

Breeding Wheat for Resistance to Insects

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I. INTRODUCTION

Host-plant resistance plays an important role in the management of the insect pests of wheat (*Triticum* sp.). The Hessian fly [*Mayetiola destructor* (Say)] and the Russian wheat aphid [*Diuraphis noxia* (Mordvilko)] coevolved with wheat in southeast Asia (Briggle et al. 1982; Souza 1998), while the wheat midge [*Sitodiplosis mosellana* (Géhin)], the greenbug [*Schizaphis graminum* (Rondani)], and the wheat stem sawfly (*Cephus* spp.) became pests of wheat as cultivation practices spread into Europe, Asia, and the new world (Hunter 1909; Barnes 1956; Shanower and Hoelmer 2001). Clearly, all five insects have a long history of association with wheat.

Reliance on host plant resistance to manage wheat insects can be explained in both an historical and economical context. In the United States, numerous major insect pest outbreaks occurred in wheat during the twentieth century, and throughout this period host plant resistance was a pest management mainstay. Development of wheat resistant to the Hessian fly and the wheat stem sawfly represents some of the earliest