The Tolerance of Potato Varieties to Post Emergence Herbicides

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Weed Control

- Pre-em weed control provides the most effective options but...
- Selecting products to match weed spectrum rather than cost per hectare for the programme is essential!
- Efficacy of some residual products is compromised more than others under dry soil conditions – 2013!
- ‘Fire Brigade’ action post-emergence

Post Emergence Broad Leaf Weed Control (1)

- Titus (rimsulfuron) 25-50g/ha + Wetter
  - Volunteer OSR, Mayweed, Redshank, Red Dead Nettle, Hemp Nettle, Small Nettle, Bugloss, Shepherds Purse, Cereals, Wild Oats
  - Fat Hen and Black Bindweed only partially controlled. Suppression of Couch and Colts Foot
  - Lower rate if specifically for Volunteer OSR
  - Crop safety. No variety restrictions but mottling can occur particularly on stressed crops. Effect varies with variety.
  - Not on Certified seed.

Post Emergence Broad Leaf Weed Control (2)

- Basagran SG (bentazone)
  - Desperation! Late Flush of Fat Hen, Fools Parsley, Corn Marigold
  - Crop safety. Variety restrictions apply.
  - Not on Certified Seed

Post Emergence Broad Leaf Weed Control (3)

- Shotput, Secorex WG (metribuzin)
  - Fat Hen, Knotgrass, Mayweed, Black Bindweed, Small Nettle, OSR, Shepherds Purse, Speedwells, Fumitory, Red Shank
  - Crop safety. Variety restrictions apply. Crop no taller than 15cm
  - Not on Certified seed

Weed Control

- Crop safety is a major restriction on post-emergence herbicide use.
- Increasing incidence of significant herbicide damage from growers or advisors ‘taking a chance’ by making applications to varieties out with the manufacturers recommendations!
**Metribuzin Damage**
- Spectrum of symptoms from pre or post-em application
  - Mottling, Necrosis, Plant death
- Risk Factors
  - Weather pattern. Alternating dull then bright = higher risk
  - Soil type. Lighter land = higher risk
  - Variety. Only 1 of the top 10 vars by area in GB has post-em approval
  - Crop size
  - **Dose rate?**

**Manufacturer Supported Variety List**
- UK variety screening for metribuzin tolerance has carried out by Scottish Agronomy Ltd on behalf of Makhteshim Agan since 2005
  - New varieties tested on two light land sites over three years
- Post emergence testing for manufacturer support done at 0.5 kg and 0.75 kg/ha prior to 2013. Is it safe – yes or no.
- **Are lower dose rates safer on varieties tested pre 2013?**
  - Market failure addressed by the current project

**Risk to the Grower**
- Damaging the crop canopy delay the development of full crop canopy
  - Lengthens growing season to achieve the same yield.
  - May have an effect on fry colour and processing quality
  - Date of planting and growing conditions will influence the decision making process.
- Inadequate weed control can reduce yield and hamper harvesting.

**Potato Council funded Project 2012/13**
*The Tolerance of Potato Varieties to Post Emergence Herbicides*
- Informing growers on the risk to crops when dealing with compromised weed control
- Scottish Agronomy Ltd & Richard Austin Agriculture Ltd. Agrii, BASF, Hutchinsons, Interfarm, MAUK. Collaboration to update variety lists at relevant post emergence rates
- Replicated trials sites. 2x Scottish Agronomy Ltd (Angus & Perthshire) 2 x Richard Austin Agriculture Ltd (Staffs & Lincs)

**Potato Weed Control Strategies**
- Urgent need for new thinking on post-emergence potato herbicides:
  - Post-emergence products parallel imported
  - Market failure in developing variety tolerance lists for manufacturer support in GB
  - Outdated variety information
  - Published information for metribuzin tolerance is based on higher dose rates than those used in practice

**12 Varieties Tested**
- Top 10 by area GB. Top 12 Scotland

<table>
<thead>
<tr>
<th>Variety</th>
<th>Area</th>
<th>Pre &amp; Post emerg</th>
<th>Metribuzin Label</th>
<th>Bentazone Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>Desiree</td>
<td>3,085</td>
<td>Pre &amp; Post eme</td>
<td>Yes*</td>
<td></td>
</tr>
<tr>
<td>Maris Piper</td>
<td>20,760</td>
<td>Pre-emergency</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Estima</td>
<td>7,740</td>
<td>Pre-emergency</td>
<td>Yes*</td>
<td></td>
</tr>
<tr>
<td>Markies</td>
<td>7,105</td>
<td>Pre-emergency</td>
<td>No information</td>
<td></td>
</tr>
<tr>
<td>Lady Rosetta</td>
<td>6,558</td>
<td>Pre-emergency</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Maris Peer</td>
<td>5,424</td>
<td>Pre-emergency</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Melody</td>
<td>4,787</td>
<td>Pre-emergency</td>
<td>No Information</td>
<td></td>
</tr>
<tr>
<td>Hermes</td>
<td>4,417</td>
<td>Pre-emergency</td>
<td>Yes* (limited data)</td>
<td></td>
</tr>
<tr>
<td>Harmony</td>
<td>3,671</td>
<td>Pre-emergency</td>
<td>No Information</td>
<td></td>
</tr>
<tr>
<td>Saturna</td>
<td>3,389</td>
<td>Pre-emergency</td>
<td>Yes (limited data)</td>
<td></td>
</tr>
<tr>
<td>Rooster</td>
<td>1,453</td>
<td>Pre-emergency</td>
<td>Yes*</td>
<td></td>
</tr>
<tr>
<td>Cultra</td>
<td>1,271</td>
<td>Pre-emergency</td>
<td>Yes (limited data)</td>
<td></td>
</tr>
</tbody>
</table>

% Total GB = 62% *Prone to more foliar scorch than others. Do not use a large single dose treatment.*
### Treatment List 2012/13

**Post - Emergence**

<table>
<thead>
<tr>
<th>Product</th>
<th>Dose / ha</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Untreated</td>
<td></td>
</tr>
<tr>
<td>2 Shotpur</td>
<td>0.5 kg</td>
</tr>
<tr>
<td>3 Shotpur</td>
<td>0.2 kg</td>
</tr>
<tr>
<td>4 Shotpur + Titus + non ionic wetter</td>
<td>0.2 kg + 0.05 kg + 0.1%</td>
</tr>
<tr>
<td>5 Shotpur x 2 at 14 day intervals</td>
<td>0.1 kg fb 0.1 kg</td>
</tr>
<tr>
<td>6 Basagran + CropSpray 11E</td>
<td>0.85 kg + 1 %</td>
</tr>
</tbody>
</table>

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### 2012/13 Summary (1)

- Large variability between sites & seasons. Getting away with it once doesn’t mean it’s safe!
- It’s not safe to assume that reducing the dose rate of metribuzin, bentazone & rimsulfuron will reduce damage!
- 0.2 kg/ha post-em of metribuzin commercially unacceptable on M.Piper, Estima, M.Peer, Melody, Harmony, Hermes, Cabaret, Innovator.
- Half rate Basagran + Oil (1st split of label recommendation) extremely harsh on all varieties tested and would not be commercially acceptable on 50% of the sites.

### 2012/13 Summary (2)

- Desiree, Markies, Melody, Hermes, Maris Piper are not recovering at 14 DAA of Basagran + Oil
- Metribuzin + rimsulfuron + wetter improves the control spectrum (Fumitory, Knotgrass, Fathen, Bindweed and Speedwells) however, the tank mix results in increased levels of phytotoxicity. Some varieties recover rapidly but M.Piper, Hermes, Estima, Melody not recovering 14 DAA

### 2012/13 Summary (3)

- Site selection important. Experience shows that light land sites provide the most robust test.
- Replication over multiple seasons is essential
- No such thing as a completely safe or unsafe recommendation for variety / post emergence combination.
- Seasonal effects are beyond a growers control!
- Individual growers must balance the need for weed control against the target weed, versus crop damage.

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