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EXPERIMENTAL SUMMARIES

1978

J.R. PEIRCE
PLANT RESEARCH DIVISION

Contents

1. Diuron + MCPA mixtures for broadleaved weed control in cereals
2. Flowable vs powder formulation of diuron for soursob control in cereals
3. Time of spraying diuron for soursob control in cereals

78Mo49B: Diuron + MCPA Mixtures for weed control in cereals
Property: C. & M. King - Gabalong
Crop: Gamenya wheat
Date of Spraying: 2/8/78
Growth Stage of Crop: 5 leaves
Date of Sampling weeds: 7/9/78
Weeds present: Capeweed
Herbicides used: Diuron 50% flowable formulation
MCPA 50% amine salt

No.	Rate product ml ha ⁻¹			Crop yield kg ha ⁻¹	% Yield Increase	% Reduction of weed dry weight
	Diuron		MCPA			
1	300	+	400	1760 ab	13	92 c
2	300	+	600	1880 b	20	94 c
3	600	+	400	1730 ab	11	97 b
4	600	+	600	1720 ab	10	98 ab
5	1000	+	400	1800 ab	15	99 a
6	1000	+	600	1813 ab	16	99 a
7	300			1665 a	7	69 d
8	600			1707 ab	9	80 cd
9	1000			1745 ab	12	87 c
10			400	1760 ab	13	64 d
11			600	1720 ab	10	79 cd
12	No treatment			1560 a		* e

* Dry weight of weeds (10 m x 1 row of crop) = 122.6 g

Comments

Site on light sandy soil type. Crop moisture stressed after spraying.

78Mo49A:

Diuron + MCPA mixtures for weed control
in Cereals

Property:

J. Paterson - Calingiri

Crop:

Madden wheat

Date of Spraying:

2/8/78

Growth Stage of Crop:

5 leaves

Date of Sampling Weeds:

7/9/78

Weeds present:

Radish and Capeweed

Herbicides used:

Diuron 50% flowable formulation
MCPA 50% amine salt

No.	Rate product ml ha ⁻¹			Crop yield kg ha ⁻¹	% Yield Increase	% Reduction weed dry weight
	Diuron		MCPA			
1	300	+	400	2853 e	44	92 e
2	300	+	600	2680 cde	35	96 d
3	600	+	400	2867 e	44	98 c
4	600	+	600	2840 e	43	99 b
5	1000	+	400	2747 de	38	100 ab
6	1000	+	600	2867 e	44	100 a
7	300			2360 bc	19	79 f
8	600			2480 bcd	25	91 e
9	1000			2680 cde	35	98 c
10			400	2387 bc	20	64 g
11			600	2280 ab	15	72 fg
12	No treatment			1987 a		* h

* Dry weight of weeds (10 m x 1 row of crop) = 106 g

78No44: Diuron + MCPA Mixtures for weed control in cereals

Property: K. Lawrence - Southern Brook

Crop: Clipper barley

Date of Spraying: 7/8/78

Growth Stage of Crop: 2-3 leaves

Date of Sampling weeds: 6/9/78

Weeds present: Radish and Capeweed

Herbicides Used: Diuron 50% flowable
MCPA 50% Amine salt

Treatments

No.	Rate product Diuron	ml ha ⁻¹ MCPA	Crop yield kg ha ⁻¹	% Yield Increase	% Reduction of weed dry weight	
1	300	+	400	1296 ab	52	99.5 a
2	300	+	600	1444 ab	69	99.5 a
3	600	+	400	1231 ab	44	99 a
4	600	+	600	1213 ab	42	99.9 a
5	1000	+	400	1388 ab	63	100 a
6	1000	+	600	1185 a	39	100 a
7	300			1269 ab	46	92 b
8	600			1416 b	66	99.5 a
9	1000			1250 ab	47	99.7 a
10		400		1296 ab	52	97.7 b
11		600		1231 ab	44	99.7 a
12	No treatment			852 c		* c

Dry weight of weeds (10 m x 1 row of crop) = 262 g

78Na30: Diuron + MCPA mixtures for weed control in cereals
Property: J. Hodgson - Yealering
Crop: Gamenya wheat
Date of Spraying: 10/7/78
Growth stage of crop: 4-5 leaves
Date of Sampling weeds: 5/9/78
Weeds present: Capeweed, Radish, Rough poppy and Scarlet pimpernel
Herbicides used: Diuron 50% flowable
MCPA 50% amine

Treatments

No.	Rate product		ml ha ⁻¹	Crop yield	% Yield	% Reduction of
	Diuron		MCPA	kg ha ⁻¹	Increase	weed dry weight
1	300	+	400	1988 e	97	95 bcd
2	300	+	600	1557 bcde	55	95 abc
3	600	+	400	1256 ab	25	99 ab
4	600	+	600	1387 abc	38	99 ab
5	1000	+	400	2080 de	107	100 a
6	1000	+	600	1478 abcd	47	100 a
7	300			1439 abcd	43	75 def
8	600			1277 ab	27	87 cde
9	1000			1805 cde	79	100 a
10			400	1151 ab	14	49 ef
11			600	1125 ab	12	85 cde
12	No treatment			1007 a		* f

Dry weight of weeds (10 m x 1 row) = 233 g

Comments on 78NA30, Mo49A & B and 78NO44

1. Wheat and Barley appear tolerant to the highest mixtures of 1000 ml of diuron + 600 ml MCPA. No distorted plants or heads were observed.
2. Overall the results would suggest that the suitable rate for cereal spraying would be in the lower rates of diuron and MCPA application. These have given on the average the highest yields and adequate weed control
3. These results indicate that an economical treatment of crops at earlier than the five leaf stage is available for broadleaved weed control. The lower rates cost less to apply than any of the current herbicides available.

78No42

: Comparison of equivalent active ingredients of flowable and powdered formulations of diuron for phytotoxic effects on cereal crops and soursob

Property

: N. Hansen - Northam

Crop

: Kite wheat

Date of Spraying

: 7th July 1978

No.	Treatments	Rate of active ingredient kg ha ⁻¹	Rate of product ha ⁻¹	Cereal yield kg ha ⁻¹	% yield change
1)	Diuron Powder	0.75	0.94 kg	1213	28
2)	" Flowable	0.75	1.50 l	1130	19
3)	" Powder	1.00	1.25 kg	1278	34
4)	" Flowable	1.00	2.00 l	1204	27
5)	" Powder	1.25	1.56 kg	1241	31
6)	" Flowable	1.25	2.50 l	1213	28
7)	Untreated			949	

No difference in phytotoxicity between powder and flowable formulation. All chemical treatments superior to unsprayed control.

78GE35

: Comparison of equivalent active ingredients of flowable and powdered formulations of diuron for phytotoxic effects on cereal crops and soursob.

Property

: M. Clinch - Greenough

Crop

: Gamenya wheat

Date of Spraying

: 21st July 1978

Herbicides Used

: Diuron powder 80%
Diuron flowable 50%

No.	Treatments	Rate of active ingredient kg ha ⁻¹	Rate of product ha ⁻¹	Cereal yield kg ha ⁻¹	% yield change
1)	Diuron Powder	0.75	0.94 kg	2469	17
2)	" Flowable	0.75	1.50 l	2484	17
3)	" Powder	1.00	1.25 kg	2264	7
4)	" Flowable	1.00	2.00 l	2220	5
5)	" Powder	1.25	1.56 kg	2130	1
6)	" Flowable	1.25	2.50 l	1920	- 9
7)	Nil Treatment			2116	

LSD P 0.05 = 345

Comments

No significant difference between powder and flowable formulation on apparent phytotoxicity. Effect of treatments on soursob control will be determined after break of season 1979.

78Mo39:

Time of spraying of flowable and powder formulation of diuron for soursob control in cereals

Property:

A. Tonkin, Moora

Crop:

Fallon wheat

Date of Spraying:

1) 3 rd July - Growth stage of Crop - 1) 1 leaf
2) 11th July " " 2) 2-2½ leaf
3) 27th July " " 3) 5 to early tillering

Herbicides Used:

Diuron flowable 50%
Diuron powder 80%

Treatments:

No.		Rate ha ⁻¹ product ha ⁻¹	Time of Spraying	Yield kg ha ⁻¹	% Increase
1)	Diuron Flowable	2.0 l	1 leaf	2210	9
2)	" Powder	1.5 kg	1 leaf	2190	8
3)	" Flowable	2.0 l	2-2½ leaf	2150	6
4)	" Powder	1.5 kg	2-2½ leaf	2144	6
5)	" Flowable	2.0 l	5 leaf to	2074	2
6)	" Powder	1.5 kg	early tillering	2090	3
7)	Untreated			2032	

Soursob Variety: Common - Short-styled - Flecked leaflets

78M45A:

Time of spraying of flowable and powder formulation of diuron for soursob control in cereals

Property:

E. Woodfield, Yarragin Rock (Kununoppin)

Crop:

Insignia wheat

Date of Spraying:

1) 20th June - Growth stage of crop - 1) 3-4 leaf
2) 29th June " " 2) 5 to early tillering
3) 6th July " " 3) tillering

Herbicides Used:

Diuron Flowable 50% a.i.
Diuron Powder 80% a.i.

Treatments:

No.		Rate ha ⁻¹ product ha ⁻¹	Time of Spraying	Yield kg ha ⁻¹	% Increase
1)	Diuron Flowable	2.0 l	3-4 leaf	1551	12.6
2)	" Powder	1.5 kg	3-4 leaf	1487	7.2
3)	" Flowable	2.0 l	5 leaf to	1495	8.6
4)	" Powder	1.5 kg	early tillering	1478	7.3
5)	" Flowable	2.0 l	tillering	1351	2.0
6)	" Powder	1.5 kg	tillering	1381	0.3
7)	Untreated			1377	

Soursob Variety: Common - Short-styled - Flecked leaflets

7845D: Time of spraying of flowable and powder dormulation of diuron for soursob control in cereals

Property: M. Inverarity, Kellerberrin

Crop: Gamenya wheat

Date of Spraying: 1) 5th July - Growth stage of Crop - 1) 1 leaf
2) 13th July " " 2) 2 leaf
3) 28th July " " 3) 3-5 leaf

Herbicides Used: Diuron Flowable 50% a.i.
Diuron Powder 80% a.i.

Treatments:

No.		Rate ha ⁻¹ product ha ⁻¹	Time of Spraying	Yield kg ha ⁻¹	% Increase
1)	Diuron Flowable	2.0 l	1 leaf	736	-20.6
2)	" Powder	1.5 kg	1 leaf	795	-14.3
3)	" Flowable	2.0 l	2 leaf	619	-33.2
4)	" Powder	1.5 kg	2 leaf	819	-11.6
5)	" Flowable	2.0 l	3-5 leaf	829	-10.5
6)	" Powder	1.5 kg	3-5 leaf	825	-11.0
7)	Untreated			927	

Soursob Variety: Common - Short-styled - Flecked leaflets

78No31A: Time of Spraying of flowable and powder formulation of diuron for soursob control in cereals

Property: N. Hansen - Northam

Crop: Warimba Wheat

Date of Spraying: 1) 30th June - Growth stage of crop - 1) 1 leaf
2) 12th July " " 2) 2-2½ leaf
3) 24th July " " 3) 5-6 leaf

Herbicides Used: Diuron Flowable 50% a.i.
Powder 80% a.i.

Treatments:

No.	Product Rate/ ha ⁻¹	Time of Application	Yield kg ha ⁻¹	% Yield Change
1)	2.0 l	1 leaf	2264	2.5
2)	1.5 kg	1 leaf	2292	4
3)	2.0 l	2-2½ leaf	2500	13
4)	1.5 kg	2-2½ leaf	2417	9
5)	2.0 l	5-6 leaf	2528	14
6)	1.5 kg	5-6 leaf	2417	9
7)	Untreated		2208	

LSD p 0.05 = 208

Soursob Variety: Common - Short-styled - Flecked leaflets

78M45B: Comparison of the flowable and powdered formulations of diuron applied at three growth stages of a cereal crop

Property: C. Smith, Doodlakine

Crop: Gamenya wheat

Date of Spraying: 1) 29th June - Growth stage of crop - 1) 1 leaf
2) 5th July " " 2) 2 leaf
3) 13th July " " 3) 3 leaf

Herbicides Used: Diuron flowable 50% a.i.
Diuron powder 80% a.i.

Treatments:

No.		Rate ha^{-1} product ha^{-1}	Time of Spraying	Yield kg ha^{-1}	% Change in yield
1)	Diuron Powder	15 kg	1 leaf	914	- 7.3
2)	" Flowable	2.0 l	1 leaf	861	-12.68
3)	" Powder	1.5 kg	2 leaf	1018	3.25
4)	" Flowable	2.0 l	2 leaf	903	- 8.42
5)	" Powder	1.5 kg	3 leaf	938	- 4.87
6)	" Flowable	2.0 l	3 leaf	978	- 0.81
7)	Untreated			986	

Soursob Variety: Mid-styled - Plain leaflets

78M45C: Time of spraying of flowable and powder formulations of diuron for Soursob control in cereals

Property: P. White - Kellerberrin

Crop: Gamenya wheat

Date of Spraying: 1) 29th June - Growth stage of crop - 1) 1-1½ leaf
2) 6th July " " 2) 2 leaf
3) 13th July " " 3) 3 leaf

Herbicides Used: Diuron Flowable 50% a.i.
Diuron Powder 80% a.i.

Treatments:

No.		Rate ha^{-1} product ha^{-1}	Time of Spraying	Yield kg ha^{-1}	% Change in yield
1)	Diuron Flowable	2.0 l	1-1½ leaf	1344	- 12
2)	" Powder	1.5 kg	1-1½ leaf	1393	- 8
3)	" Flowable	2.0 l	2 leaf	1282	- 16
4)	" Powder	1.5 kg	2 leaf	1152	- 25
5)	" Flowable	2.0 l	3 leaf	1347	- 11
6)	" Powder	1.5 kg	3 leaf	1373	- 9
7)	Untreated			1529	

LSD p 0.05 = 196

Soursob Variety: Common - Short-styled - Flecked leaflets

78No31B: Time of Spraying of flowable and powder formulation of diuron for Soursob control in Cereals

Property: R. Heal - Beverley

Crop: Gamenya wheat

Date of Spraying: 1) 4th July - Growth stage of crop - 1) 2 leaf
2) 13th July " " 2) 2½-3 leaf
3) 28th July " " 3) 4 leaf

Herbicides Used: Diuron Flowable 50% a.i.
Diuron Powder 80% a.i.

Treatments:

No.		Rate/ ha	Time of Spraying	Yield kg/ha	% Change in yield
1)	Diuron Flowable	2.0 l	2 leaf	1614	- 9
2)	Diuron Powder	1.5 kg	2 leaf	1597	-10
3)	Diuron Flowable	2.0 l	2½-3 leaf	1625	- 8
4)	Diuron Powder	1.5 kg	2½-3 leaf	1619	- 9
5)	Diuron Flowable	2.0 l	4 leaf	1701	- 4
6)	Diuron Powder	1.5 kg	4 leaf	1645	- 7
7)	Unsprayed			1773	

Soursob Variety - Mid-styled, Basal crescent on leaflets,
Purple tipped sepals.

Comments - 78Mo39, M45A,B,C,D, and No31A & B.

1) Late seasonal start to cropping masked the usual competitive effect of soursob on most cereal crops. Soursob which sprouts during March - April, regardless of moisture supplies, has nearly completed its vegetative life cycle, except bulb formation, by late June early July. For this reason soursob could be expected to compete more vigorously with cereal crops after an early break where crops are usually established during May and early June.

2) Except for one experiment (Yarragin Rock via Kununoppin) yields from treated crops in the areas east of Northam were less than the untreated areas. The use of diuron at the 2.0 l or 1.5 kg rates did cause some damage to the crops. Most severe damage occurred in the wheel track of the spray vehicle. The wheel tracks occupied some 16% of the harvested plot area.

3) The sites at Kellerberrin, Doodlakine, and Trayning were all sited in creek beds of coarse sand. Sands allow the diuron to be rapidly leached down to the root zone of the cereal crop, and also because of low organic matter content do not bind any of the applied diuron herbicide. These two factors would explain the greater phytotoxicity of the diuron in these trials. The trial site at Kununoppin was not in a creek line and the soil was therefore more typical of the area.

4) There appears to be no difference in crop tolerance between the 2.0 l ha⁻¹ rate of the 50% active flowable formulation and 1.5 kg ha⁻¹ of the 80% active powdered formulation. This indicates that the flowable formulation is slightly more active per unit of active ingredient (i.e. 2.0 l = 1.0 kg diuron; 1.5 kg = 1.25 kg diuron), although this was not detected in experiments 78No42 and 78GE35.

5) Applications of diuron beyond the 5 leaf stage of the crops will cause crop damage and hence cause yield depression.

6) The 'variety' of soursob at the Beverley property (78No31B) has not been noticed before on cropping land. Its growth seems considerably weaker than the variety of soursob most common in infestations in this state and in South Australia. This weaker growth may not be competing with the crops to the same degree