

WEED CONTROL IN CARROTS

RESEARCH RESULTS – 2006

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**FOR THE ONTARIO PROCESSING
VEGETABLE GROWERS**

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Purpose Of This Booklet

This booklet is provided as a guide to the 2006 processing vegetable weed control research control plots. The experiments outlined in this booklet are located at Ridgetown Campus. We appreciate the funding, cooperation and assistance provided by the Ontario Processing Vegetable Growers and the Ontario Food Processors Association. As well, we would like to thank the chemical companies and their representatives, agextension personnel, and other research scientists for their ideas, plant material and herbicide samples that were used in these trials. Funding for the 2006 research program was provided by:

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We trust that the information provided by this research will further the science of weed control by assisting with the registration of herbicides through the minor use system. We also hope this information will be of use in the extension of proper herbicide recommendations, thereby enabling growers to achieve consistent, broad spectrum weed control with a minimum of crop damage.

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Trial 1: Effect of Timing on Tolerance of Carrot to Dual II Magnum

Objective: Determine the effect of applying Dual II Magnum preemergence, early postemergence or late postemergence on crop injury, carrot size and carrot yield.

Materials & Methods:

Crop: Carrot

Variety: Fontana

Planting date: Apr 19/06

Planting rate: 260000 seeds/ha

Depth: 1 cm

Row spacing: 38cm

Design: Randomized Complete Block Design

Plot width: 1.5m

Plot length: 10m

Reps: 4

Field Preparation: Applied 250 kg/ha of 27-0-0 + 250 kg/ha of 18-19-19 on April 17.

Soil Description:

Sand: 81%

OM: 4.9%

Texture: Loamy Fine Sand

Silt: 12%

pH: 6.7

Soil: Normandale

Clay: 7%

CEC 7

Application Information:

| | A | B | C |
|------------------|-----------|-----------|----------|
| APPLICATION DATE | APR 28/06 | MAY 17/06 | JUN 5/06 |
| TIME OF DAY | 15:00 PM | 11:00AM | 10:00AM |
| TIMING | PRE | POST1 | POST2 |
| AIR TEMP (c) | 14 | 21 | 22 |
| RH (%) | 26 | 26 | 35 |
| WIND SPEED (KPH) | 8 | 0 | 1 |
| SOIL TEMP (c) | 22 | 22 | 20 |
| CLOUD COVER (%) | 0 | 10 | 0 |
| CROP STAGE | PRE | 2-4 LEAF | 5-8 LEAF |

Spray Equipment:

Application Method: CO2 Backpack

Pressure: 207 KPA (30 PSI)

Nozzle Type: AIR INDUCTION

Nozzle Size: ULD120-02

Nozzle Spacing: 50 cm (20")

Boom Width: 1.5 m (60")

Spray Volume: 200 L/ha (20 GAL/AC)

Table 1.1. Carrot visual injury 7, 14 and 28 days after application, carrot dry weight and yield.

| HERBICIDE | RATE (L/AC) | CARROT GROWTH STAGE | CARROT VISUAL INJURY | | | AVERAGE WEIGHT G/M2 | YIELD T/AC |
|----------------------|----------------|---------------------------|-------------------------|-----|-----|---------------------------|---------------|
| | | | 7D | 14D | 28D | | |
| 1. Check (WEED-FREE) | | | 0A | 0A | 0A | 74A-D | 17.6C |
| 2. DUAL II MAG | 0.5 | PRE | 0A | 0A | 0A | 73A-D | 20.5BC |
| 3. DUAL II MAG | 0.7 | PRE | 0A | 0A | 0A | 82A-D | 20.8AB |
| 4. DUAL II MAG | 1.4 | PRE | 0A | 0A | 0A | 89A | 21.0AB |
| 5. DUAL II MAG | 0.5 | 2-4 LF | 0A | 0A | 0A | 83ABC | 24.7A |
| 6. DUAL II MAG | 0.7 | 2-4 LF | 0A | 0A | 0A | 86AB | 23.4AB |
| 7. DUAL II MAG | 1.4 | 2-4 LF | 0A | 0A | 0A | 80A-D | 20.9AB |
| 8. DUAL II MAG | 0.5 | 5-8 LF | 0A | 0A | 0A | 63CD | 17.0C |
| 9. DUAL II MAG | 0.7 | 5-8 LF | 0A | 0A | 0A | 66BCD | 18.3C |
| 10. DUAL II MAG | 1.4 | 5-8 LF | 0A | 0A | 0A | 61D | 17.3C |
| LSD (P <0.05) | | | NS | NS | NS | 22 | 4.2 |

Note: Means followed by the same letter are not significantly different (P=0.05, LSD).
NS – No significant differences among treatments.

Conclusions:

This trial was kept weed-free to test for the effect of preemergence and postemergence applications of Dual II Magnum on carrot visual injury, dry weight, carrot length and yield of 'Fontana' carrot.

Visual injury was not observed in any of the treatments. Though there was no injury observed in the trial, and no reduction in carrot length (data not shown), carrots weighed less in the three late postemergence (5-8 lf stage of carrot) Dual II Magnum applications, which resulted in a reduction in yield.

Dual II Magnum has been submitted as an URMULE (2003-3426) to the PMRA. Data from this and previous years' trials were submitted to support the minor use for preemergence applications of Dual II Magnum in carrot.

Trial 2: Herbicide Tolerance in Carrots

Objective: Determine the tolerance of carrots to preemergence applications of KIH-485 and Impact.

Materials & Methods:

Crop: Carrot

Variety: Fontana

Planting date: Apr 19/06

Planting rate: 260000 seeds/ha

Depth: 2 cm

Row spacing: 75cm

Design: Randomized Complete Block Design

Plot width: 1.5m

Plot length: 10m

Reps: 4

Field Preparation: Applied 250 kg/ha of 27-0-0 + 250 kg/ha of 18-19-19 on April 17.

Soil Description:

Sand: 81%

OM: 4.9%

Texture: Loamy Fine Sand

Silt: 12%

pH: 6.7

Soil: Normandale

Clay: 7%

CEC 7

Application Information:

| | |
|------------------|-----------|
| APPLICATION DATE | A |
| TIME OF DAY | APR 28/06 |
| TIMING | 3:00PM |
| AIR TEMP (c) | PRE |
| RH (%) | 14 |
| WIND SPEED (KPH) | 26 |
| SOIL TEMP (c) | 8 |
| CLOUD COVER (%) | 22 |
| CROP STAGE | 0 |
| | PRE |

Spray Equipment:

Application Method: CO2 Backpack

Pressure: 207 KPA (30 PSI)

Nozzle Type: AIR INDUCTION

Nozzle Size: ULD120-02

Nozzle Spacing: 50 cm (20")

Boom Width: 1.5 m (60")

Spray Volume: 200 L/ha (20 GAL/AC)

Table 2.1. Effect of herbicide treatment on 'Fontana' carrot visual injury 7, 14 and 28 days after application, stand counts, carrot dry weight and yield.

| HERBICIDE | RATE | VISUAL INJURY | | | STAND #/2M ROW | DRY WT G | YIELD T/AC |
|---------------------|------------|---------------|-----|-----|-------------------|-------------|---------------|
| | | 7D | 14D | 28D | | | |
| 1. Check (WEEDFREE) | | 0B | 0B | 0C | 22A | 56A | 21.5A |
| 2. IMPACT | 22.5 ML/AC | 0B | 0B | 0C | 21A | 67A | 22.7A |
| 3. IMPACT | 45 ML/AC | 0B | 0B | 0C | 25A | 81A | 21.1A |
| 4. KIH-485 | 100 G/AC | 3B | 19A | 38B | 24A | 26B | 10.0B |
| 5. KIH-485 | 200 G/AC | 8A | 21A | 68A | 16A | 8B | 2.8C |
| LSD (P <0.05) | | 4 | 16 | 22 | 9 | 26 | 3.5 |

Note: Means followed by the same letter are not significantly different (P=0.05, LSD).

Conclusions:

This trial was kept weed-free to test for the effect of preemergence and applications of Impact and KIH-485 on carrot visual injury, dry weight, carrot length and yield of 'Fontana' carrot.

Preemergence applications of Impact did not injure carrot, however, there was significant visual injury, reduced stand counts, plant weights and yields in th KIH-485 treatments. Future research should focus on determining tolerance of carrots to postemergence applications of Impact, however, KIH-485 does not have potential for use in carrot.