

BIOLOGY AND MANAGEMENT OF MATRICARIA

ALEX DOUGLAS AND DAVE NICHOLSON



GRDC
GRAINS RESEARCH
& DEVELOPMENT
CORPORATION



Department of
Primary Industries and
Regional Development

GOVERNMENT OF
WESTERN AUSTRALIA

MATRICARIA

Biology

Distribution

Phenology

Germination

Management

Large plants in fallow

In medic and sub-clover pastures

Seed set control



DISTRIBUTION

Matricaria was introduced from South Africa via South Australia in 1920s

Appeared in the eastern wheat-belt in late 1960s

Matricaria has been reported in Southern Cross, Mukinbudin, Merredin, Kellerberrin and Beacon and near Esperance.

There are 2 species in WA

- Globe Chamomile (*Oncosiphon piluliferum*) and
- Columba Daisy (*O. suffruticosum*)



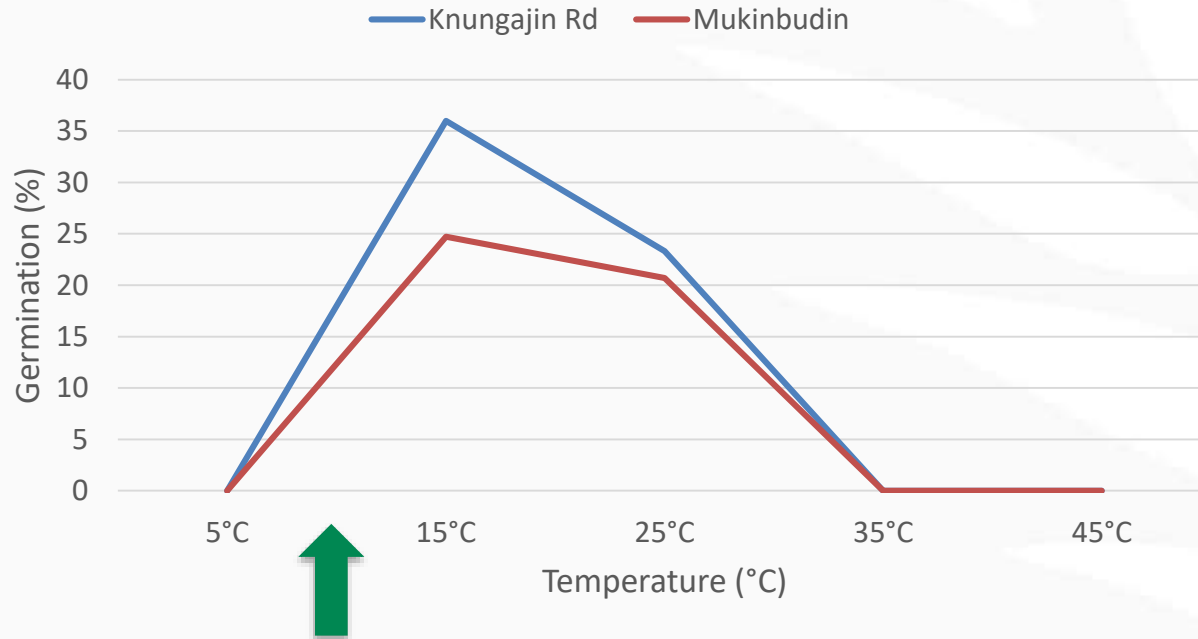
PHENOLOGY

Most seed germinates in Autumn
Forms a rosette
Bolts in August
Flowers September to November
3000-5000 seeds per plant (up to 100000)
Seeds can be retained in the head for many months



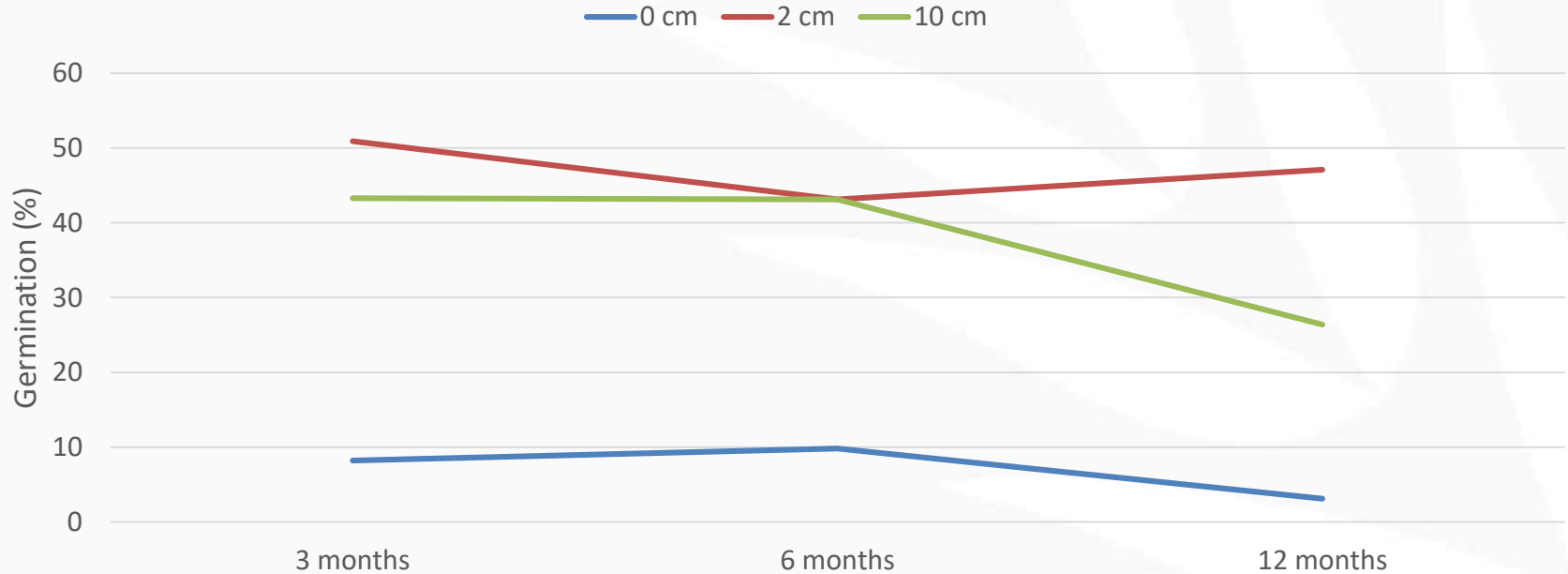
GERMINATION

Effect of constant temperature on germination (%) for two populations of *Matricaria*



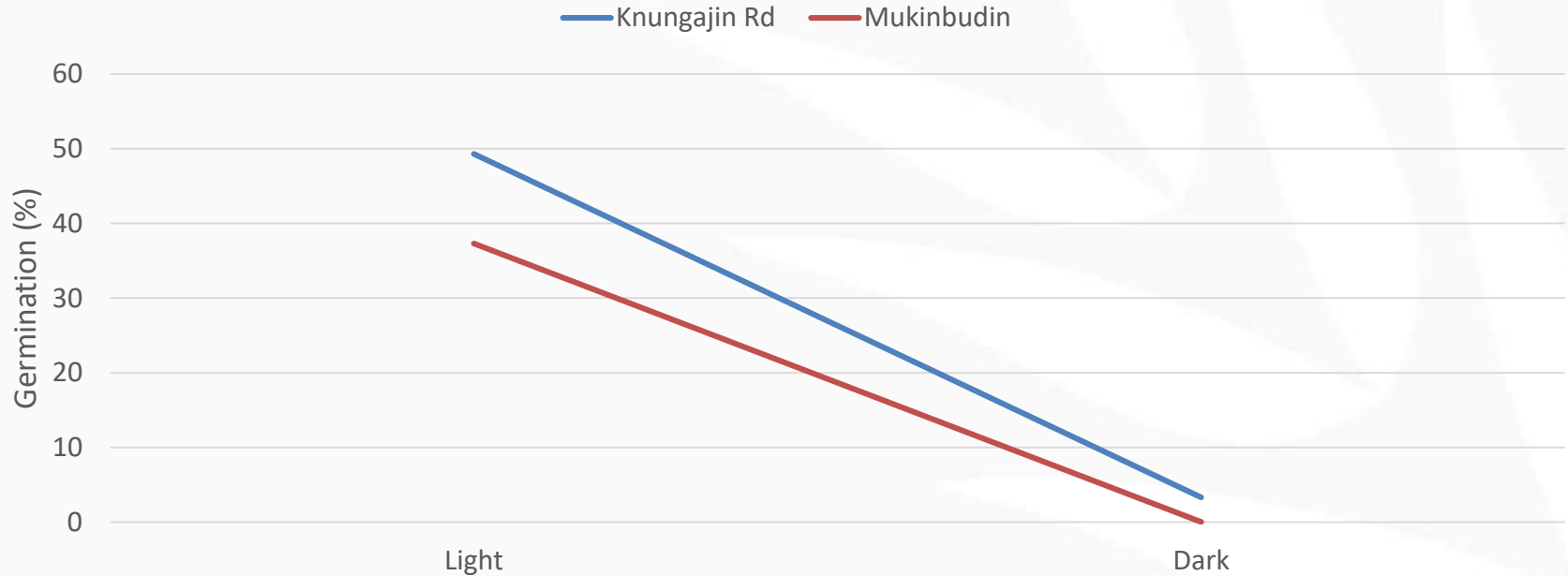
GERMINATION

Effect of depth of burial and time on *Matricaria* seed survival



GERMINATION

Effect of light and dark conditions on germination (%) of two populations of *Matricaria*



BIOLOGY

Key Messages

- Plants germinate readily in the temperature range 10 – 25 degrees
Autumn temperatures
Less likely to be a summer weed
- Plants produce large quantities of seed
- Seed survives well if buried at 2-10 cm
Can last for at least 5 years
Implications for planned tillage
- Darkness inhibits germination
Dormancy?



MANAGEMENT

Large flowering matricaria in fallow – Mukinbudin 2017

Matricaria biomass reduction (%) compared to the untreated, 3 and 5 weeks post herbicide application

Treatment (rate/ha)	Biomass reduction (%) 3 weeks PA	Biomass reduction (%) 5 weeks PA
Untreated	0	0
Bromoxynil 1.5L	10	10
Glyphosate 1.25L (570g ai/L)	42	60
Glyphosate 2L	50	50
Glyphosate 1.8L + 2,4-D LVE 500mL (680g ai/L)	50	60
Glyphosate 1.8L + 2,4-D LVE 500mL + Hammer® 30 mL	50	55
Paraquat 2L + Hammer® 30mL	87	87
Paraquat 2L + Chlorsulfuron 20g	85	85
Sharpen® 17g + Hasten 1%	55	55
Sharpen® 34g + Hasten 1%	57	57

Lsd

11

13

MANAGEMENT

Matricaria plant density (plants/m²), matricaria biomass reduction compared to the untreated control (%) and the level of suppression in medic growth (%) (7 weeks after application), medic pasture in Beacon 2018.

Treatment (rate/ha)	Matricaria density (plants/m ²)	Matricaria control (%)	Medic suppression (%)
Untreated	85	0	0
Jaguar [®] 1.1L	7	70	55
Ecopar [®] 150mL + MCPA 750mL	72	38	15
Atrazine 556g	26	7	43
Paraquat 500mL	7	80	20
Paraquat 500mL + atrazine 278g	4	92	3
Raptor [®] 25g	48	0	10
Raptor [®] 25g + Bromoxynil 200 1.4L	52	50	7
Raptor [®] 25g + paraquat 500mL	9	78	27
Glyphosate 400mL (450g ai/L)	2	99	7

MANAGEMENT

Matricaria plant density (plants/m²), matricaria control compared to the untreated control (%) and the level of suppression in sub-clover growth (%) (8 weeks after application), sub-clover pasture in Moora 2018.

Treatment (rate/ha)	Matricaria density (plants/m ²)	Matricaria control (%)	Sub-clover suppression (%)
Untreated	35	0	0
Ecopar [®] 500mL + MCPA amine 750mL	4	89	3
Bromoxynil 200 1.4L	7	80	0
Jaguar [®] 1.1L	0	100	8
Broadstrike [®] 25g + Bromoxynil 200 700mL	13	63	3
Broadstrike [®] 25g + Bromoxynil MA 700mL	13	63	3
Raptor [®] 45g	42	0	3
Raptor [®] 45g + Bromoxynil 200 1.4L	6	83	3
Paraquat 500mL + MCPA amine 500mL	9	75	0

SEED SET CONTROL OF MATRICARIA

Merredin 2017

Three times of application

Time 1 - Early bud formation (all green),
23/8/17

Time 2 - 30% green buds 70% yellow heads
(no seed), 13/9/17

Time 3 - 100% yellow heads (no mature seed),
5/10/17



SEED SET CONTROL OF MATRICARIA

Matricaria seed number (seeds/plant) following application of a range of herbicides to flowering matricaria, at three times, Merredin 2017

Treatment (rate/ha)	Seed Number (seeds/plant)		
	All buds green	30% green 70% yellow (no seed)	100% yellow heads (no seed)
Untreated	5903	12712	16019
Bromoxynil 2L	3864	3853	4031
Glyphosate 1.25L (570g ai/L)	0	180	1472
Glyphosate 2L	0	0	1220
Glyphosate 1.25L + Ecopar 400mL	0	0	3269
Paraquat 2L	3992	4995	6721

SEED SET CONTROL OF MATRICARIA

Matricaria germination (%) following application of a range of herbicides to flowering matricaria, at three times, Merredin 2017

Treatment (rate/ha)	Germination (%)		
	All buds green	30% green 70% yellow (no seed)	100% yellow heads (no seed)
Untreated	25.3	27.4	32.6
Bromoxynil 2L	19.1	17.5	17.1
Glyphosate 1.25L (570 g ai/L)	0	0.25	0.5
Glyphosate 2L	0	0	0.75
Glyphosate 1.25L + Ecopar 400mL	0	0	0.25
Paraquat 2L	25.5	10.6	9.2

MANAGEMENT

Key Messages

Fallow - paraquat 2L + Hammer® 30mL – 87% control

paraquat 2L + chlorsulfuron 20g – 85% control

Medic pasture - paraquat 500mL + atrazine 500mL – 92% control

Sub-clover pasture - Ecopar® 500mL + MCPA amine 750mL – 89% control

Jaguar® 1.1L – 100% control

Raptor® 45g + bromoxynil 200 1.4L – 83% control

Glyphosate performance is highly variable, but gives excellent **seed set control** if sprayed when flower buds are green to yellow with no mature seed formed.

Some of the treatments discussed are not registered for this use – please read the label prior to application

Thank you

The following growers/agronomists have provided trial sites and input to treatment selection; Ray and Stuart Faulkner (Beacon), Richard Humphrey (Moora), Phillip Gray (Merredin), Brendan McCartney (Mukinbudin), Ty Henning (TekAg), James Lydon and Darren Marquis (Landmark) and the members of MADFIG and FEAR. Dave Nicholson and Nerys Wilkins for excellent technical support.

alex.douglas@dpird.wa.gov.au

Important disclaimer

The Chief Executive Officer of the Department of Primary Industries and Regional Development and the State of Western Australia accept no liability whatsoever by reason of negligence or otherwise arising from the use or release of this information or any part of it.

© State of Western Australia 2018

