Development of a Bioherbicide for Wild Oats in Australia

S. D. HETHERINGTON and B. A. AULD

NSW Agriculture, Orange Agricultural Institute, Forest Road, Orange NSW 2800, Australia

In Australia Avena fatua is a principal weed in a range of cereal crops including wheat, barley and oats. The fungus Drechslera avenacea causes leaf lesions and damping-off of seedlings and its use as a bioherbicide is under investigation. Experiments were conducted to determine the feasibility and merit of foliar application of low rates of herbicides and a conidial suspension to control the weed. A range of herbicides were applied to wild oats and wheat at rates lower than those recommended for the control of wild oats. The selective post-emergent herbicide Achieve™ (Tralkoxydim; Cropcare Australasia Pty ltd) reduced weed growth at 10% of the recommended rate and was included in subsequent experiments. In a second series of experiments, V8 agar plates were amended with herbicides at 0, 10 and 20% of the manufacturer’s recommended rate for control of wild oats. Plugs of D. avenacea were placed in the centre of these plates and the radial growth of colonies was measured for 9 days. All herbicides slowed fungal growth. However, colonies growing on Achieve™-amended media were able to grow steadily and produced viable and infectious spores. Finally, the effect of a combination of the herbicide Achieve™ and D. avenacea was tested for its effect on A. fatua and wheat. The above-ground dry weight of wild oats was reduced by 85% compared to an uninoculated control, ten days after a conidial suspension (1.5 x 10^5) and Achieve™ at 10% of recommended application rate were applied. Wheat was unaffected. The effects of a number of inoculum amendments, including amino acids and iron chelators, were also examined.