

Black grass (*Alopecurus myosuroides*) resistant to HRAC groups A and B in northern Spain (Navarre)

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Introduction

Black grass (*Alopecurus myosuroides*) is one of most important weed in the northern areas of cereal-wheat and barley- in Navarra. During the last years, its control has been based on herbicides from HRAC groups A and B. At present, the efficacy of these herbicides are becoming insufficient and even null. The resistant population selection seems to be the result of an excessive use of same mode of action.

Material and Methods

The trial was carried out in Lumbier, in a field of wheat in randomized blocks and 4 replications. The herbicides were sprayed with a handheld sprayer using 4 flat fan spray tips (green Albus) spaced 50 cm to deliver 300 l/ha at 3 kg/cm². The initial density of black grass was 162 plants/m². The treatments were applied in two times.

Treatments (rate l-kg/ha)	Moment
Untreated Polarpec +Arelon (2+2) Polarpec +Mohican (3+0,25) Polarpec +Mohican +Arelon (3+0,25 +3) Experimental 1+Arelon (_+3) Herbaflex (2.5) Herold (0,6 l/ha) Herold+Arelon (0,6+2) Herold+Polarpec (0,4+2)	Post 1: 21st November BBCH BG 11
Experimental 2 Atlantis (0,5)* Broadway (0,275)* Traxos Pro (1)	Post 2: 13rd January 2015 BBCH BG 20-21

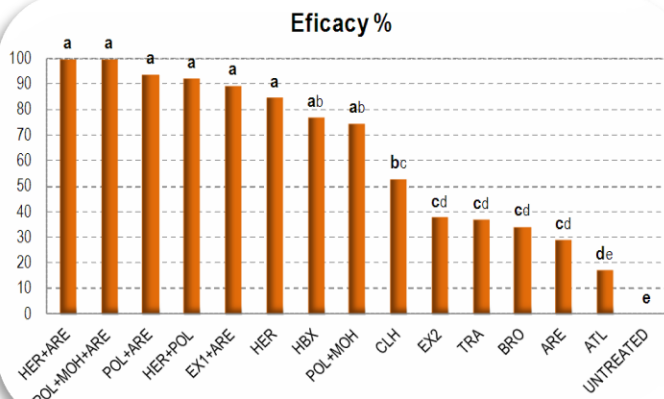


Herbicide	CODE	Composition	HRAC Group
Arelon	ARE	isoproturon 50%	C2
Atlantis	ATL	mesosulfuron 3% + iodosulfuron-m-0,6%	B+B
Broadway	BRO	prioxulam 6,8% + florasulam 2,3%	B+B
Chlortosint	CHL	chlortoluron 50%	C2
Herbaflex	HBX	isoproturon 40% + beflutamid 8%	C+F1
Herold	HER	flufenacet 40% + diflufenican 20%	K3+F1
Mohican	MOH	diflufenican 50%	F1
Polarpec	POL	prosulfocarb 80%	N
Traxos Pro	TRA	pinoxaden 3% + clodinafop-p-3%	A+A

* With its respective coadjuvant.

Results

The weed control was carried out before the harvest by counting number of black grass ears per m². All the herbicides of HRAC Groups A and B failed having efficacies under 40%. The HRAC Group C herbicides (Arelon and Chlortosint) have also failed. But when they are mixed with another HRAC Groups –K1 and N- the total efficacy rise to 90-100%. The best results were obtained mixing Herold with Arelon and Polarpec with Mohican and Arelon, being both different HRAC groups from A and B.



Discussion

- A black grass resistant population has been selected because of the repeated use of HRAC A and B modes of action.
- The best efficacy results were obtained with different mode of action.
- Despite these results, the chemical control is not the best tool to control this population. An IPM solution –crop rotation mainly-must implemented to reduce the high pressure of black grass.