Herbicide options for annual legume pastures

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Grain & Graze 3 project

Purpose: To demonstrate the available herbicide options for a range of annual legume pasture varieties

Location: "Kayanaba" (WMG main trial site), Dandaragan

Soil Type: Course non-wetting red sand

Soil Test Results: n/a

Rotation: 2014: RR Canola, 2013: Wheat, 2012: Oats

Growing Season Rainfall (April- October 2015): n/a

BACKGROUND SUMMARY

A small but growing number of farmers in the West Midlands region are using Serradella (and other aerial seeded annual legume pastures) in the pasture phase of their rotation. Controlling weeds in Serradella pastures requires the use of different herbicides and other management strategies (e.g. weed wiping) when compared to traditional subclover based pastures.

TRIAL DESIGN

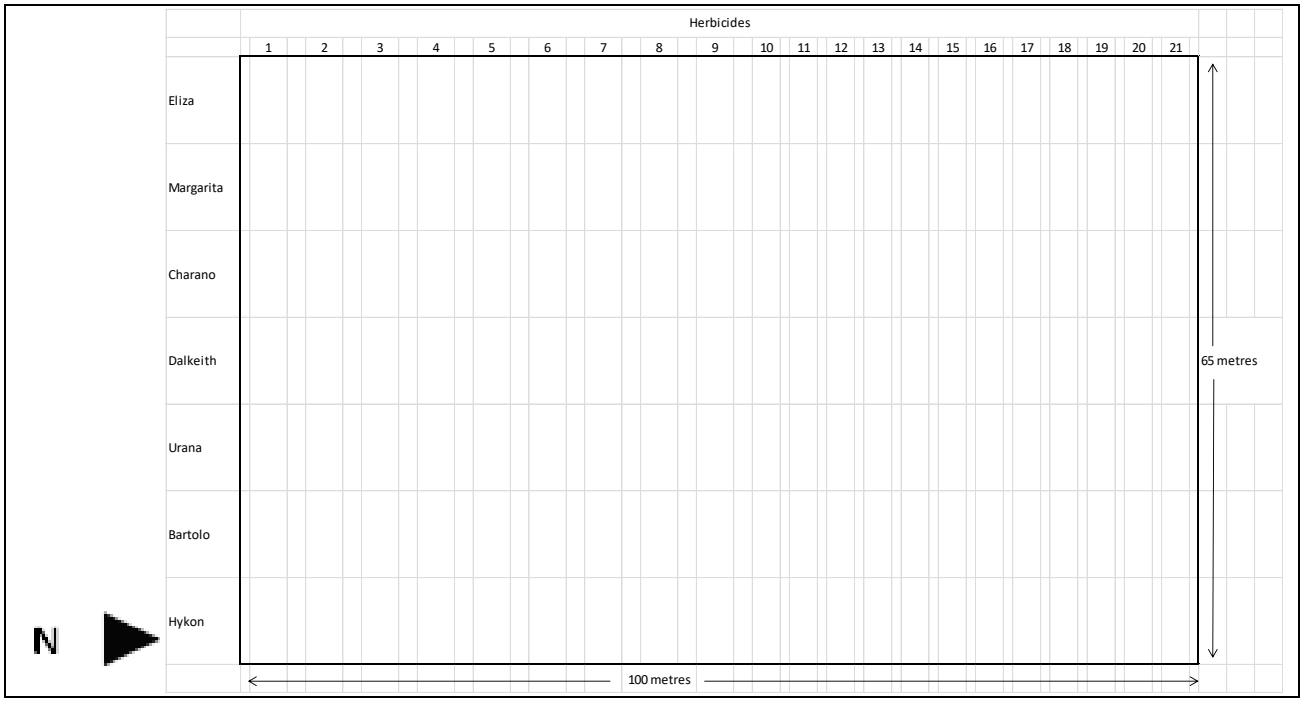
Machinery used: DAFWA Cone Seeder with knife points and press wheels on 9" row spacing

Pastures & seeding rate: Eliza French Seradella (10kg/ha pod), Margarita French Serradella (5kg/ha seed), Santorini Yellow Serradella (5kg/ha seed), Dalkeith Subclover (10kg/ha), Urana Subclover (10kg/ha), Bartolo Bladder Clover (10kg/ha), Hykon Rose Clover (5kg/ha)

Seeding date: 7 May 2015 (dry) following a knockdown

Fertiliser at seeding: 50kg/ha Big Phos Mn + 40kg/ha Muriate of Potash

TRIAL LAYOUT



Treatments:

Plot	Post-sowing Pre-emergent	Post-emergent	Cost ($/ha)
1	Spinnaker (Imazethapyr) 100g/ha		13
2	Kerb (Propyzamide) 1L/ha		22
3	Spinnaker 100g/ha + Kerb 1L/ha		35
4	Spinnaker (Imazethapyr) 100g/ha	Weed Wiper (Glyphosate)	18
5	Kerb (Propyzamide) 1L/ha	Weed Wiper (Glyphosate)	27
6	Spinnaker 100g/ha + Kerb 1L/ha	Weed Wiper (Glyphosate)	40
7	Spinnaker (Imazethapyr) 100g/ha	Raptor (Imazamox) 40g/ha	45
8	Kerb (Propyzamide) 1L/ha	Raptor (Imazamox) 40g/ha	64
9	Spinnaker 100g/ha + Kerb 1L/ha	Raptor (Imazamox) 40g/ha	77
10		Spinnaker (Imazethapyr) 75g/ha	10
11		Raptor (Imazamox) 40g/ha	32
12		Broadstrike (Flumetsulam) 25g/ha	13
13		Bromoxynil (Bromoxynil) 1.25L/ha	15
14		EcoPar (Pyraflufen-Ethyl) 400ml/ha + Agritone 750 (MCPA Amine) 330ml/ha	16
15		Spinnaker (Imazethapyr) 75g/ha	10
16		Raptor (Imazamox) 40g/ha	32
17		Broadstrike (Flumetsulam) 25g/ha	13
18		Bromoxynil (Bromoxynil) 1.25L/ha	15
19		EcoPar (Pyraflufen-Ethyl) 400ml/ha + Agritone 750 (MCPA Amine) 330ml/ha	16
20		Weed Wiper (Glyphosate)	5
21		Weed Wiper (Glyphosate)	5

Spray Dates:

Post-Sowing Pre-Emergent: 7 May 2015

Post-Emergent: 9 July 2015

Weed Wiper: 27 August 2015

RESULTS

Weed density (mostly wild radish) was variable across the site, so instead of accurately measuring weed numbers and their subsequent control, the following observations were made:

1) The density and early growth of the annual legume pastures, despite the moderate-high sowing rates, was less than ideal due to the non-wetting nature of the soil and the dry conditions experienced throughout May and June.
2) Margurita French Serradella was the most productive variety at the site, with Charano Yellow Serradella the next most productive. This was not unexpected given the sandy soil type. Eliza French Serradella was patchy but this was due to poor seed quality.
3) Spinnaker applied at 100g/ha post-sowing pre-emergent gave excellent weed control throughout the growing season. However, it also severely retarded the growth of the annual pasture legumes. The Serradella's were least affected but early vigour, in particular, was still retarded. It is fair to say that this rate of Spinnaker was too high for this soil type and this type of season. A more moderate rate of 50 to 75g/ha might have been more appropriate.
4) Propyzamide had little or no impact on weed density and growth, but this was as expected given there was a predominance of broad leafed weeds and little or no annual ryegrass.
5) Raptor and Spinnaker applied as post-emergent sprays were effective at reducing wild radish density and growth, although the timing of the post-emergent spray should have been 1-2 weeks earlier to achieve a better result. Raptor (Imazamox) is set to become significantly cheaper in future years as the product becomes "off-patent".
6) EcoPar + MCPA applied as a post-emergent spray was effective at reducing radish density and growth, but it caused unacceptable levels of damage to the Serradella's. It was a good option on sub clovers.
7) Broadstrike and Bromoxynil as post-emergent sprays were relatively ineffective at reducing wild radish density and growth.
8) The weed wiper was effective at reducing radish density and growth (particularly later in the season), although it is probably best used in conjunction with either grazing or an early spray. It could also be used more than once in the season.

DISCUSSION

1) Total seasonal biomass production from all of the annual pasture legumes was relatively poor as a result of the poor start. It begs the question, should Serradella, given its useful tolerance to the Imidazolinone group of herbicides, be sown with a fast growing Imidazolinone tolerant cereal such as Scope CL barley to improve early

season feed production? If the season is good, the cereal could be grazed early and then sprayed out with a grass selective herbicide to stop it out-competing the Serradella later on. If the season is poor, the cereal could be left to provide valuable winter and spring feed.

2) Residues of Imidazolinone group herbicides can affect the performance of the following year's crops and pastures, so be aware and plan ahead.

ACKNOWLEDGEMENTS

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