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Matricaria: A Locally Important Weed

Alex Douglas, DPIRD, Katanning

GRDC
GRAINS RESEARCH & DEVELOPMENT CORPORATION

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Origin

- Native to South Africa
- Thought to have arrived in South Australia in contaminated fodder, during the drought of 1922. First collected in Calomba S.A in 1930.
- *Oncosiphon piluliferum* appeared in the eastern central wheatbelt in the early 1970's

2 species of matricaria in WA

Calomba Daisy - *Oncosiphon suffruticosum*

Globe Chamomile - *Oncosiphon piluliferum*


Oncosiphon suffruticosum


Oncosiphon piluliferum

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Occurrence (1980's)

- Most frequently observed in pasture paddocks, including stubble paddocks and older grazing paddocks - 31%
- Matricaria survives grazing, is unpalatable but not known to be toxic (taints meat and milk).
- Common in headlands and firebreaks, and along the edges of crops, non-arable areas, fencelines, water points and stock yards.
- Infestations in crop were relatively infrequent (5% of sightings) and affected six paddocks of wheat, two of lupins and one of oats.
- This low prevalence in crops probably reflects effective herbicidal control during cropping. CULTIVATION AT CROP ESTABLISHMENT

(Dodd and Lloyd 1988)

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Phenology

- Initial seedling densities can be high, averaging 10,500/sq.m
- Cultivation and crop seeding destroyed existing seedlings but stimulated late germinations in June and July.
- Following germination in April, *O. piluliferum* period of vegetative growth lasting two to three months. Stem elongation began in early July and capitulum buds first appeared during late July and August.
- Bolting began in mid to late August. Flowering began in late August and peaked between mid September and mid October.
- Plants then progressed rapidly through seed ripening and senescence and most plants died in late October/early November.
- Most plants of *O. piluliferum* were between 20 and 35 cm in height, although the greatest plant heights measured were 41 and 44 cm.

Plants measuring only a few centimetres could flower.

(Dodd and Lloyd 1988)

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Seed Production

- Plants that germinate first produced the greatest number of seeds.
- Seed output similar for both species, 5,000 - 6,000 seeds/plant.
- Although *O. piluliferum* had fewer capitula than *O. suffruticosum*, it produced more seeds per capitulum (mean = 248 cf 58 seeds per capitulum).
- In crop, the small plants of *O. piluliferum* produced few capitula and fewer seeds (250 to 750 per plot).
- Large plants are capable of producing ≥ 53,000 seeds/plant (non-cropped areas)
- Seed production in trial plots averaged 1,300,000 seeds/sq.m for both species.

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Seed Production

O. piluliferum has a shorter growing season than ***O. suffruticosum*** and is more likely to complete flowering and seed production before the onset of summer drought.

Both species displayed high levels of survivorship and seed production.

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Germination

- **Freshly harvested seeds and 30 month old, laboratory stored seeds, tested**
- **Fresh seed was highly germinable: and after 10 days,**
  - 90% had germinated,
  - 2% was dormant and
  - 8% was non-viable.
- **The old seed was highly viable (85 to 88% viable) but showed high dormancy (75 to 81% dormant).**
- **Seeds exposed to light/dark showed higher germination (13%) than those kept in darkness (3%).**

(Dodd and Lloyd 1988)

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Persistence

- *O. piluliferum* **was prevented from producing seeds in a study at Mukinbudin. Plants last set seed in 1987**
  Plants were seen emerging for the next 5 years.
- **Packets of** *O. piluliferum* **seeds were buried in 1988, retrieved periodically until April 1992.**
- **When the seeds from these packets were set to germinate an average of 77% of the seeds germinated.**
- **In two of the packets, 91% and 96% of seeds were still viable after four years, indicating that the seeds of this weed, although small, are capable of persisting for several years, if buried.**

The persistence of Matricaria is due reserves of dormant seeds in the soil.

(Dodd and Lloyd 1989)

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New project

In this project we will be looking at;

- **life of the weed seed-bank (persistence),**
- **the rate of decline of seed-banks under field conditions,**
- **plus make some investigation into seed production, dormancy, plant establishment pattern and phenology.**

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Rayner 2009

	Treatment	Rate /ha	2009				2010	
			18/08/09 % control	26/08/09 % control	09/09/09 % control	Counts Aves/m²	25/08/10 % control	Vigor 25/08/10
1	Diuron (500g/L)	500mL	33	18	30	110.8	2	8
2	2,4-D ester LV (680g/L)	1000mL	55	37	57	94.4	15	8
3	Diuron (500g/L)+ 2,4-D ester LV (680g/L)	250+ 500mL	30	32	45	116.7	3	8
4	Glean® (750g/Kg)	20g	10	3	3	120.3	3	9
5	Ally® (600g/Kg)	5g	28	18	10	144.7	17	8
6	Logran® (750g/Kg)	20g	20	13	15	104.9	3	8
7	Sencor® (480 SC) + Broadstrike™ (800g/Kg)	156mL+ 25g	37	28	70	38.9	5	9
8	Hammer® (240g/L)+MCPA amine (500g/L)	100mL+ 500mL	82	68	77	41.3	18	8
9	Tigrex®	1000mL	65	32	37	90.9	8	9
10	Bromicide MA®	1400mL	63	58	60	24.5	13	9

Treated on 4/8/2009, Eradu Wheat

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Rayner 2009

	Treatment	Rate /ha	2009				2010	
			18/08/09 % control	26/08/09 % control	09/09/09 % control	Counts Aves/m2	25/08/10 % control	Vigor 25/08/10
11	Starane™ (200g/Kg)	1000mL	78	90	98	0.6	70	8
12	Hotshot ™	750mL	70	87	98	1.7	83	6
13	Tordon 242™	1000 mL	55	67	92	12.6	68	8
14	Ecopar® + MCPA amine	400+500 mL	73	60	63	75.2	7	8
15	MCPA LVE 500	1000mL	37	38	33	116.7	10	9
16	Velocity®	670ml	99	100	100	0.0	5	8
17	Velocity®	1000mL	99	100	100	0.0	30	8
18	Velocity® + Ally®	670ml + 5g	99	100	98	1.5	28	8
19	Hussar®	100mL	50	40	47	105.2	7	8
20	Nil		0	3	3	245.5	3	8

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New project

The main issue is managing matricaria effectively in pastures.

This is the phase where it builds up significantly.

There are some herbicide options available for cereals crops, where herbicides are helped by the crop competition.

We will focus initial management trials on seed set control options for the pasture phase as an aid to reducing the seed bank.

There will be laboratory and glasshouse research to complement the field work.

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McCartney site 2017

	Treatment	22 June % Control	5 July % Control
1	Untreated	0	0
2	Glyphosate (570) 1.25 L	42.5	-
3	Glyphosate (570) 1.8 L + 2,4-D LVE 680 500 mL	50	60
4	Glyphosate (570) 1.8 L + 2,4-D LVE 680 500 mL+ Hammer 30mL	50	
5	Glyphosate (570) 2 L	50	
6	Paraquat 2L + Hammer 30 mL	87.5	
7	Paraquat 2L + Glean 20g	85	
8	Bromoxynil 1.5L	10	
9	17g Sharpen + 1% Hasten	55	
10	34g Sharpen + 1% Hasten	57.5	

(Douglas and Nicholson 2017)

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Bromoxynil 1.5 L

Paraquat 2L + Hammer 30 mL

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Glyphosate 1.8 + 2,4-D LVE 500mL + Hammer 30 mL

Sharpen 34 g + Hasten

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Thank you

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