Summary of SceptrePlus Field Vegetables herbicide work

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SceptrePlus outcomes for Field Vegetable growers
14th April 2022
Trials and treatments tested – approaches included single products and tank mixes

<table>
<thead>
<tr>
<th>Target</th>
<th>Trial code</th>
<th>Number of years of trials</th>
<th>No. treatments tested + controls/standards*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carrots and parsnips (field) Replacement for linuron</td>
<td>SP 01</td>
<td>3</td>
<td>61</td>
</tr>
<tr>
<td>Herb crop safety screens (Pot and field)</td>
<td>SP 02</td>
<td>3</td>
<td>95</td>
</tr>
<tr>
<td>Sweetcorn</td>
<td>SP 06</td>
<td>2</td>
<td>55</td>
</tr>
<tr>
<td>Celery</td>
<td>SP 10</td>
<td>2</td>
<td>37</td>
</tr>
<tr>
<td>Cucurbits (courgette and pumpkin)</td>
<td>SP 13</td>
<td>3</td>
<td>85</td>
</tr>
<tr>
<td>Brassicas</td>
<td>SP 27</td>
<td>3</td>
<td>39</td>
</tr>
<tr>
<td>Leeks and onions inc. salad onions</td>
<td>SP 28</td>
<td>2</td>
<td>61</td>
</tr>
<tr>
<td>Lettuce and baby leaf salads</td>
<td>SP 29</td>
<td>3</td>
<td>61</td>
</tr>
<tr>
<td>Volunteer potatoes in carrots and parsnips</td>
<td>SP 35</td>
<td>3</td>
<td>47</td>
</tr>
<tr>
<td>Legumes</td>
<td>SP 50</td>
<td>2</td>
<td>28</td>
</tr>
<tr>
<td>Asparagus</td>
<td>SP 51</td>
<td>2</td>
<td>54</td>
</tr>
</tbody>
</table>

* Some may have been repeated treatments to check phytotoxicity
EAMUs gained from SceptrePlus

- Devrinol (napropamide)
  - Herbs, spinach and babyleaf crops
- Artist (metribuzin + flufenacet)
  - Asparagus
- Dual Gold (s-metalochlor) and Diva (pyridate)
  - Sweetcorn
- Wing-P (dimethenamid-P + pendimethalin)
  - Sweetcorn as a pre-em, cucurbits as an inter-row
- Finalsan (pelargonic acid)
  - Cucurbits and sweetcorn
- Emerger (aclonifen)
  - Carrots and parsnips
  - Alliums
  - Celery
  - Herbs
- Hurricane (diflufenican)
  - Carrots and parsnips
  - Brassica, salads and legumes herbicides in progress
  - Residues data required but products are in the pipeline for a number of crop targets
    - AHDB 9987
    - Ethofumesate
Trial approaches

- Product safety screens
  - Often included products available in other crops – limited pipeline
  - Herbs and babyleaf – rates trialled

- Tank mixes
  - Increase weed spectrum
  - Guidance for when authorised

- Grower led trials in herbs and spinach
  - Inform over greater species range or situation
Emerger – guidance on replacing ioxynil and linuron

- SceptrePlus trials provided a foundation to build on
  - Limited situations – main crop only
  - Applied later than the crop timings gained in the authorisation – post-em
  - Mixes – rate, growth stage and wax dependant

- Generally safer in low dose mixtures post-em compared with large doses pre-em (particularly if mixed with Wing-P pre-em)

- Effects observed in other trials
  - Agrii included work on Emerger in mixtures and sequences with other onion herbicides in 2020
  - Evidence of increased crop effects where Emerger was used in some sequences or mixtures
  - Varying responses between different types of onions in the degree of damage

- Increased risk of crop damage in adverse conditions

Emerger 0.5 L/ha + Basagran 0.3 kg/ha + Starane Hi-Load 0.2 L/ha
At 2 TL, then 3-4 TL
Carrots and parsnips – providing indications on use in mixes and timing

**Emerger** – safe on maincrop carrots and parsnips in trials, but crop effects seen when

- Heavy rainfall occurred after application
- Tank-mixed with actives with similar modes of action e.g. DFF or clomazone
- Can cause yellow spotting and growth rate reduction
- In other umbellifer crops such as parsley it caused crop death applied at peri-em
- Has gaps in control of cranesbill, solanum weeds and field pansy. Weak on groundsel

- No experience with early crops from trials work
- Care with tank-mix partners, especially those in same HRAC group – difluenican and clomazone
  - Group F - Inhibition of pigment synthesis – ‘bleachers’
- Scorch and a check to growth when mixed with metribuzin
Which herb crops can Devrinol and Emerger be used in?

- Substantial number of treatments screened for use in herbs
  - 9 products – different rates
- 3 years of herb trial screens
  - Initial pot screens
  - Field trial
  - Grower led trials on their own farms
- Note - Single trials – ‘snapshot’ of guidance which growers can take forward

**Pre-em**

- Emerger 0.75 L/ha reduced weed numbers and was safe to use in parsley, coriander and chives, causing only a slight stunt to parsley at this rate. Also, safe to use in chamomile, dill, mint, rosemary and sage but **NOT drilled thyme**
- Emerger - 1.5 L/ha was safe for coriander, chives, chamomile, dill, mint, rosemary, sage, but **NOT drilled thyme or parsley.**
- Devrinol 0.85 L/ha was safe to use in coriander, chives, chamomile, dill, mint, rosemary, sage, drilled thyme and dill – **NOT parsley**

**Post-em**

- Emerger 0.75 L/ha only safe in coriander, chives, dill, rosemary and mint
- Emerger 0.5 L/ha safer to parsley, but causes stunting
Diva (pyridate) – less crop effect than standard

Scores of 0 are no effect
10 = crop death

Greater effect at site 1 as the crop was at 5 leaves at application compared to 4 leaves at site 2

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Phytotoxicity (0-10)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Site 1</td>
</tr>
<tr>
<td></td>
<td>28 DAA</td>
</tr>
<tr>
<td>Untreated</td>
<td>0.0</td>
</tr>
<tr>
<td>Callisto 0.75 L/ha</td>
<td>3.7</td>
</tr>
<tr>
<td>Fornet 6OD 0.75 L/ha</td>
<td>4.0</td>
</tr>
<tr>
<td>Callisto 0.75 L/ha</td>
<td></td>
</tr>
<tr>
<td>Fornet 6OD 0.75 L/ha</td>
<td></td>
</tr>
<tr>
<td>Diva 0.75 L/ha</td>
<td></td>
</tr>
<tr>
<td>Stomp Aqua 3.3 L/ha fb Diva 0.75 L/ha</td>
<td>1.0</td>
</tr>
<tr>
<td>AHDB 9986 + AHDB 9857</td>
<td>3.0</td>
</tr>
<tr>
<td>AHDB 9858</td>
<td>3.0</td>
</tr>
<tr>
<td>AHDB 9867</td>
<td>4.7</td>
</tr>
<tr>
<td>Stomp Aqua 3.3 L/ha fb AHDB 9867</td>
<td>6.3</td>
</tr>
<tr>
<td>AHDB 9866</td>
<td>5.3</td>
</tr>
<tr>
<td>Stomp Aqua 3.3 L/ha fb AHDB 9866</td>
<td>6.0</td>
</tr>
<tr>
<td>Stomp Aqua 3.3 L/ha fb AHDB 9859 (1/3 rate)</td>
<td>3.0</td>
</tr>
<tr>
<td>Stomp Aqua 3.3 L/ha fb AHDB 9859 (Inter Row)</td>
<td>1.0</td>
</tr>
<tr>
<td>Stomp Aqua 3.3 L/ha fb AHDB 9990</td>
<td>1.7</td>
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<tr>
<td>F prob. value</td>
<td>&lt;0.001</td>
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<tr>
<td>d.f.</td>
<td>27</td>
</tr>
<tr>
<td>L.S.D.</td>
<td>1.083</td>
</tr>
</tbody>
</table>
Diva (pyridate) – an additional post-em option for sweetcorn

Variety: Earlybird

Early polythene covered crop

Graph showing % weed cover:
- Untreated
- Callisto 0.75 L/ha + Fornet 60D 0.75 L/ha
- Callisto 0.75 L/ha + Fornet 60D 0.75 L/ha + Diva 0.75 L/ha
- Stomp Aqua 3.3 L/ha fb Diva 0.75 L/ha
- AHD B9986 + AHDB 9857
- AHDB 9858
- AHDB 9867
- Stomp Aqua 3.3 L/ha fb AHDB 9867
- AHDB 9866
- Stomp Aqua 3.3 L/ha fb AHDB 9866
- Stomp Aqua fb AHDB 9859
- Stomp Aqua fb AHDB 9859 inter-row
- Stomp Aqua fb AHDB 9900

Site 1 and Site 2
Cucurbits – Inter-row Wing-P authorisation

- Transplanted crop
  - Low weed population (photos not presented)
  - Wing-P safe inter-row in transplants through plastic – acts as a barrier
- Drilled crops
  - High weed population
  - Significant and visual differences in control
  - But stunting from Wing-P, even as an inter-row at 2.0 L/ha
    - Risk of crop damage
- Useful, but use with care
Drilled pumpkins - Pre-em trial – Finalsan as a ‘stale-seed bed’ application

* = significantly less weeds than UTC

L.S.D (24 Jun) – 20.11 F pr. 0.049
L.S.D (26 Aug) – 24.3 F pr. 0.006

Finalsan as a ‘stale-seed bed’ application

Applied post-drilling and pre-emergence
Asparagus – authorisation for Artist

- Metribuzin is an important active ingredient, especially in dry conditions
  - Some contact activity and persistence
  - But, resistance has developed in specific weeds where use is repeated e.g. groundsel
  - Artist is a useful addition to the armoury – EAMU is for 2.0 L/ha (it was applied at 2.5 L/ha in the trial)
- AHDB 9952 and AHDB 9898 show promise and reduced fumitory by 30%
- AHDB 9898 would add black nightshade control
- Residuals may have given greater efficacy in a wetter Spring
Still more in the pipeline

- Brassicas
- Salads
- Legumes
- Other crops

Residues trials for **selective and crop safe herbicides AHDB 9987 and AHDB 9875** are underway, or have been completed:

- This will allow authorisations in legumes, outdoor cucurbits, flowerhead brassicas, head cabbage, leafy brassicas and oriental cabbages following product registration in 2023

- These were trialled extensively in SceptrePlus in brassicas, cucurbits, sweetcorn and legumes.

- The products were trialled in other field veg crops but they were too damaging to those crops.

Thanks for listening, and to all those who have contributed, and collaborating contractors such as PGRO, VCS, Allium and Brassica Centre, David Norman and Liz Johnson.