns the use of common stinking smut (Tilletia caries L.) in Montana. Contrary to this position, I had thought mercury or nonmercury compounds is unnecessary to protect wheat from seed and seedling decay in Montana. Would it not be better to continue treating seed routinely, so that year-to-year varying conditions, pathogen status, and seed vigour are insured against and a reliable stand and yield produced?

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