

The Future of Small Grain Weed Control in a Historical Perspective

*Thomas E. Kearney, Farm Advisor
University of California Cooperative Extension
Yolo/Solano Counties*

In 1960, the only University of California recommended herbicide for small grains was 2,4-D. The 1999 recommendations list nine herbicides. In 1962, Barban was added for wild oat control in barley and wheat.

In the 1960's one of the most troublesome broad-leaved weeds not controlled by 2,4-D was amsinckia (fiddleneck). Trials in the 1960's showed the herbicide Bromoxynil was highly effective in controlling amsinckia and it was added to the University recommendations in the 1960's. The most recent addition to the University recommendations for broad-leaved weeds was Chlorsulfuron (Glean). This herbicide has not been widely used in California mainly due to its soil residual. Chlorsulfuron is widely used in some small grain growing areas of the U.S. (Kansas).

Barban found limited usage for wild oat control and often caused injury when used during cold, overcast weather conditions. The next wild oat herbicide recommended was Difenzoquat (Avenge). This herbicide found good acceptance and was widely used. Difenzoquat has a relatively wide application time, 3 to 5 leaf stage of wild oats, and can be mixed with most of the broad-leaved herbicides. Its main limitations are it is only effective on wild oats and some varieties are sensitive. The most recent recommended grass herbicide for wheat is Diclofop-methyl (Hoelon). This herbicide has activity on wild oats and is highly effective on Italian ryegrass, it has some activity on littleseed canarygrass. Crop injury has been an occasional problem with Diclofop-methyl (Hoelon) when used in cold (lower than 40°F) and prolonged wet weather. An increasingly troublesome grass which Diclofop-methyl (Hoelon) has little or no activity on when applied postemergence is Ripgut brome.

The results of a few trials conducted in Yolo County grower fields to assess weed control and yield increases in problem fields are:

Grower: Dettling
Year: 1978
Crop: Wheat
Predominate Weed: Wild Oats

Herbicide	% Wild Oat Control	Yield Increase Lbs/Acre
Difenzoquat (Avenge)	88	1570
Diclofop-Methyl (Hoelon)	79	1615
L.S.D. @ 5%		1442

Grower: Giguiere
 Year: 1977
 Crop: Wheat
 Predominate Weed: Italian Ryegrass

Herbicide	% Ryegrass Control	Yield Increase Lbs/Acre
Dicolofop-Methyl (Hoelon)	97	1240

Grower: Horgan & Abele
 Year: 1985
 Crop: Wheat
 Predominate Weed: Wild Oats,
 Littleseed Canarygrass
 Italian Ryegrass

Herbicide	% Control			Yield Increase Lbs/Acre
	Wild Oats	Canarygrass	Ryegrass	
Diclofop-methyl (Hoelon)	98	85	100	1170
L.S.D. @ 5%				592

Three herbicides are currently being evaluated for grass control in wheat. They are Bayer MKH6561, Fenoxaprop + mefenpyr (Puma) and Imazamox (Raptor). Preliminary testing shows Bayer MKH6561 has good crop tolerance and has activity on wild oats, littleseed canarygrass and Ripgut brome. Soil carryover of Bayer MKH6561 is currently being evaluated. Fenoxaprop + mefenpyr (Puma) has good crop tolerance and has activity on wild oats and littleseed canarygrass. Tolerance to Imazamox (Raptor) was found in wheat. This tolerance can be transferred to other wheat varieties. Imazamox (Raptor) controls most grasses, including volunteer wheat of non-tolerant varieties, and many broad-leaved weeds. All three of these herbicides will be important additions for the future of small grain weed control.

The most widespread perennial weed in small grains is field bindweed (morning glory). A trial was conducted in the dryfarmed area of Yolo County to measure the yield difference for barley between a dense field bindweed area and where the field bindweed had been controlled. The barley yield was significantly increased in the controlled plots.

Grower: Heidrick
 Year: 1966
 Crop: Barley
 Predominate Weed: Field Bindweed

% Control of Field Bindweed	Yield Increase Lbs/Acre
90	490
L.S.D. @ 5%	482