Fungicides Could Greatly Increase Maize Yields in Africa

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Grey leaf spot is one of the principal constraints to maize production in sub-Saharan Africa. In Africa, grey leaf spot was first observed causing economic losses in maize fields in South Africa during the 1990/91 growing season. Since then, the pathogen has been reported as widespread in sub-Saharan Africa. Grey leaf spot of maize is caused by the fungus Cercospora zeae-maydis which is known to infect only maize. The fungus produces spores in infested debris in the spring. The spores are then wind-blown to infect maize crops. Losses associated with grey leaf spot occur when photosynthetic tissue is rendered nonfunctional due to lesions and/or the blighting of entire leaves [1]. The blighting and premature death of leaves severely limits photosynthesis and the developing kernels. Additional losses due to grey leaf spot occur when photosynthate is diverted from the stalk and roots, which then may predispose these tissues to stalk and root rots resulting in stalk lodging [1].

In Malawi, maize yield losses of 29-69% due to grey leaf spot have been reported [2]. A survey conducted in western Ethiopia indicated yield losses due to the disease ranging from 22 to 75% for both improved and local varieties [3]. Small-scale farmers experience considerable yield losses estimated at 35% in Zimbabwe and 45% in Kenya [4]. A crop loss assessment in Tanzania indicated that the disease caused grain losses ranging from 15 to 40% [5]. In South Africa, grain yield losses due to grey leaf spot are usually between 30 to 40% [6].

Fungicides have been found to provide excellent control of grey leaf spot. Few hybrids have sufficient resistance to prevent yield losses due to grey leaf spot. Research in South Africa has demonstrated that even the most resistant hybrids respond to fungicide treatment. Yield losses up to 50% have occurred in unsprayed hybrids with moderate resistance as opposed to 65% yield reductions in unsprayed susceptible varieties [1]. In tests in Zambia, grain yield differences in sprayed and unsprayed treatments ranged from 27 to 54% depending on the susceptibility of the genotype [7].

References