

CONTROL OF DOWNY BROME IN WINTER WHEAT WITH PROPOXYCARBAZONE AND MESOSULFURON. Steven R. King* and Kevin B. Thorsness, Assistant Professor, Montana State University-Southern Agricultural Research Center, Huntley, MT 59037 and Bayer CropScience, Fargo, ND, 58103.

In Montana, downy brome (*Bromus tectorum*) is becoming one of the most troublesome and difficult to control weeds in winter wheat (*Triticum aestivum*). Increased no-tillage production practices, warmer winters, and limited herbicide choices have facilitated the increase in downy brome populations. In 2005-06, an experiment was performed to evaluate the efficacy of propoxycarbazone and mesosulfuron applied alone or in combination for the control of downy brome in winter wheat. Four postemergence treatments of propoxycarbazone were applied in the fall of 2005. Sequential treatments applied in the spring of 2006 consisted of no herbicide, propoxycarbazone alone, propoxycarbazone plus mesosulfuron, and mesosulfuron alone. These treatments were compared to sulfosulfuron applied in the fall or in the spring. The experiment also contained a nontreated control. The experiment was designed as a randomized complete block and contained four replications. Winter wheat injury and downy brome control were rated throughout the growing season and wheat yield was determined at harvest. All treatments applied in the fall did not injure wheat at any rating time. Sequential spring applications of propoxycarbazone alone, propoxycarbazone plus mesosulfuron, and mesosulfuron alone caused wheat injury of 9, 14, and 5%, respectively, 8 days after the spring treatment. However, by harvest no injury was apparent from any treatment. Downy brome control prior to the application of sequential treatments ranged from 56 to 68% and there was no difference among treatments. In June, propoxycarbazone applied alone in the fall controlled downy brome equivalent to either sulfosulfuron treatment. Fall applied propoxycarbazone followed by spring applications of propoxycarbazone alone, propoxycarbazone plus mesosulfuron, or mesosulfuron alone controlled downy brome 87, 92, and 90%, respectively, in June. Sequential treatments controlled downy brome greater than propoxycarbazone or sulfosulfuron applied in the fall or the spring application of sulfosulfuron. No difference in winter wheat yield was observed among treatments regardless of the level of downy brome control. Results indicate that spring applications of propoxycarbazone, propoxycarbazone plus mesosulfuron, or mesosulfuron alone following a fall application of propoxycarbazone are efficacious for the control of downy brome.