Location: Jason Stokes, Chapman Valley

Plot Size: 3m by 10m

Soil Type: loamy clay

Paddock Rotation:
2014 – Biserrula

2013 – Wheat

2012 - Biserrula

Pre – Emergent Knockdown Trial

Catrina Matheson, Agronomist, Great Northern Rural Services, Geraldton

Aim

To compare the efficacy of different adjuvants with varying rates added to Glyphosate or Paraquat on weeds such as Paddy Melons, Wild Radish, Serradella, Mint weed, Capeweed, Couch Grass and Blue Lupin.

Background

Weeds reduce yields by competing for moisture, nutrients, and light during the growing season. Weeds also harbor insects and disease pests and interfere with harvesting. It is important to remove weeds before seeding to give the crop the best chance of establishment. It is common practice to spray glyphosate that can translocate to plant roots followed by a desiccating paraquat that kills possible second germination after the original spray.

This trial looked at what adjuvants added to glyphosate and paraquat proved to be most effective in killing summer weeds.

Trial Details

- Spray Time: 1pm – 2.30pm
- Air Mix Nozzle 110-01 used for hand spray
- Spray swath = 3m
- 110 degrees fan angle from nozzles
- 2 litres of water in each bottle @ 100 Litres/ha
- 20ml of Glyphosate/Paraquat added to each bottle of water with the addition of an adjuvant at either 0.05/0.02%
- Delta T – 12.1°
- Wind speed – 17km/h
- ENE 61°
- Temperature – 29.5°
- Wind-chill 29.1°
- Dew point – 8.7°
- Humidity – 28.6%

Spray Mixes

	Herbicide/ha	Adjuvant	Adjuvant Rate
1	Control	Water	
2	Glyphosate 450 1.0L		
3	Glyphosate 450 1.0L	Liberate	0.5%
4	Glyphosate 450 1.0L	Anti-Evap	0.5%
5	Glyphosate 450 1.0L	Enhance	0.5%
6	Glyphosate 450 1.0L	Uptake	0.5%
7	Glyphosate 450 1.0L	Superseed	0.5%
8	Glyphosate 450 1.0L	LI700	0.5%
9	Glyphosate 450 1.0L	Wetta 1000	0.2%
10	Glyphosate 450 1.0L	Pulse	0.2%
11	Paraquat 1.0L		
12	Paraquat 1.0L	Liberate	0.5%
13	Paraquat 1.0L	Anti-Evap	0.5%
14	Paraquat 1.0L	Enhance	0.5%
15	Paraquat 1.0L	Uptake	0.5%
16	Paraquat 1.0L	Superseed	0.5%
17	Paraquat 1.0L	LI700	0.5%
18	Paraquat 1.0L	Wetta 1000	0.2%
19	Paraquat 1.0L	Pulse	0.2%

Plots were randomly replicated 3 times and visual recordings of brown out on weeds were recorded 4 weeks after spray application. Each spray was applied with 100L/ha water.

Statistical Results

Analysis of variance

Source	d.f.	s.s.	m.s.	v.r.	F pr.
Rep	2	1995.6	997.8	3.28	0.049
Treatment	18	7976.8	443.2	1.45	0.166
Residual	36	10965.3	304.6		
Total	56	20937.7	373.9		

Predictions from Regression Model:

Response variate: brownout_%_of plot

Treatment	% of Brown Out
1	15.2
2	28.33
3	45
4	41.67
5	30
6	45
7	28.33
8	26.67
9	55
10	43.33
11	33.33
12	50
13	40
14	55
15	28.33
16	43.33
17	46.67
18	15
19	35

Average least significant difference = 29.07
Coefficient of variation and standard error of a single unit; %CV = 47.26, SE= 17.45

Discussion:

From the statistical analyses performed on this trial. It is concluded that Paraquat at 1L with adjuvant LI700 at 0.5% is most efficient in causing fast brownout on Paddy Melons, Wild Radish, Serradella, Mint weed, Capeweed, Couch Grass and Blue Lupins. Paraquat at 1L with adjuvant Superseed at 0.5% proved to be just as effective as Glyphosate 450 at 1L with adjuvant Pulse at 0.2%