



Evaluation of new herbicides for capsicums and chillies

P R Frost, T L Hingston and J E Seidel

Serve-Ag Research Pty Ltd



Know-how for Horticulture™

Weed Management ~ Balancing people, planet, profit

Introduction

- Three year project funded by Horticulture Australia Ltd.
 - No herbicides currently registered for broadleaf weed control in capsicums or chillies.
 - Identified and screened herbicides for crop safety and weed efficacy.
 - 13 trials conducted in major production areas throughout Australia.



Herbicides Screened

Pre-crop transplant Pre-emergent

sulfentrazone

isoxaflutole

clomazone

oxadiargyl

pendimethalin

s-metolachlor

dimethenamid-p

flumioxazine

Post-transplant Pre-emergent

s-metolachlor

dimethenamid-p

oxyfluorfen

pendimethalin

oxadiargyl

Post-transplant Post-emergent

carfentrazone

bentazone

metribuzin

imazamox



Effective Herbicides Identified

- **Command (480 g/L clomazone)**
- **Stomp (330 g/L pendimethalin)**
- **Raft (400 g/L oxadiargyl)**
- Best results when applied pre-crop transplanting to weed free soil (pre-weed emergence).
- Effective pre-emergent control of common broadleaf and grass weeds across a number of sites.



Weed Efficacy – broadleaf weeds

Treatment	Mean % control compared to untreated control (no. of trials)			
	Green amaranth	Pig-weed	Black night-shade	Sow thistle
clomazone 240 g ai/ha	-	56 (1)	12 (2)	78 (1)
clomazone 480 g ai/ha	50 (3)	100 (2)	51 (5)	-
oxadiargyl 200 g ai/ha	-	100 (1)	-	100 (1)
oxadiargyl 400 g ai/ha	90 (3)	100 (3)	95 (5)	100 (1)
pendimethalin 660 g ai/ha	-	-	52 (2)	-
pendimethalin 990 g ai/ha	95 (3)	100 (3)	70 (5)	44 (1)

*Data from trials conducted without use of plastic



Weed Efficacy – grass weeds

Treatment	Mean % control compared to untreated control (no. of trials)			
	Summer grass	Crabgrass	Crowsfoot grass	Barneyard grass
clomazone 240 g ai/ha	100 (1)	73 (1)	91 (2)	-
clomazone 480 g ai/ha	100 (3)	-	100 (3)	100 (1)
oxadiargyl 200 g ai/ha	-	99 (1)	-	-
oxadiargyl 400 g ai/ha	91 (3)	100 (1)	84 (3)	83 (1)
pendimethalin 660 g ai/ha	99 (1)	-	93 (2)	-
pendimethalin 990 g ai/ha	99 (3)	97 (1)	95 (3)	100 (1)

*Data from trials conducted without use of plastic



Weed Efficacy – under plastic



Untreated Control



clomazone 480 g ai/ha



Weed Efficacy – under plastic



oxadiargyl 400 g ai/ha



pendimethalin
660 g ai/ha



Crop yield – variety trial

Treatment	Kg of fruit per plot (1 row x 5 m)	
	Capsicum cv. Warlock	Chilli cv. Blister
clomazone 960 g ai/ha	9.9	8.8
oxadiargyl 800 g ai/ha	9.5	8.9
pendimethalin 1980 g ai/ha	9.8	9.1
untreated control	10.0	8.7

*Trial conducted without plastic in Bowen, Queensland 2003

Double proposed use rates, sandy alluvial soil with low organic carbon and clay



Herbicide residue in produce

- **Herbicides residues in produce was below limit of quantitation at all sites:**
 - Clomazone < 0.01 mg/kg (2 sites).
 - Pendimethalin < 0.01 mg/kg (2 sites).
 - Oxadiargyl to be analysed.



Summary

- Effective weed management strategies developed for capsicums and chillies.
- Integration of herbicides into cropping systems.
- **Clomazone** and **oxadiargyl** safe inter-row and under plastic.
- Phytotoxicity with **pendimethalin** when used under plastic and needs further investigation.



Thankyou

- This project was funded by levy paying growers and Horticulture Australia Ltd.
- The assistance of growers from around Australia for providing trial sites is gratefully acknowledged.
- The input and advice from Chris Monsour (Bowen Crop Monitoring Services) who also conducted the trial work in Bowen (North Queensland) is gratefully acknowledged.



Know-how for Horticulture™

Weed Management ~ Balancing people, planet, profit