

Aldura and Mexicali, yields were reduced 72 and 31% respectively below the untreated checks.

TABLE 2
AVERAGE YIELD IN lb/A OF ALL HARVESTED TREATMENTS ON ALL VARIETIES

Treatment	Yield	% of Check
Avenge	5896	82
Hoelon	7788	109
Carbyne	7788	109
Check	7172	100

Avenge is used to control wild oat in wheat and barley. No wild oat was present. Cajeme 71, NK Probred, Yecora Rojo and WBP 1000 D were not effected by Avenge. In the absense of wild oat competition and under the conditions of the test the other red and durum wheat varieties were effected. Yield of wheat was decreased an average of 18%.

Carbyne controlled canarygrass and stunted the growth of all varieties tested. Zaragosa yields were reduced by Carbyne. Other varieties recovered and yield averaged 8% higher than the untreated check.

Hoelon had little or no effect on any variety, controlled canarygrass and yields average 8% more than the untreated areas.

Grass weed control in small grain
1979 Arizona summary

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Wild oat and canarygrass are two annual grass weeds that compete with small grain crops and can cause yield reductions in Arizona. Where these weeds become established the profitable production of small grain may be prohibited.

Two herbicides, difenzoquat (Avenge) and barban (Carbyne) are available for control of these weeds. Avenge gives good control of wild oat, but has no effect on canarygrass. Carbyne gives fair control of wild oat and excellent control of canarygrass. The selective control of a one grass within another grass has never been simple. Following applications of Carbyne or Avenge to wheat or barley some affect on the crop is usually seen.

Carbyne and Avenge both act as growth regulators. When taken into the plant, growth is slowed or stopped completely. The crop, wheat or barley, may be affected shortly after treatment but should recover quickly and outgrow and compete favorably with the weeds. Crop competition is essential for selective control.

Where weed problems are severe, 20 or more weeds per sq. ft. emerging with the crop, applications of Avenge or Carbyne can provide normal yields of grain. Yield increases of 100% or more over untreated areas are possible. Most evaluations of these herbicides has been done where weeds were a problem. They were not tested often where weeds were not present.

In 1978, some varieties of durum wheat appeared to be very sensitive to Avenge. The crop did not make normal recovery after treatment. The wheat remained stunted throughout the growing season and yield of grain was reduced. This observation was made in commercial treated acres as well as in experimental plots.

Further testing in 1979 in Yuma County confirmed that this was not a seasonal phenomenon and that some red and durum wheats were sensitive to Avenge. However, the severity of injury varied from location to location. The same variety could suffer a 30% yield loss in one location and no yield loss at another. The reason for this variation in response is not fully understood.

Carbyne has also affected wheat growth. In most instances all varieties of wheat will be stunted following Carbyne applications. The wheat recovers more rapidly than the weeds and at harvest no adverse effect on yields is noted. However, some varieties appear to be more sensitive to Carbyne and do not recover as quickly.

The summary of data in Table I is only an indication of which varieties may give an adverse response to these herbicides. Obviously, it would be impossible to test all varieties under all possible conditions. If a variety has shown a yield decrease when treated, it would be wise not to use the variety where a wild oat or canarygrass problem is expected. Even if no yield decrease has been measured, it does not indicate that this variety will never be injured by the herbicide under any conditions.

Tank mixtures

Where 2,4-D or bromoxynil (Brominal, Buctril) is applied to small grain for broadleaf weed control the use of a tank mixture with Avenge or Carbyne may increase the probability of injury. This is particularly true with 2,4-D. If 2,4-D is to be used, apply it at least one week following application of Avenge or Carbyne. Do not use tank mixes.

A tank mix with bromoxynil is less likely to increase the risk of injury to the wheat. But this risk is not eliminated. Tank mixes with Avenge or Carbyne may affect the degree of grass weed control achieved and the effect of the herbicide on the crop.

Table I
Response of red wheat and durum varieties to grass herbicides in Arizona

Varieties	Type of Wheat	Response to Avenge			Response to Carbyne		
		Number of times tested*	Number of times		Number of times tested	Number of times	
			Stunting recorded**	Yield loss recorded***		Stunting recorded	Yield loss recorded
Jori	Durum	3	3	2	2	2	0
Cocorit	Durum	1	1	0	1	1	0
Produra	Durum	8	8	2	6	4	1
WBP 1000D	Durum	4	1	0	3	3	0
Mexicali	Durum	4	3	2	2	2	0
Crane	Durum	3	3	3	3	3	0
NK Aldura	Durum	1	1	1	1	1	0
NK Probred	Red	4	4	0	4	4	0
Zaregosa	Red	4	4	1	4	4	3
Cajeme 71	Red	7	5	0	5	4	0
Inia 66	Red	1	1	0	1	1	0
Tanori	Red	2	2	1	2	1	0
Yecora	Red	4	4	1	4	4	0
Rojo	Red						
Aim	Red	1	1	1	1	1	0
WS13	White	1	1	1	1	1	0

* Means number of observed trials where herbicides were observed on this variety.

** Stunting was observed with Avenge and Carbyne in almost all trials. In most instances, the stunting was temporary.

*** Yield was not measured in all trials. Most of the yield losses occurred without the presence of weeds. Where ever a yield loss was recorded, it should be assumed that this variety can be sensitive.