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Weed Resistance description from control complaints

Herbicide Resistance in Europe: Challenges, Opportunities and Threats
European Weed Research Society

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OBJECTIVE

In 2013 12 biotypes of *Lolium rigidum* surviving herbicide field treatments were received from advisors. The main objective was to determine if populations were resistant to herbicides. And if they are, to determine the herbicides to whom they are resistant.

MATERIAL & METHODS:

Dose response experiment 1:

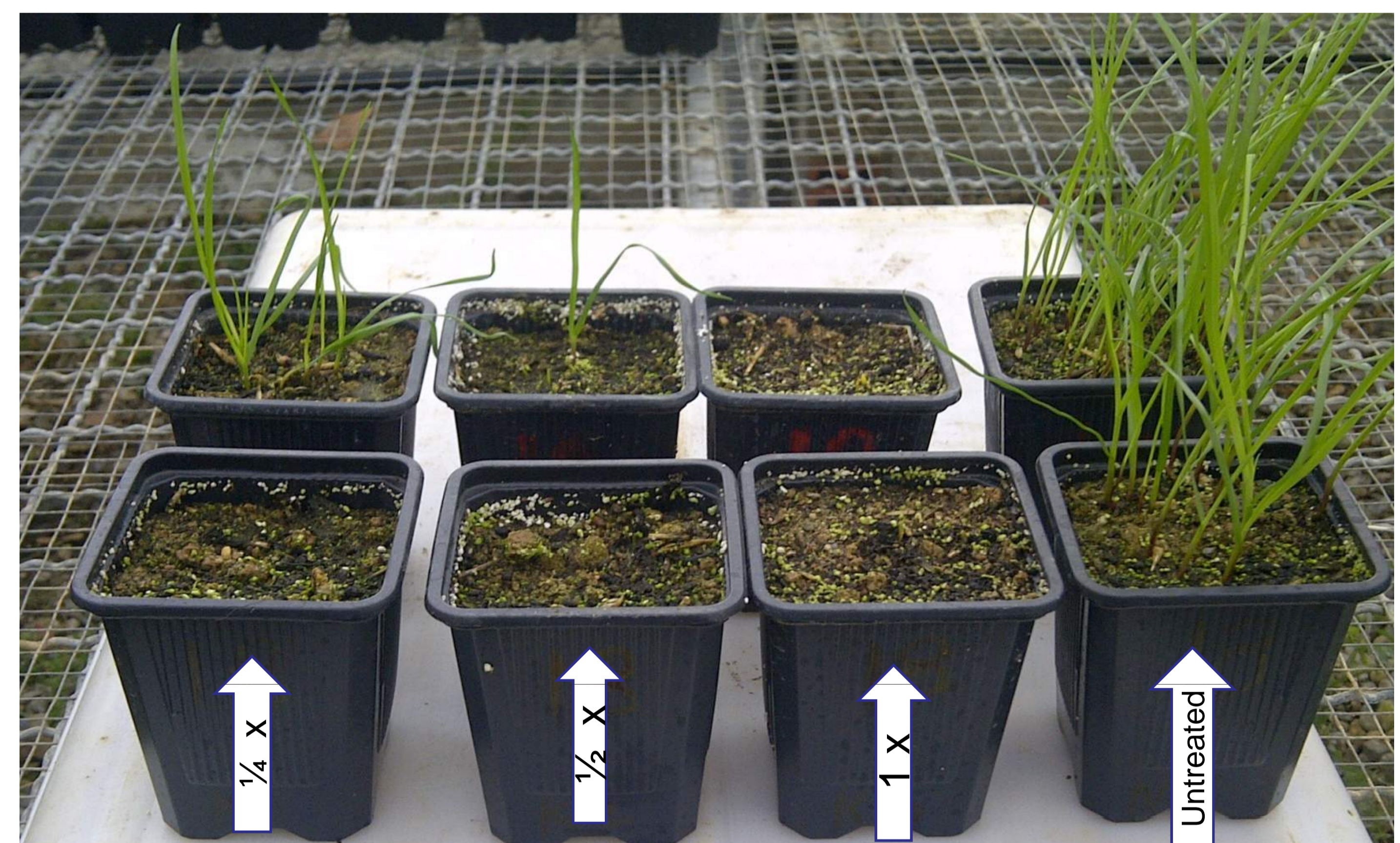
HRAC Group	Herbicide	Dose 1X (gai/ha)	Dosage range tested
B	0,6% iodosulfuron methyl + 3% mesosulfuron methyl	3 + 15	0- 0,25X-0,5X-1X-2X
N	80% Prosulfocarb	4000	0- 0,125X- 0,25X- 0,5X-1X
C2	50% CTU	1500	0- 0,25X- 0,5X-1X-2X
A	36% Diclofop- methyl	540	0- 0,25X- 0,5X -1X-2X
A	24% Clethodim	144	0- 0,25X- 0,5X-1X-2X
G	36% Glyphosate	720	0- 0,125X- 0,25X- 0,5X-1X

Dose response experiment 2:

HRAC Group	Herbicide	Dose 1X (gai/ha)	Dosage range tested
K3 + F1	40% Flufenacet + 20% DFF	240+120	0- 0,25X- 0,5X-1X-2X
K3	40% Propyzamide	700	0- 0,25X- 0,5X -1X-2X
K3	50% metazachlor	1000	0- 0,25X- 0,5X-1X-2X

RESULTS EXPERIMENT 1:

Biotype	Diclofop	Cletodim	Iodosulfuron + Mesosulfuron	CTU	Glyphosate
6-13	R	R	R	*	*
7-13	R	R	*	S	*
8-13	R	**	R	R	*
9-13	R	*	R	S	*
10-13	R	*	R	**	*
11-13	R	R	R	R	*
17-13	R	S	S	*	S
18-13	R	S	S	**	S
19-13	R	S	R	S	
20-13	R	R	R	*	
21-13	R	*	R	S	
22-13	R	S	R	S	



Dose-response to propyzamide observed in population 10/13 in the top. At bottom sensitive standard population

RESULTS EXPERIMENT 2:

Population	Ed50 Propyzamide (gai/ha)	Ed90 Propyzamide (gai/ha)	Resistance factor Ed50	Resistance factor Ed90
10-13	114,7 (12,1)	399,6	4,66	6,42
11-13	33,4 (6,0)	106,6	1,36	1,71
Standard	24,6 (4,2)	62,2		

Population	Ed 50 Metazachlor (gai/ha)	Ed 90 Metazachlor (gai/ha)	Resistance factor Ed50	Resistance factor Ed90
10-13	139,7 (14,4)	254,6	1,84	2,06
11-13	73,3 (18,3)	118,9	0,98	0,96
Standard	75,1 (15,3)	123,8		

No differences in dose-response curves between biotypes using Flufenacet + DFF



Dose-response to prosulfocarb in the less susceptible population

CONCLUSIONS:

1. Complaints are very useful to detect early stages of herbicide resistance
2. There are *Lolium* populations less susceptible to prosulfocarb than the standard
3. Biotypes with low susceptibility to prosulfocarb, are also less susceptible to propyzamide and metazachlor than the standard
4. In this test, biotypes low susceptibles to glyphosate were found

Population	Ed50 Prosulfocarb (gai/ha)	Ed90 Prosulfocarb (gai/ha)	Resistance factor Ed50	Resistance factor Ed90
Average "non problematic biotypes"	400 (72)	912		
08/13	1688 (168)	8288	4.21	9.07
10/13	2088 (184)	8744	5.21	9.57