Using Reduced Herbicide Rates

Effective wild oat control can be obtained in spring wheat and barley, but key management factors must be kept in mind

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Herbicides are registered at application rates that are adequate for good weed control under a wide variety of conditions. When conditions are favorable for herbicide activity, however, lower application rates (below labeled rates) will often provide good weed control at a reduced price.

The following are factors to consider when applying reduced (below labeled rates).

1. One important point to keep in mind before trying reduced herbicide rates is that when using an herbicide below the manufacturer's labeled rate, growers assume the liability for performance. Thus, it is important to apply reduced rates accurately and timely. *The risk of weed control failure increases as rates are reduced.*
2. Proper application timing is very important when applying reduced herbicide rates. Postemergence wild oat herbicides require application to wild oats and crops at precise leaf stages. Leaf number on wild oats is determined by counting the leaves on the main stem and disregarding the tillers. The youngest leaf is counted as a full leaf only when another leaf becomes visible. Lower leaves, which may have died from various stresses, such as frost or wind damage, should also be counted in the total leaf number. An accurate leaf count is important for optimum wild oat control.
3. Using reduced-rate herbicides effectively demands that growers calibrate their equipment precisely. There is less margin for application errors with reduced rates.
4. There are a number of tradeoffs for the advantages any one wild oat herbicide might offer. When using reduced herbicide rates, herbicides should be applied to the smallest labeled wild oat leaf stage. However, if the herbicide is applied too early, odds are greater that a late flush of wild oats will require a second herbicide application, or that some wild oats might escape treatment.

Most postemergence wild oat herbicides are more effective when temperatures are cool (less than 75 F) temperature and adequate soil moisture is available. The exception is Avenge – Avenge is more active under hot, dry conditions. Wild oats also grow better, and with less stress, when soil and air temperatures are cool.

Use caution when using reduced herbicide rate for wild oat control when wild oats are under stress due to high temperatures (above 75 F), drought, or frost damage. If wild oat are under environmental stress, the plants are not growing properly, and will not take up and transport the herbicide as needed for adequate control.

Research has been conducted for several years at the Northwest Research and Outreach Center in Crookston, Minn., to evaluate reduced rates of postemergence wild oat herbicides. Herbicides were applied at the lowest labeled rate, ¾ and ½ of the labeled rate in spring wheat and barley. Results of this research have shown that with accurate rates and proper timing of application, wild oats can be controlled with the most effective herbicides at rates as low as one-half of the

normal use rate. In wild oat populations greater than about 40 plants per square foot, the full rate or nearly full rate, was more consistent than reduced rates, but in low to moderate infestation levels below 40 plants per square foot, the reduced herbicide rates performed very well. However, wild oat control with reduced herbicide rates can vary from year to year. This is mostly due to environmental conditions and the wild oat population.

Reduced rates of Puma and Discover have given good to excellent wild oat control. However, Discover has given the most consistent wild oat control at the reduced rate of ¾ and ½ of the labeled rate.

Adoption of reduced herbicide rates for wild oat control in spring wheat and barley could lead to a savings of $7 to $13 per acre in chemical costs with grain yields equal to using full herbicide rates. However, reduced rates should not be used if:

1. Wild oats are under stress due to adverse environmental conditions.
2. Wild oat infestations are greater than 40 plants/ft.

Are Below Labeled Rates Legal?

A herbicide user can legally choose a rate lower than listed on the herbicide rate unless the label specifically prohibits low rates. However, the company has no obligation to support herbicides when the application rate was less than labeled rates. Herbicide users should not expect a company representative to provide any assistance if weed control is less than expected from a rate of herbicide that is less than the labeled rate. Thus, the user assumes all risk and liability of unacceptable weed control when less than labeled rates are used.

Wild Oat Control in Spring Wheat and Barley with Reduced Herbicide Rates at Crookston, MN - 2000

Treatment	Rate (product/A)	% Wioa Control		Yield (bu/A)	
		Barley	Wheat	Barley	Wheat
Assert + NIS + COC	1 pt (1X)	85	78	32	25
Assert + NIS + COC	0.75 pt	81	73	42	30
Assert + NIS + COC	0.50 pt	58	58	31	26
Puma	0.67 pt (1X)	91	92	41	32
Puma	0.50 pt	83	80	39	33
Puma	0.33 pt	65	65	26	26
Achieve + SC + AMS	7.2 oz (1X)	95	95	39	34
Achieve + SC + AMS	5.4 oz	95	94	40	36
Achieve + SC + AMS	3.6 oz	96	95	40	36
Discover + DSV	3.2 oz (1X)	96	96	40	36
Discover + DSV	2.4 oz	97	97	41	35
Discover + DSV	1.6 oz	95	95	34	39
Weedy check	---	---	---	10	3
LSD (0.05)		8	6	11	8

Wild Oat Control in Spring Wheat with Reduced Herbicide Rates at Crookston, MN - 2001

Treatment*	Rate (product/A)	% Wheat Injury		% Wioa Control		Yield (bu/A)
		6/21	7/9	7/9	7/22	
Assert + NIS + COC	1 pt (1X)	5	0	98	94	58
Assert + NIS + COC	0.75 pt	5	0	92	90	64
Assert + NIS + COC	0.50 pt	2	0	92	89	62
Puma	0.67 pt (1X)	5	0	100	100	61
Puma	0.50 pt	2	0	96	96	54
Puma	0.33 pt	0	0	93	93	62
Discover + DSV	3.2 oz (1X)	0	3	100	100	63
Discover + DSV	2.4 oz	7	0	98	97	63
Discover + DSV	1.6 oz	0	0	95	95	63
Weedy check	---	0	0	--	--	47
LSD (0.05)		ns	2	4	6	ns

* All treatments were tank mixed with Buctril at 1 pt/A.

Wild Oat Control in Barley with Reduced Herbicide Rates at Crookston, MN - 2001

Treatment*	Rate (product/A)	% Barley Injury 6/21	% Barley Injury 7/9	% Wioa Control 7/9	% Wioa Control 7/22
Assert + NIS + COC	1 pt (1X)	3	0	98	95
Assert + NIS + COC	0.75 pt	3	0	92	90
Assert + NIS + COC	0.50 pt	3	0	92	89
Puma	0.67 pt (1X)	3	0	100	100
Puma	0.50 pt	2	0	96	96
Puma	0.33 pt	7	0	93	93
Discover + DSV	3.2 oz (1X)	30	15	100	100
Discover + DSV	2.4 oz	13	0	98	98
Discover + DSV	1.6 oz	25	0	95	95
Weedy check	---	0	0	--	--
LSD (0.05)		22	6	4	5

* All treatments were tank mixed with Buctril at 1 pt/A.