

# Evaluation of Herbicides for the Control of Littleseed Canarygrass in Wheat

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## **Abstract**

*The two herbicides currently registered for the control of canarygrass in Arizona work by inhibiting lipid biosynthesis. The levels of control with these herbicides have been variable, ranging from 60 to 90 percent. Crop safety has been good. Two newer herbicides utilizing a different mode of action have provided more consistent and higher levels of weed control but with increased crop injury. These are numbered compounds (MKH6561 and F130060) and they are ALS inhibitors.*

## **Introduction**

Hoelon (diclofop) was the only herbicide available for the control of littleseed canarygrass (*phalaris minor*) in wheat grown in the low deserts of Arizona from the mid 1980's to 1999. Achieve (tralkoxydim) was registered in Arizona in 1999 and widely used for the control of this weed. Both of these herbicides work by inhibiting lipid biosynthesis, which is required for cell growth. Hoelon has exhibited good crop safety but has been inconsistent (60-90 percent) in controlling littleseed canarygrass. Achieve has produced generally higher levels of control of this weed (70-95 percent), also with good crop safety. Puma (fenoxaprop) was registered in California in 1999 but not in Arizona. Puma also works by inhibiting lipid biosynthesis and has produced very good (75 to 95 percent) levels of canarygrass control in our tests. It was registered in California too late in the season in 1999 to be widely used.

The three herbicides registered for canarygrass control in the low desert of Arizona and California, Hoelon, Achieve and Puma use the same mode of action and produce marginal to very good levels of weed control with good crop safety. Hoelon is frequently unsatisfactory for growers, while Achieve, in one year of use, has been more consistent with good grower satisfaction. Puma has yet to be tested commercially.

The search has continued for a more consistent and highly effective herbicide for canarygrass control. Two newer herbicides, both using a different mode of action than the three that are registered, were tested this year. MKH6561 is being developed by Bayer and works by inhibiting protein synthesis. Specifically it is a sulfonylurea herbicide that inhibits acetolactate synthase (ALS). It has been tested in the low desert for the last 4 or 5 years. F130060 is being developed by Aventis and is also an ALS inhibitor. This is the first year it has been in our tests.

## **Method**

This test was conducted at the University of Arizona Yuma Valley Agriculture Center between February 18, 2000 and March 6, 2000. The soil type is a silty clay loam and the crop was flood irrigated with Colorado river water. Plot size was 14 x 25 feet set in a randomized complete block with four replications. The variety of wheat was Kofa Durum planted at 120 lbs./A.

Treatments consisted of a standard rate of Puma, Hoelon, Achieve and MKH6561 and two rates of F130060 sprayed at two timings and an untreated check for a total of thirteen treatments. The first timing was applied on February 18 when the canarygrass was at the 1 to 3 leaf stage and the wheat was beginning to tiller. The second application was made on March 6 when the canarygrass was from 1 leaf to tillering and the wheat was elongating and 12 to 14 inches in height. A uniform and heavy infestation of littleseed canarygrass (20-50/ft.<sup>2</sup>) was present. Visual evaluation of percent weed control was made on April 20, 44 and 65 days after treatment. Visual evaluation of stunting and leaf discoloration were made at this same time.

## Results

Results of visual evaluations of weed control made 44 and 65 days after treatment appear in Table 1. These results indicate that Puma, Hoelon and Achieve produced variable levels of control of 60 to 95 percent from both the early and late applications. Leaf discoloration occurred from the Puma and Hoelon applications but was temporary. In general there was good crop safety from these three herbicides. MKH6561 and F130060 produced more consistent and higher levels (80 to 95 percent) of control. Higher levels of control were achieved from the late applications. Crop safety was marginal with both of these herbicides and ranged from 20 to 50 percent stunting. Injury was higher from the late applications. Yields were not taken in this test and the effect of this stunting on yields was difficult to access visually.

**Table 1.** Weed control and phytotoxicity from 13 herbicide treatments.

<u>HERBICIDE</u>	<u>RATE (Lbs. ai/A)</u>	<u>TIME APPLIED</u>	<u>WEED CONTROL (%)</u>	<u>PHYTOTOXICITY (%)</u>
Puma	0.11	1-3 leaf	70 f g	7.5 d e
Hoelon	1.0	1-3 leaf	69 g	2.5 e f
Achieve	0.25	1-3 leaf	80 d e f	0 f f
MKH6561	0.95	1-3 leaf	83 c d e	26.3 b
F130060	0.14	1-3 leaf	89 a b c d	25.0 b
F130060	0.17	1-3 leaf	93 a b c	18.8 c
Puma	0.11	1 leaf to tillering	84 b d c e	12.5 d
Hoelon	1.0	1 leaf to tillering	58 h	2.5 e f
Achieve	0.25	1 leaf to tillering	75 e f g	0 f
MKH6561	0.05	1 leaf to tillering	94 a b	41.3 a
F130060	0.14	1 leaf to tillering	94 a b	27.5 b
F130060	0.17844	1 leaf to tillering	95 a	26.3 b
Untreated	-	-	<u>0 i</u>	<u>0 f</u>
			LSD(0.05) = 10.162	LSD(0.05) = 5.839