

Great Lakes Fruit, Vegetable & Farm Market EXPO

December 9-11, 2008

DeVo Place Convention Center, Grand Rapids, MI



Potato

Tuesday afternoon 2:00 pm

Where: Gallery Overlook (upper level) Room C

Recertification credits: 1 (1B, PRIV OR COMM CORE)

CCA Credits: PM(1.0) CM(1.0)

Moderator: Fred Springborn, Agriculture & Natural Resources Educator, Montcalm County MSU Extension

2:00 p.m. Potato Varieties

- David Douches, Crop & Soil Sciences Dept., MSU

2:20 p.m. Insecticide Trials CPB Resistance Status

- Walter Pett, Entomology Dept., MSU

2:40 p.m. Diseases Review of 2008

- William Kirk, Plant Pathology Dept., MSU

2:50 p.m. Seed Health and Management

- William Kirk, Plant Pathology Dept., MSU

3:20 p.m. Potato Defoliants and Weed Research at MSU

- Daniel Brainard, Horticulture Dept., MSU
- Wesley Everman, Weed Science Specialist, Crop & Soil Sciences Dept., MSU

3:40 p.m. Why Drift Management is Important

- Jeffrey Zimmer, Michigan Dept. of Agriculture

Potato Defoliants and Weed Research at MSU

Wesley Everman
Presented by Daniel Brainard

Michigan State University



Introduction

- New Program Investigating
 - effects of herbicides on tuber quality
 - herbicide effects on mini-tuber production
 - optimal herbicide timing on potatoes
 - herbicide antagonism with other pesticides
 - defoliant selection and effect on storage quality



Weed Management

- Herbicide effect on tuber quality
 - variety specific growth cracks in chip varieties



Weed Management

- Herbicide Application Timing
 - at planting, 10 DAP, or at cracking



Weed Management

- Defoliants
 - efficacy
 - tuber defects
 - storage quality



Herbicide Application Timing Methods

- Residual PRE herbicides
 - Lorox 1 lb/A and Dual Magnum 1 pt/A
 - applied at planting, 10 DAP, and at cracking
 - Sencor 0.125 lb/A added PRE
- POST application following PRE
 - Matrix 1 oz/A alone or with Sencor 0.33lb/A



Herbicide Application Timing Results

- Reduced lambsquarters control with Lorox + Dual at planting compared to all other treatments
- All at planting applications with Sencor or a POST application resulted in similar weed control and potato yield as delayed applications

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Herbicide Application Timing Comments

- PRE applications can be made earlier in the season for flexibility
- Be prepared to make a POST application to control weeds and preserve yield

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Defoliants

- Used to kill potato vines to aid harvest
- Rapid acting chemicals
- Good growing conditions aid vine kill
- Lush stands often require 2 applications
- Apply 7 to 14 days prior to harvest

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Defoliants

- Several excellent options available
 - Reglone (diquat)
 - Rely (glufosinate)
 - Aim (carfentrazone)
 - Desiccate II (endothall)

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Defoliants

- Reglone 1-2 pt/A +0.25% NIS
 - Most commonly used
 - Rapid acting
 - May require second application
 - Allow 5 days between applications
 - Safety issues due to toxicity of diquat
 - Apply at least 7 days before harvest

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Reglone 3 days



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Defoliants

- Rely 3 pt/A + 17 lb AMS
 - Rapid acting
 - Limited to single application / season
 - Increase spray volume to 30 GPA when vine canopy is dense or weather is cool
 - 4 hour rain free period
 - Apply at least 9 days before harvest

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Rely 3 days



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Defoliants

- Aim 3.2 oz + 1% MSO
 - Rapid acting
 - May require second application
 - Do not apply more than 11.6 oz/A per year
 - Thorough coverage is required
 - Not as effective as Reglone or Rely
 - Apply at least 7 days before harvest

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Aim 3 days



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Defoliants

- Dessiccate II 3 pt/A + 5 lb AMS + LI700
 - Been around a long time – not commonly used
 - Do NOT apply LI 700 if temps are high
 - Do NOT apply LI 700 if field moisture stressed
 - Increase rate to 4 pt if vine growth is lush
 - Apply at least 10 days before harvest

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Defoliants

- Very few differences
 - Reglone fast acting – symptoms overnight
 - Aim needs thorough coverage
 - Rely can only be applied 1 time per season
- Rely and Reglone have overall best vine kill

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Managing Off-Target Pesticide Drift

Jeffrey Zimmer
Michigan Department of Agriculture
Pesticide and Plant Pest Management Division
Grand Rapids Regional Office

Off-Target Pesticide Drift

The physical movement of a pesticide through air at the time of application or soon thereafter, to any site other than that intended for application.

Off-Target Pesticide Drift

- Doesn't include* off-target movement by
 - erosion
 - migration
 - volatility
 - wind-blown contaminated soil particles after the application
- * Unless the label requires drift mitigation

Off-Target Drift Complaints

- Drift complaint investigations:
 - FY2007 – 34 of 178 investigations (19%)
 - FY2006 – 41 of 231 investigations (18%)
 - FY2005 – 42 of 182 investigations (23%)
- Complaint receipt decision making:
 - Particle or droplet drift vs. odor
 - Medical conditions (human or veterinary)
 - Noise and flyovers

Contributing Factors

- Weather conditions
- Application methods
- Application equipment
- Crop or area treated
- Topography
- Applicator decisions



Adverse Impacts

- Human health effects
- Environmental contamination
 - water, air, soil, flora, fauna
- Property use limitations
 - agricultural crops, forage, animals
 - home gardens, orchards, companion animals
 - public roadways, bike trails, parks
 - outdoor living and recreation



Pesticide Evaluations

Basic Tenet

When properly applied, a pesticide should not (with reasonable certainty) harm human health or cause unreasonable risks to environment.

Pesticide Evaluations

- Evaluations include:
 - estimated deposition levels.
 - estimated amounts of off-target drift.
 - potential risks to health and environment.
- Evaluations may lead to restrictions:
 - conditions of application.
 - methods of application.
 - use of barriers or buffer zones.

Pesticide Off-Target Direct Discharge

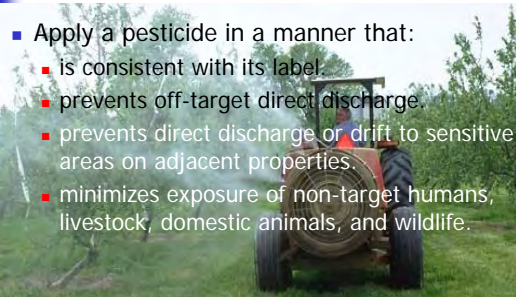
The direct application of pesticides onto a property that is beyond the boundaries of the intended treatment area.

Responsibilities – Reg. 637

- Before a pesticide application, determine:
 - the likelihood of off-target drift
 - the direction of possible off-target drift
 - sensitive areas that may be impacted

Responsibilities – Reg. 637

- Apply a pesticide in a manner that:
 - is consistent with its label.
 - prevents off-target direct discharge.
 - prevents direct discharge or drift to sensitive areas on adjacent properties.
 - minimizes exposure of non-target humans, livestock, domestic animals, and wildlife.



Responsibilities – Reg. 637

- Do not apply when off-target drift may occur and unprotected persons are:
 - within the application site.
 - adjacent to the application site.
- * unless permitted by the pesticide label

Responsibilities – Reg. 637

- Do not apply weather conditions:
 - favor off-target drift.
 - prevent proper deposition to the target area.

Responsibilities – Reg. 637

- Maintain application equipment:
 - in sound mechanical condition, including shutoff valves.
 - free of leaks and other defects or malfunctions.



Drift Management Plan

- DM plan is required when off-target drift is likely, due to:
 - nature of the application.
 - atmospheric conditions.
- DM Plan should strive to minimize:
 - occurrences off-target drift.
 - adverse effects of off-target drift.

Drift Management Plan

- DM Plan components:
 - informed consent of residents
 - written or verbal notification of residents
 - before leaving the application area
 - name, address, phone number of contact.
 - drift minimization practices.

Drift Management Plan

- Drift minimization practices include:
 - managing droplet size.
 - using equipment that minimizes drift.
 - optimizing nozzle-to-target distances.
 - using drift-reduction additives.
 - establishing buffer zones.
 - installing wind shields or wind breaks.
 - identifying maximum wind speed/direction.
 - other effective measures.

Drift Management Plan

- DM Plans must:
 - be in writing.
 - list the measures to be used.
 - describe how the measures will reduce drift.
 - be annually reviewed by the applicator.
 - record where the plan was implemented.
 - be maintained and accessible to MDA for 1 year (GUP)/3 years (RUP).

Drift Management Plan

- DM Plan does not exempt applicators from complying with regulations, including pesticide label requirements.
- Having and implementing a DM Plan is taken into account when MDA determines appropriate enforcement action.

Pesticide Label Improvement

- Spray Drift Workgroup recommended:
 - standardize spray drift labeling.
 - fund training and education.
 - support Drift Reduction Technology project.
 - tailor restrictions to local conditions.
 - assess real world effects of drift regulation.
 - develop water quality standards for all pesticides.

Pesticide Label Improvement

- EPA PR Notice expected in January 2009 will focus on drift mitigation measures:
 - buffer zones
 - sensitive sites
 - mitigating practices
- Departments of agriculture and agricultural industries will have opportunity to comment.



- Pesticide & Plant Pest Management Division
 - Lansing (517) 373-1087
 - Traverse City (231) 922-5210
 - Grand Rapids (616) 356-0600
 - Saginaw (989) 757-7501
 - St. Joseph (269) 428-2575
 - Lansing (517) 373-1087
 - Detroit (313) 456-1360