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Eds. W.C. Botes, D. Boros, N. Darvey, P. Gustafson, R. Jessop, G.F. Marais, G. Oettler & D. Salmon
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Selectivity and efficacy of herbicides for use on winter cereals

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An experiment was carried-out with the objective of evaluating the selectivity and efficacy of herbicides applied for weeds control on winter cereals. The experiment was conducted under field conditions at Embrapa, in Passo Fundo, RS, during the 2005 growing season. Black oat, white oat, turnipseed and vetch were sown in order to act as volunteer crops interfering with wheat, triticale, barley and rye crops. The results indicated that the treatments were selective tc wheat, triticale and rye while barley was the species more sensitive to them especially to iodosulfuron-methyl. Black oat, white oat, and ryegrass showed different response to the treatments according to the tested rate while turnipseed and vetch were efficiently controlled by iodosulfuron-methyl, 2,4-D and 2,4-D + picloran.

Introduction

Wheat, triticale, barley and rye are important crops for the winter growing season in Southern Brazil. The weeds, mainly ryegrass, black oat and white oat, may cause great economic damage on grain productivity of winter cereals. An experiment was carried-out with the objective of evaluating the selectivity and efficacy of herbicides applied for weeds control on winter cereals. Yield losses will vary with the weed species and weed density, as well as the timing of weed emergence and control. Understanding change in the soil seed bank, weed spectrum, and weed control practices is the key to effective weed control in a no-till system.

Materials and Methods

The experiment was conducted under field conditions at Embrapa, in Passo Fundo, RS, during the 2005 growing season. The soil of experimental site is a loam Oxisol. The testing crops were wheat, barley, rye and triticale. Black oat, white oat, turnipseed and vetch were sown in order to act as volunteer crops interfering with those cereal crops. The tested herbicides were bentazon, metsulfuron-methyl, dichlofop-methyl, clodinafop-propargyl, 2,4-D, 2,4-D + picloran, 2,4-D + glyphosate (in sequential application) and iodosulfuron-methyl. The pre-emergence treatments were applied on 23 June 2005, one day before sowing the crops. The post-emergence treatments were applied on 27 July 2005 at the 3-5 leaf stage of the weed.

Results and Discussion

The results indicated that the treatments were selective to wheat, triticale and rye while barley was the species more sensitive to them especially to iodosulfuron-methyl. Black oat, white oat, and ryegrass showed different response to the treatments according to the tested rate while turnipseed and vetch were efficiently controlled by iodosulfuron-methyl, 2,4-D and 2,4-D + picloran (table 1).

Table 1: Evaluation of phytotoxicity (Duncan´s 5%) in black oat, white oat, ryegrass, turnipseed and vetch, from post-emergence applied herbicides, at 40 DAT (days after treatment). National Wheat Research Center, Passo Fundo, RS – Brazil, 2005.

Nº	Active Ingredient	Rate per hectare (product) (L or g ha^{-1})	Black oat	White oat	Rye-grass	Turnip-seed	Vetch
01	Bentazon	1.5	0 c	0 c	0 c	50 c	35 cd
02	Bentazon	2.5	0 c	0 c	0 c	65 c	50 b
03	Metsulfuron-methyl	4.0	0 c	0 c	0 c	80 b	25 de
04	Metsulfuron-methyl	6.0	0 c	0 c	0 c	90 ab	45 bc
05	Dichlofop-methyl	1.5	85 b	80 b	95 a	0 d	0 f
06	Dichlofop-methyl	3.0	90 ab	85 ab	98 a	0 d	0 f
07	Clodinafop-propargyl	100	95 ab	90 ab	80 b	0 d	0 f
08	Clodinafop-propargyl	200	98 a	95 a	95 a	0 d	0 f
09	2.4-D amine	1.0	0 c	0 c	0 c	100 a	95 a
10	2.4-D amine	2.0	0 c	0 c	0 c	100 a	100 a
11	2.4-D + picloran	1.5	0 c	0 c	0 c	100 a	95 a
12	2.4-D + picloran	3.0	0 c	0 c	0 c	100 a	100 a
13	2.4-D amine + glyphosate	1.5+2.0	0 c	0 c	0 c	80 b	15 e
14	2.4-D amine + glyphosate	2.0+2.0	0 c	0 c	0 c	85 b	30 cd
15	Iodosulfuron-methyl	70	85 b	80 b	93 a	85 b	95 a
16	Iodosulfuron-methyl	100	95 ab	85 ab	100 a	98 a	100 a
17	Check	-	0 c	0 c	0 c	0 d	0 f