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Ecology and control of grass weeds in cereal pasture rotations in the Great Southern Region.

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PROJECT TITLE: Ecology and control of grass weeds in cereal
pasture rotations in the Great Southern Region.
PERSONNEL: A. Wallace (Research Officer), L. Lambert (Technical
Officer).
FILE NAME: WALA90b.DOC
EX FILE: 6399

TRIAL TITLE: Silvergrass Control
TRIAL NUMBERS: 90AB11, 90KA95, 90KA96.

TRIAL NUMBER: 90AB11
LOCATION: Great Southern Agricultural Research Institute,
Katanning.
SITE DETAILS: The site was an established silvergrass dominant pasture on a light
sandy soil.
TRIAL DESIGN: Randomized block design
Three replicates.
PLOT SIZE: 4 x 15 m
SPRAYING DETAILS:
SPRAYING DATE: 7/6/1990 TIME: 11 am
EQUIPMENT: Nissan 4x4 Patrol NOZZEL TYPE:
Hardi 4110-12.
PRESSURE: 210 Kpa VOLUME: 40L/ha
WIND SPEED: 10 Km/hr DIRECTION: NW
MOISTURE SURFACE: Damp DEPTH: Damp
CHEMICALS: Simazine 2,2-DPA, Pursuit, Kerb.
WEED GROWTH STAGE: 3-6 Leaf Stage.

TRIAL NUMBER: 90KA95
LOCATION: Great Southern Agricultural Research Institute,
Katanning.
SITE DETAILS: The site was an established silvergrass dominant pasture on a medium
clay soil.
TRIAL DESIGN: Randomized block design
Three replicates.
PLOT SIZE: 4 x 15 m
SPRAYING DETAILS:
SPRAYING DATE: 7/6/1990 TIME: 1 pm
EQUIPMENT: Nissan 4x4 Patrol NOZZEL TYPE:
Hardi 4110-12.
PRESSURE: 210 Kpa VOLUME: 40L/ha
WIND SPEED: 11 Km/hr DIRECTION: NW
MOISTURE SURFACE: Moist DEPTH: Damp
CHEMICALS: Simazine 2,2-DPA, Pursuit, Kerb.
WEED GROWTH STAGE: 3-6 Leaf Stage.

TRIAL NUMBER: 90KA96
LOCATION: Great Southern Agricultural Research Institute,
Katanning.
SITE DETAILS: The site was an established silvergrass dominant pasture on a heavy
(Moort type) clay soil.
TRIAL DESIGN: Randomized block design
Three replicates.
PLOT SIZE: 4 x 15 m
SPRAYING DETAILS:

SPRAYING DATE: 7/6/1990 TIME: 3 pm
 EQUIPMENT: Nissan 4x4 Patrol NOZZEL TYPE:
 Hardi 4110-12.
 PRESSURE: 210 Kpa VOLUME: 40L/ha
 WIND SPEED: 11 - 12 Km/hr DIRECTION:
 NW
 MOISTURE SURFACE: Moist DEPTH: Wet
 CHEMICALS: Simazine 2,2-DPA, Pursuit, Kerb,
 WEED GROWTH STAGE: 4-6 Leaf Stage.

When interpreting the results several factors need to be considered;
 (a) The heavy soil site was found to be ryegrass dominant rather than silvergrass dominant.
 (b) Application problems caused the 2,2-DPA and Kerb treatments to be abandoned.
 (c) There was little rain until approximately a month after spraying (late break to season). This dry period was followed by a very wet month (July) and as a consequence more plants were able to germinate following the herbicide application.

Silvergrass control on three sites in Katanning (90AB11, 90KA95, 90KA96)

Treatment (ml/ha)	Silvergrass heads per m ²		
	Light Sand	Medium Clay	Heavy Clay
Simazine 500	82	0	5372
Simazine 750	13	0	5087
Simazine 1000	13	41	3291
Simazine 1500	13	0	816
Pursuit 150	3264	3386	4964
Pursuit 250	1632	3074	4134
Pursuit 350	3291	3713	4624
Pursuit 450	3168	5508	3917
Untreated	5318	3332	6147

Light sand 5%LSD = 2675, Medium clay 5%LSD = 4971, Heavy clay 5%LSD = 3053.

Comments

Simazine was found to be very active against silvergrass on the light sandy site and all rates applied gave complete control. There were some late germinations which enabled seed set, although in the simazine treated plots panicles/m² were markedly reduced when compared to other treatments. On the medium and heavy sites simazine was also effective against silvergrass. Some activity was also noted against brome grass.

The effect of soil type on the action of simazine was mainly influenced by the water holding capacity of the soil. Although simazine was found to be active against silvergrass at all rates applied, on all trial sites, the higher water holding capacity of the clay soils maintained the activity of the simazine in the upper horizon and hence extended the effectiveness of the herbicide. Conversely on the light soil, silvergrass control was enhanced due to seasonal rather than soil characteristics as plants were droughted earlier in the spring/summer, sand having a greater drainage rate than clay.

It has been suggested that simazine at high rates (>1 litre) may cause stunting of clover plants. These particular trials did not show this clearly. Clover plant population variations over individual sites contributed to this.

Pursuit, while not found to have a significant effect on silvergrass, did display activity against geranium. Rates of as low as 250 ml/ha (sandy site) were capable of causing plant death.

PROJECT TITLE: Ecology and control of grass weeds in cereal pasture rotations in the Great Southern Region.

PERSONNEL: A. Wallace (Research Officer), L. Lambert (Technical Officer).

FILE NAME: WALA90a.DOC

EX FILE: 6399

TRIAL TITLE: Using less than currently recommended rates of grass selective herbicides for ryegrass control.

TRIAL NUMBERS 90AB12, 90KA93, 90KA94.

INTRODUCTION:

A previous trial (WIRC Project Number W/06/032/W) reported effective control of ryegrass with lower than recommended rates of the grass selective herbicides (Sertin, Assure, Fusilade and Verdict) under virtually ideal conditions. If this result proved to be repeatable it may lead to significant reductions in herbicide costs for farmers. To study this further, trials were established at Katanning, Newdegate and Rylington Park (Mayanup). Sites were chosen in these areas so that rainfall effects could be examined.

TRIAL NUMBER: 90AB12

LOCATION: Great Southern Agricultural Research Institute, Katanning.

SOWING DETAILS: Site was cultivated twice prior to sowing. Seeded with 15 kg/ha Wimmera annual ryegrass, 6 kg/ha Dalkieth sub-clover and 3 kg/ha Circle Valley medic on 21/5/1990.

80 kg/ha of superphosphate applied at seeding.

TRIAL DESIGN: Randomized block design

Three replicates.

PLOT SIZE: 4 x 15 m

SPRAYING DETAILS:

SPRAYING DATE: 3/7/1990

TIME: 2 pm

EQUIPMENT: Nissan 4x4 Patrol

NOZZEL TYPE: Hardi 4110-12.

PRESSURE: 210 Kpa

VOLUME: 55L/ha

WIND SPEED: 6 Km/hr

DIRECTION: SW

TEMPERATURE: 14 C

MOISTURE SURFACE: Damp

DEPTH: Dry

CHEMICALS: Sertin, Fusilade, Verdict, Assure, Pursuit, Kerb.

ADDITIVES: none.

WEED GROWTH STAGE: 3-5 Leaf Stage.

TRIAL NUMBER: 90KA93

LOCATION: Newdegate Research Station.

SOWING DETAILS: Site was cultivated twice prior to sowing. Seeded with 15 kg/ha Wimmera annual ryegrass, 6 kg/ha Dalkieth sub-clover and 3 kg/ha Circle Valley medic on 7/6/1990. 80 kg/ha of superphosphate applied at seeding.

TRIAL DESIGN: Randomized block design

Three replicates.

PLOT SIZE: 4 x 15 m

SPRAYING DETAILS:

SPRAYING DATE: 26/7/1990

TIME: 9.30 am.

EQUIPMENT: Nissan 4x4 Patrol

NOZZEL TYPE: Hardi 4110-12.

PRESSURE: 210 Kpa

VOLUME: 60L/ha

WIND SPEED: Nil

DIRECTION: Nil

MOISTURE SURFACE: Moist

DEPTH: Damp

CHEMICALS: Sertin, Fusilade, Verdict, Assure, Pursuit, Kerb.

ADDITIVES: Wetting Agent and Crop Oil.

WEED GROWTH STAGE: 3-5 Leaf Stage.

TRIAL NUMBER: 90KA94

LOCATION: Rylington Park (Mayanup).

Due to problems experienced during seeding which led to a poor and patchy seedling establishment, this site was abandoned. This trial will be run at this location in 1991.

RESULTS:

Only the results for the Newdegate and Katanning sites will be presented (there being no results from Rylington Park).

Pasture manipulation with low rates of grass selective herbicides - Newdegate (90KA93) and Katanning (90AB12).

Ryegrass heads per m²

Treatment (ml/ha)	Newdegate	Katanning
Sertin 125 + oil	4250	3883
Sertin 250 + oil	550	933
Sertin 500 + oil	0	117
Sertin 750 + oil	0	100
Fusilade 125 + oil	1683	4500
Fusilade 250 + oil	433	2450
Fusilade 500 + oil	0	100
Fusilade 750 + oil	0	0
Verdict 125 + WA	2750	4333
Verdict 250 + WA	133	1983
Verdict 500 + WA	0	750
Verdict 750 + WA	0	500
Assure 125 + WA	3683	3883
Assure 250 + WA	3267	2617
Assure 500 + WA	1883	716
Assure 750 + WA	317	133
Pursuit 125	3400	4350
Pursuit 250	1750	2733
Pursuit 500	1733	2167
Pursuit 750	450	2517
Kerb (1 kg/ha)	3883	1967
Untreated	2433	4000

Newdegate 5% LSD = 1446, GSARI 5% LSD = 1243.

Comments

Sertin, Fusilade and Verdict at rates of 500-750 ml/ha (recommended rates) achieved effective control of ryegrass at Newdegate. Fusilade and Sertin (500 and 750 ml/ha) gave adequate control at the Katanning site despite the omission of

adjuvants. The lower rates (125 and 250 ml/ha) and all of the Pursuit and Assure rates had little to no effect, on both sites.

It was observed that where ryegrass was successfully controlled by a herbicide application, silvergrass then became the dominant grass species in the absence of ryegrass competition.

Patchiness of sub-clover/medic stands, despite preseeding, meant that no measurement of the effect of applied herbicides on seed yield were done.

Ryegrass growth stage at time of herbicide application.

Treatment (ml/ha)	Booting	Ear emergence	Anthesis
Roundup 360 + WA	43	31	42
Roundup 100 + WA	151	159	103
Roundup 100 + Sertin 300 + oil	19	28	48
Roundup 100 + Pursuit 250 + oil	125	99	56
Sertin 300 + oil	31	12	49
Pursuit 250 + oil	139	111	81
5% LSD = 45.4			
Untreated = 122 grams seed/m ² .			

Comments:

Applications of Roundup 360ml/ha, Sertin 300ml/ha and the Roundup/Sertin mix were the most effective in suppressing growth when sprayed at the first time of spraying. Seed viabilities for this trial are yet to be processed. Later times of spraying are likely to have reduced the number of live seeds produced by the plants.

It was observed that plots treated at booting had some younger heads on plants that were otherwise stopped at the sprayed growth stage. These younger seed heads are likely to contain viable seed. Under grazed conditions it is probable that regrowth of this nature would be severely limited.

From the seed yield data it does not appear that there is synergism occurring between Roundup and Sertin. However there may be some with Roundup and Pursuit. The level of the synergistic effect is not strong enough to improve the level of ryegrass seed set control above the level of the most effective treatment Sertin 300ml/ha applied at ear emergence.