1984

# Crop oil additives to herbicides

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EXPERIMENTAL SUMMARY 1984

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## Crop Oil Additives to Herbicides

Several replicated and observational trials were conducted with crop oil additives to knockdown and selective in-crop herbicides. Crop damage and herbicide efficacy was examined with the selective herbicides and speed of brown out and eventual kill with the knockdowns.

### Knockdowns

Caltex Lovis and B.P. Ulvapron were used as the oil additives at the rate of 1% and 5% of the total spray volume which was 65L/Ha. No benefits in weed control with Roundup or Spray Seed applied at various rates resulted from the addition of crop oils at the rates used under winter spraying conditions at Wongan Hills Res. Stn., and Avondale.

### Selective In-Crop Herbicide

A tolerance trial at Avondale an wheat using Hoegrass and Combine at recommended rates with and without Caltex Lovis and B.P. Ulvapron at 1% and 3% did not result in any visual crop damage attributable to the herbicides or the herbicides plus oils at both rates. The application volume was 36L/Ha with a dry and wet bulb temperature of 14°c and 12°c respectively (80% RH). The crops was Egret wheat sprayed at Zadoks 14/21. No harvest was carried because of an uneven late emergence of some broadleaf weeds and the presence of barley grass in patches.

A trial at Lake Grace (84LG42) looked at the efficacy of Combine and Glean as well as crop damage with oil additives. The application volume was 36L/Ha with a dry and wet bulb temperature at spraying of 10.5°c and 7.5°c respectively (68% RH). The wheat crop was at Zadoks 15/22. Ryegrass and radish were the target weeds.

The trial results are summarised below:

| | Treatment | % Control Ryegrass | % Control Radish | Crop Damage |
|---|---|---|---|---|
| 1. | Nil Herbicide/Nil oil (tracked) | 5 | 5 | 5 |
| 2. | " " /0.5% oil | 10 | 15 | 5 |
| 3. | " " /2.0% oil | 10 | 25 | 5 |
| 4. | Combine 1L/Ha | 60 | 55 | 5 |
| 5. | " " + 0.5% oil | 65 | 55 | 5 |
| 6. | " " + 2.0% oil | 65 | 55 | 5 |
| 7. | Combine 2L/Ha | 80 | 70 | 4.75 |
| 8. | " " + 0.5% oil | 70 | 65 | 5 |
| 9. | " " + 2.0% oil | 80 | 65 | 5 |
| 10. | Glean 10g (No wetter) | 55 | 60 | 5 |
| 11. | Glean 10g + 0.1% WA | 55 | 65 | 5 |
| 12. | Glean 10g + 0.1% WA + 2% oil | 55 | 75 | 5 |
| 13. | Glean 20g + 0.1% WA | 60 | 65 | 5 |
| 14. | Glean 20g + 0.1% WA + 0.5% | 65 | 70 | 5 |
| 15. | Glean 20g + 0.1% WA + 2% oil | 65 | 80 | 4.25 |

Oil - Caltex summer spraying oil.

Crop damage 0 - Crop death 5 - No damage.

Yield data indicated no response to herbicides or oil additives. Trampling by sheep prior to harvesting and severe radish contamination of the harvest sample from the control plots rendered yield data of little value.

Weed control ratings indicated a marginal but doubtful benefit of oil additives with Glean on radish. Weed control was generally far from perfect, with or without oil. Crop tolerance was excellent with the exception of high rate of oil with Glean plus wetter.

## Umbrella grass (Cyperus eragrostis) control in irrigated pasture (85 HAI).

Umbrella grass has been a common weed of irrigated pastures and drainage areas in the South West of W.A. for many years. Normally infestations have been restricted to channel edges and drains where water lies.

Laser levelling of paddocks and subsequent soil disturbance coupled with more uniform water distribution over the paddock has seen umbrella grass density increase dramatically in newly sown pastures. The current recommendation of 7L/Ha of 2,4-D) Ester is too damaging to clovers to use as an overall paddock spray.

Trials were initiated to:

(1) Evaluate low-rates of 2,4-D amine and 2,4-D B, MCPB and MCPA for control of umbrella grass in established irrigated pasture.

(2) To establish the tolerance of perennial clovers to the herbicide treatments.

Results.

Spraying Date: 8/1/1985 (28° - 30°c Temperature)

Spray Volume: 65L/Ha.

All herbicide treatments had Crop Oil (Ulvapron) included at 0.5% of total spray volume.

Pasture Composition: Paspalum, Kikuyu perennial cloverws, Umbrella grass, Kyllinga weed (Cyperus brevifolius).

Percentage Control 16 days post spraying (Mean of Reps)

| 2,4-D Amine | | Umbrella Grass | Clovers Damage |
|---|---|---|---|
| | 1.0L/Ha | 70% | Very Mild |
| | 2.0L/Ha | 85% | Mild |
| | 3.0L/Ha | 85% | Mild-Mod |
| 2,4-D B | 1.5L/Ha | 40% | Nil |
| | 3.0L/Ha | 45% | " |
| MCPB | 4.0L/Ha | 60% | Nil |
| MCPA | 2.0L/Ha | 85% | Mild |
| | 4.0L/Ha | 85% | Mild-Mod |
| Control | | Nil | Nil |

Control was assessed by browning of leaves and rotting of the stem bases at ground level. Similar ratings were recorded 35 days post spraying.

Grazing cattle assisted control by pulling rotting stems away from the root.

Being a perennial plant, it is expected that some regeneration of umbrella grass will occur at the rates of herbicide used.

The treatment with either 2,4-D amine or MCPA at 2L/Ha is cheap, reasonably effective and causes only minor and acceptable damage to perennial clovers. Earlier spraying (November) when Umbrella grass is younger may prove more effective. Other pasture species, including Cyperus brevifolius were unaffected by the treatments.

## Stinkwort Control 85NO5 85PE14

Stinkwort is a spring/summer growing weed widely distributed in urban, semiurban and agricultural areas. Control recommendations have been based on 2,4-D amine at 2L/Ha pre-flowering and 4L/Ha post-flowering.

Crop oil additives gave promise of enhanced control at lower rates and 'newer' herbicides warranted investestigation.

Two trials have been conducted, in the West Dale and Swan Valley.

West Dale Vigourous growing, sprayed 1/2/85 after 12 mm rainfall. Temperature 33°c R.H.50%.

Swan Moderately vigourous, dry soil, sprayed 11/1/85 Temperature 34°c R.H.32%.

Results. Control and Vigour Ratings

| Treatment | Rate Ha | West Dale 16/2 C | West Dale 16/2 V | West Dale 27/2 C | West Dale 27/2 V | Swan 30/1 C | Swan 30/1 V | Swan 20/2 C | Swan 20/2 V |
|---|---|---|---|---|---|---|---|---|---|
| 2,4-D Amine | 1.0 | - | - | - | - | 2 | 2.5 | 4 | 4 |
| " " | $1.0_L$ + 1% DC TRON | - | Not used | | - | 1.5 | 2.0 | 4 | 4 |
| " " | $2.0_L$ + 1% DC TRON | 3 | 2 | 4 | 3.5 | 2.5 | 2.5 | 5 | 5 |
| " " | $2.0_L$ + 1% AF 1304 | 3 | 3 | 4 | 3.5 | - | - | - | - |
| " " | $2.0_L$ ---------- | 2.5 | 2.5 | 3.5 | 3 | 2 | 3 | 6 | 5 |
| " " | $4.0_L$ ---------- | 3.5 | 3 | 5 | 4 | 3 | 3.5 | 6 | 5 |
| " " | $4.0_L$ + 1% DC TRON | 3.5 | 3 | 5 | 4 | 3 | 3.5 | 6 | 5 |
| " " | $4.0_L$ + 1% AF 1304 | 3 | 3 | 5 | 4.5 | - | - | - | - |
| Roundup | $0.5_L$ | 2 | 2 | 2 | 2 | - | - | - | - |
| " | $0.5_L$ + 1% AF 1304 | 2.5 | 0.5 | 1.5 | 1 | - | - | - | - |
| " | $1.0_L$ + 1% DC TRON | - | - | - | - | 2.5 | 3 | 3 | 3 |
| Sprayseed | $1.0_L$ | 1.5 | 1 | 2 | 1 | - | - | - | - |
| " | $1.0_L$ + 1% AF 1304 | 1.5 | 1 | 1.5 | 0.5 | - | - | - | - |
| " + 2,4-D | $0.5_L$ + $1.0_L$ + 1% AF 1304 | 1.5 | 1 | 2.5 | 1.5 | - | - | - | - |
| Garlon | $0.2_L$ + 1% DC TRON | - | - | - | - | 0.5 | 0.5 | 1.5 | 1 |
| Glean | 15 g + wetter | - | - | - | - | 1 | 1 | 0 | 0 |
| Bromoxynil + MCPA | $2.0_L$ + 1% DC TRON | - | - | - | - | 3 | 3 | 2 | 3 |
| Control | ---------- | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |

DC TRON - AMPOL CROP OIL
AF 1304 - SHELL CROP OIL
SPRAY VOLUME 85L/Ha

RATINGS

| CONTROL (C) | VIGOUR (V) |
|---|---|
| 0 - Nil | 0 - No Damage |
| 1 - 0-25% | 1 - Very Mild |
| 2 - 25% - 50% | 2 - Mild |
| 3 - 50% - 75% | 3 - Moderate |
| 4 - 75% - 90% | 4 - Severe |
| 5 - 90% - 99% | 5 - Death |
| 6 - 100% | |

The results indicate that 2,4-D is the cheapest most effective herbicides and that previous recommendations hold true. The additions of crop oils at the rates trialled and the volume of application used under warm to hot condition offered no control benefits to any herbicide treatments.

## Ice Plant (Mesembryanthem Nodiflorum) control in Crop and Pasture 83SG20, 83SG21.

Preliminary trials in 1983 established that several herbicides gave effective control of iceplant in crop. Timely cultivation backed up, if required, by these herbicides was seen as effectively overcoming any problems with iceplant as a weed of cereal crops.

Control of iceplant in pasture could be achieved but with medic damage and at a cost which could only be justified as a cost against the following crop. Doubt was also raised as to whether salt accummulation by iceplant, preceeding control by herbicides, would affect germinating cereals in the following year.

Pasture treatments applied in September 1983 were direct drilled to Gutha wheat on May 1st 1984 without any prior weed control. No post emergence spraying for weeds was carried out.

Yields from some of the 1983 pasture treatments are given below:

| | | |
|---|---|---|
| Control | 1.56 | t/ha |
| Sprayseed 750 ml | 1.76 | " |
| Roundup 500 ml | 2.00 | " |
| Glean 15 g | 2.56 | " |
| Tribunil 850 g | 2.12 | " |
| Igran 500 ml | 1.80 | " |
| Igran + MCPA 750 + 300 ml | 1.85 | " |

The above treatments which gave significant yield increases over the unsprayed control plots gave good control of iceplant in 1983. While it is tempting to suggest that control of iceplant in the year preceeding cropping and hence reduced salt accummulation led to an increase in yield, the more likely reason is related to better seed bed preparation and crop establishment associated with absence of iceplant residues in the treated plots.

Good rainfall at the site would also have minimised any salt problems.

The exceptionally good yield with Glean was associated with excellent control in 1983 and residual effects in the alkaline soil, persisting into 1984, controlling iceplant and other susceptible weeds.

Control in Crop

Trials for control of Iceplant in wheat and barley were also established at the same site. Gutha wheat was seeded in on May 1st following a single early cultivation to encourage iceplant in the crop. An adjoining crop of Forrest Barley (seeded mid-May) was treated with the same herbicides.

Treatments were applied June 22, 1984. At this time the wheat was well advanced (Zadoks 31) and the barley at the correct stage for spraying (14/22). No yield data is available on the Barley as this was harvested by the farmer. (Wheat yields are given in Table 1). All treatments in both wheat and barley gave excellent control of iceplant. Crop damage from Glean, Igran, and Tribunil was evident on the barley in early vegetative growth and from Tordon 242 near maturity. Gutha wheat suffered no visual damage from any treatment.

Benefits from control (of weeds) other than iceplant eg., Mustard, medic ryegrass (minor) could also be attributed to some of the herbicides.

The concern expressed by farmers over iceplant in crops in the Salmon Gums district dissipated somewhat in 1984 with a return to good rainfall, and hence crops, and the success of incrop spraying. Iceplant in pasture remains as a continuing problem.

| Table I<br>Treatment | Gutha wheat<br>Rate/Ha | Mean Yield t/Ha |
|---|---|---|
| Glean + WA | 15 g | 1.63 |
| Isopoturon | 2.5 L | 1.73 |
| Tribunil | 850g | 1.67 |
| Linuron + MCPA | 250 g + 600 ml | 1.45 NS |
| Dicamba MCPA | 1L | 1.79 |
| Igran + MCPA | 550 ml + 600 ml | 1.51 NS |
| Tordon 242 | 1L | 1.57 |
| Igran | 850 ml | 1.43 NS |
| Control | | 1.22 |
| | CV% 8.4 | |