Potato weed control – towards a more post-emergence approach?

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Potato weed control strategies

1. Pre-cultivations clean-up

2. Post-planting cultivations

3. Pre-emergence herbicide tactics

4. Potato herbicide developments
Potato weed control strategies

1. Pre-cultivations clean up:

- if early-winter plough / open winter – large weeds
- prevents transplanted weeds, perennials, vols.
- often planting cultivations enough
- glyphosate
- delays after de-stoning
Potato weed control strategies

2. Post planting cultivations:

- destroys one flush – creates another flush
- over-works soil – cracks in ridge / greens
- soil water losses / damage to root systems
- planter ridge profile finish
- ok for high weed numbers on black soils
- incorporation of Sencorex
- but new implements?

Looks pretty but no great agronomic advantages
Potato weed control strategies
Potato weed control strategies

3. Residual herbicide soon after planting:
   residual on settled ridge soon after planting
   ease of management – optimal soil moisture
   three week period to get best conditions
   getting the best from pendimethalin (Stomp)
   no crop effects
   not on unstable or cobbly ridges
   overspray before crop emerged
   Springs too dry
Potato weed control strategies

Residual on settled ridges soon after planting:
Potato weed control strategies

Residual on settled ridges soon after planting:
3. Pre-emergence herbicides:

contact + residual just prior to emergence

weed control still relatively simple

very reliable in dry and wet springs – crop safe

strain taken-up by contact

timing can be tricky to manage

extends life of residual

all products available
Potato weed control strategies

3. Peri-emergence herbicides:
   contact + residual at up to 10% emergence
   weed control still relatively simple
   very reliable in dry and wet springs – less crop safe
   strain taken-up by contact
   timing can be tricky to manage
   extends life of residual
   fewer products available
Potato weed control strategies

3. Post-emergence residual herbicide:
   residual + contact up to 40% crop emergence
   crop damage too great
   contact takes the strain
   very effective in a dry time
   now outdated
Potato weed control strategies

3. Incorporation of herbicides:

  incorporate metribuzin

  ease of management – optimal soil moisture

  a good start in a dry time

  herbicide at depth – where weeds chit in a dry time

  increased crop effects

  dilution of herbicide

  label allows mineral soils?
1. Are PDQ replacements as effective and safe?
2. What are the limitations of low rates of Linuron?
3. Earlier herbicide applications?
4. Do late herbicide applications affect yield/grade?

Assess component parts of herbicide programme - 2008
Test complimentary mixes / programmes 2009
1. What are safety limits of Sencorex on light soils?

2. Will early pendimethalin help?

3. Can complex residual mixtures cope?
Contact herbicides compared 2009

Weed control 19DAT
AMG 1tl-3 tillers

Retro + Activator (2.0l+0.2l)
Shark (0.33l)
Basta (2.0l)

LSD = 21
Contact herbicides compared 2009

Weed control 19DAT
AMG 1tl-3 tillers

LSD = 13
Contact herbicides compared 2009
Contact herbicides – trial conclusions

PDQ >> Basta > Retro > Shark for grassweed control

Nothing as wide spectrum for BLW control

Basta and Retro as crop-safe as PDQ

Shark should be pre-emergence only

Reliance on partner herbicides for extra contact activity
Contact total herbicides

PDQ
Contact total herbicides

Shark
Linuron at 1.2l/ha – trials conclusions:

• Linuron (1.2l) still a cost-effective option
• no situation where Linuron (1.2l) is sufficiently residual
• Sencorex best partner but light land crop safety
• specialist Sencorex crop safety trials required
Potato council trials 2008-2009

Linuron at 1.2l/ha – trials conclusions:

• Stomp programmes – too dry in 2009 to assess

• Defy = Artist = Gamit for cleavers

• Residual only approach unsuccessful in dry season

• Three way residual mixes worked well but no substitute for high rates of Linuron
Potato weed control strategies

Residual herbicides v post-emergence herbicides

aim to control weeds with residual herbicides

BUT soil moisture required – 2010 and 2011

new residuals unlikely

current residuals under threat

post-emergence herbicides are old chemistry

poor selectivity

varietal restrictions

Better post-emergence strategies need to be developed NOW!
Potato weed control strategies

Urgent need for new thinking on post-emergence potato herbicides:

1. Post-emergence products parallel imported
2. Manufacturer margin prevents development
3. Outdated variety information
4. Current information at inappropriate rates

Enlisted group of collaborators / sponsors to look at updating variety list at relevant post-emergence rates.
The tolerance of potato varieties to a range of post-emergence herbicides – 2012-3.
The tolerance of potato varieties to a range of post-emergence herbicides – 2012-3.

Replicated field trials Staffs. and Lincs. 2012-3

**Treatments:**

1. Untreated control
2. Metribuzin – 0.5kg/ha
3. Metribuzin – 0.2kg/ha
4. Bentazone – 1.65kg/ha
5. Rimsulfuron 50g/ha + Metribuzin 0.2kg/ha
The tolerance of potato varieties to a range of post-emergence herbicides – 2012-3.

Replicated field trials Staffs. and Lincs. 2012-3

Top 20 most widely grown varieties tested:

Maris Piper  Estima  Markies
Lady Rosetta  Maris Peer  Hermes
Melody  Marfona  Harmony
Saturna  King Edward  Desiree
Pentland Dell  Saxon  Cabaret
Charlotte  Fontane  Rooster
Russet Burbank  Innovator
The tolerance of potato varieties to a range of post-emergence herbicides – 2012-3.

Replicated field trials Staffs. and Lincs. 2012-3

Assessments:

% vigour reduction v untreated – 7, 14 and 21 DAT

% foliage necrosis – 7, 14 and 21 DAT

% foliage chlorosis - 7, 14 and 21 DAT

2013 only for processor varieties:

fry colour
dry matter