



HERBICIDE RESISTANCE TEST

Peter Kirby (Indigo Specialty Products)

Winter grass - Sample

292-20

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SUMMARY: A Winter grass sample exhibited strong resistance to Tribute, Metribuzin, and Destiny, intermediate resistance to Simazine, weak resistance to Propyzamide and Endothal, and no resistance to Glyphosate 540@ 1L/ha.

We will be testing with propyzamide again to check if the resistance level changes.

Table 1: Results as determined by resistance testing 3 weeks after treatment. Data recorded as % survival (% of plants surviving) as compared to untreated plants. 100% refers to all plants surviving and 0% refers to death. Data is the mean of 2 replicate pots per herbicide rate. Included in the test was a susceptible (S) biotype and resistant biotypes. Data for the S and R biotypes is not shown.

Herbicide	Herbicide Group	Paddock Sample	
		Survival	Rating
Tribute 1.5L/ha	Group B - Sulfonylureas	100	RRR
Metribuzin 750WG @ 150g/ha	Group C	90	RRR
Simazine 2kg/ha	Group C	80	RR
Propyzamide 1L/ha	Group D - Benzamide	30	R
Glyphosate 540@ 1L/ha	Group M	0	S
Poachek 15mL per 100m ²	Group Z	10	R
Destiny 150ml/ha + 1% Hasten	Group B - Sulfonylureas	100	RRR

Resistance-rating:	RRR- indicates plants tested have strong resistance	RR - indicates medium-level resistance	R-indicates low-level but detectable resistance	S- indicates no detection of resistance
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RESULTS

The standard susceptible weed biotype was killed with all the herbicides and my standard resistant biotypes responded to the herbicides as expected confirming accurate herbicide performance (Table 1). There are two types of information in Table 1. The numbers represent the percentage survival of resistant plants. In addition a rating system is used to indicate the level of resistance that the surviving plants exhibited. This comprises of 3 resistance ratings and a no resistance rating that are explained in Table 1.

Strong resistance: Plants that exhibited strong resistance are represented by a RRR rating (Table 1). Survivors classed as having strong resistance showed virtually no herbicide symptoms.

Intermediate resistance: Plants that exhibited intermediate resistance are represented by a RR rating (Table 1). Survivors classed as having intermediate resistance showed 40-60% stunting compared to untreated plants and the development of new shoots.

Weak resistance: Plants that exhibited weak resistance are represented by a R rating (Table 1). Survivors classed as having weak resistance showed 70-90% stunting compared to untreated plants and recovery via the

development of new shoots.

No resistance: A 'S' rating in Table 1 represents plants that did not exhibit any detectable resistance. In rare cases, where the incidence of resistance (frequency of resistance) is low, resistance may not be detected.

PLANT MATERIAL

A Winter grass sample was organised by Peter Kirby for herbicide resistance testing. In addition, a susceptible Winter grass and resistant Winter grass sample(s) were also included as part of the test to accurately gauge the levels of resistance.

METHODS

If you would like a copy of the methods used, please contact Peter Boutsalis (info@plantscienceconsulting.com.au)

RESISTANCE MANAGEMENT

To avoid selecting for herbicide resistance, or if herbicide resistance is present:

1. Avoid spraying dense weed populations with grass selective herbicides only. Use non-selective and pre-emergence herbicides where relevant
2. Rotate mode of action herbicides.
3. Avoid reducing herbicide rates.
4. Apply herbicides at the correct weed stage. Spraying larger weeds can greatly reduce herbicide efficacy.
5. Reduce weed seed-set to avoid resistant seed build-up in the seedbank and consider spraying out patches with non-selective herbicides.
6. Reduced herbicide efficacy due to poor spraying conditions will increase weed survival and the level of herbicide resistance.

Additional Information on the trial

The conclusion of each sample is dependent on the actual sample taken. Whether the sample is a true representation of the resistance profile of the paddock it was collected from cannot be ascertained from this study. For this reason, responsibility cannot be taken if the level of resistance in a paddock differs from the testing results. Confirmation of resistance indicates that the paddock where the particular sample originated from contains resistant individuals although the actual frequency of resistance in the paddock cannot be concluded.