

## EFFICACY OF HERBICIDES FOR THE CONTROL OF GRASSY AND BROAD LEAF WEEDS IN WHEAT CROP AT EL-MARJ LIBYA

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### Abstract

Field experiments were conducted at the Australian Demonstration Farm at El-Marj Libya during the winter season 1988-89 and 1989-90 to determine the efficacy of herbicides on grassy and broad leaf weeds and grain yield of Wheat variety Mexicale. Herbicides viz., Illoxan, Brominal, Dicuran and Dosanex alone and in different combinations were tested. Illoxan 36 F.C. 2.2 lit + 2 lit Brominal H/ha and Illoxan 36 F.C 2.5 lit + 1 lit Brominal H/ha increased the yield significantly over other treatments in 1988-89 while Dicuran 500 F.W 5 lit/ha and Dosanex F.L 6 lit/ha in 1989-90. The herbicide treatments showed varied response on weed control according to prevailing weed infestation in both the years. Dicuran 500 P.W and Dosanex F.L were more phytotoxic than the mixture of Illoxan 36 F.C and Brominal-H.

### Introduction

Weeds produce greater loss to crops than any other pests or diseases by competing with the crop for space, air, light, water and nutrients causing a considerable reduction in the yield of wheat (Mustafa *et al.*, 1984). According to an estimate as much as 25% of the potential wheat yield is reduced by weeds (Aslam, 1984).

Weed control is known to increase crop production. It has been also observed that cultural methods of weed control can not always be practiced at proper time due to unfavourable weather conditions and unavailability of labour. In such situations it is necessary to resort to such methods that could reduce not only cost of production but save time and labour; one of such methods is chemical weed control. Makhdoom & Memon (1982) found Dicuran M.A 60 as effective in controlling weeds and increasing grain yield by 58% in wheat crop while Brown & Beaty (1970) found highly significant differences in yield among various herbicide treatments. Post emergence application of Dicuran-M.A @ 2.25 kg per hectare showed good control of weeds and significantly higher grain yield (Ahmed *et al.*, 1984). Makhdoom & Shah (1976) found that the grain yield of wheat was enhanced by the use of weedicides to the tune of 50%. Bajwa (1984) found Stomp, Dicuran M.A, Buctril M, Arelon and Dosanex F.L to be most effective herbicides for weed control whereas Illoxan. 36 F.C 2.5 l/ha gave a very good control of grassy weeds *Lolium rigidum*, *Phalaris* and wild oat and was found more effective for grassy and broad leaf weed when applied in mixture form with Brominal-H or plus (Prance, 1980). The present report gives the results of the experiment conducted at the Australian Demonstration Farm at El- Marj, Libya during the winter season of 1988-89 and 1989-90 on the efficacy of Illoxan, Brominal, Dicuran and Doserex in the control of grassy and broad leaf weeds in wheat.

Table 1. Weed control and grain yield of wheat as affected by application different herbicides.

Herbicide Treatment	1988-89			1989-90			Grain yield (kg/ha) 1988 - 1989	Grain yield 1989 - 1990		
	Wild Avena spp and coriander	Over all weed city control	Phyto-toxi city control	<i>Lolium rigidum</i>	<i>Scorpiurus</i>	Cruci-ferous spp.			Over all weed city control	
a) Illoxan 36 FC 1.5 lit + Brominal H 1 lit/ha.	4	3	4	4	6	2	4	1	1690	1381
illoxan 36 FC 1.5 lit + Brominal H 2 lit/ha	3	3	4	4	6	2	4	1	1740	1414
b) Illoxan 36 FC 2.5 lit + Brominal H 1 lit/ha.	4	2	3	3	6	2	4	1	1930	1359
Illoxan 36 FC 2.5 lit + Brominal H 2 lit/ha.	3	2	3	3	6	2	4	1	1950	1392
c) Dicuran 500 F.W 5 lit/ha.	6	4	5	4	3	2	3	2	1405	1666
d) Dosanex F.L 6 lit/ha	5	4	6	4	3	2	3	2	1540	1567
Control	-	-	-	-	-	-	-	-	1170	1228

## Herbicide Analysis:

- a) Illoxan 36 F.C 378 g/l diclofop-methyl (also sold as Ilocnlon and Iloe-Grass)  
 b) Brominal H 360 g/l M.C.P.B 120 g/l bromymil.  
 c) Dicuran 500 F.W  
 d) Dosanex Fl. 500 g/l metoxurn.

L.S.D (0.05)

150

120

## Materials and Methods

The field selected for this experiment was under wheat/medic rotation. The soil was clay-loam in texture, high in organic matter and available phosphorus contents with pH 7.5. Wheat variety Mexicale was sown @ 85 kg/ha with 100 kg/ha superphosphate (P2 O5) applied on December 10 in 1988-89 and on December 12 in 1989-90. Four herbicide in different combination were applied on wheat at 3-4 leaf stage for grassy and broad leaf weed control with 100 l of water/ha on January 8 and 11 during both the years. The experiment was laid out in R.C.B.D. having 4 replication with a plot size of 6x50 m. Weed control and phytotoxicity assessment were made according to European Weed Research Committee (E.W.R.C.) Standards. A 1.9 m width of each plot was machine harvested and grain yield data analysed by the method given by Peterson (1939).

## Results and Discussion

**Weed infestation and assessment:** In Rabi 1988-89, weed infestation on the basis of ground coverage was 80% with 60% wild coriander, 30% *Avena* spp., (wild oat) and 10% other species. The best overall treatments in the assessment made on 1-2-1989 were Illoxan F.C 1 + 2 L. Brominal H and Illoxan 36 F.C 2.5 I + 1 l Brominal H. The main weed present was wild coriander which appeared a difficult weed to control with Dicuran 500 F.W and Dosanex Fl. Illoxan 36 F.C gave excellent control of *Avena* spp. There was phytotoxicity with Dicuran 500 FW and Dosanex Fl at assessment time, with no phytotoxicity in any of the other treatments (Table 1).

During rabi 1989-90, the weed infestation was different than the year in 1988 due to different location. In this site of study, the total ground coverage for weed population was 60% with 35% *Lolium rigidum* (rye grass), 35% *Scorpiurus*, 25% cruciferous and 5% wild oat. The best over all treatments in the assessment made on 7-2-1990 were Dicuran 500 FW l/ha and Dosanex FL 6 l/ha. These were the only treatments to give acceptable overall weed control. The main weeds present were *Avena* spp., (wild oat) and scorpiurous. The scorpiurous weed control was not satisfactory with the mixture of Illoxan 36 F.C and Brominal H at all combination while their control on *Lolium rigidum* was excellent. Dicuran 500 FW 5 lit/ha and Dosanex Fl 6 lit/ha gave better control of both main weed (*L. rigidum* and scorpiurous), while cruciferous spp., was controlled at all rates. Phytotoxicity appeared with Dicuran 500 FW and Dosanex FL which was recovered by the crop at later stage (Table 1).

**Grain yield:** All treatments gave significantly higher yield than the control while mixture of Illoxan 2.5 lit + 2 lit Brominal H significantly increased the yield over other treatments apart from Illoxan 2.5 lit + 1 lit Brominal H. Dicuran and Dosanex did not appear to have any advantage over the mixture of Illoxan and Brominal H because the main weed present in this trial was wild coriander, which could not be controlled satisfactorily by Dicuran and Dosanex and the yield was reduced because of weed infestation (Table 1).

Dicuran 500 F.W produced yields significantly higher than un-sprayed plots, as well as being significantly higher than the other treatments except Dosanex Fl 6 lit/ha. The yield may have been higher, if scorpiurous weed had not been present, which

made the overall weed control poor with the mixture of Illoxan and Brominal H (Table 1). The results are in conformity with those of Bhan *et al.*, (1978) and Majeed *et al.*, (1983).

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are available that control weeds in wheat rather. food crop of Pakistan. During 2006-07, it was grown. effectively.Â on controlling grassy and broad leaf weeds and their. Abbas G, Anjum M, Abbas Z, Aslam M, Akram. effects on wheat cvFakhr-e-Sarhad.. Pakistan Journal. M. 2009. Impact of different herbicides on broad leaf. of Weed Science Research Res. 9, 1-11. weeds and yield of wheat. Pakistan Journal of Weed. Science Research 15(1), 1-10.Â Efficacy of different herbicides for controlling broad leaf weeks in wheat (*Triticum aestivum* L.) Pak. J. Biol. Sci. The use of herbicides to control weeds is often important in determining the success or failure of a crop. However, many other practices can be implemented before and after a herbicide application to help reduce weed competition.Â Herbicide-resistant weeds and new invaders should be removed (manually if necessary), regardless of their number, to prevent them from spreading and becoming a serious control problem. Mapping your fieldâ€™s weed problems will allow you to monitor the spread of weed patches over time and help you assess the effectiveness of your control program.Â Most wild oat herbicides for wheat cost between \$10 to \$25 per acre. In this case, lost income exceeds the cost of the herbicide and application, so spraying would be justified. Rotating herbicides controls the resistant weeds in the years when effective herbicide groups are used with the goal of reducing the resistant weed population. Not only must mixtures contain herbicides from different groups, but also each herbicide in the mixture must be acting on the same weed species to effectively provide multiple modes of action.Â The following are examples of herbicide resistant weeds that are known to exist in Ontario. In each case, growers have learned how to adapt their weed management programs to include the resistant weed biotypes. Table 2. Herbicide Resistant Weeds in Ontario.Â Use crop rotation, changing herbicides is not enough. Different crops allow for a broader spectrum of herbicide and tillage options to control weeds.