BCPC Weed Review – *Weed control in Potatoes*

VCS Potatoes Ltd

BCPC Weed Review – *Weed control in Potatoes*

Why control weeds?

Competition for resources

- Water
- Nutrition
- Light

Spread disease – Virus PVY/PVLR TRV and disease *P.infestans, rhizoctonia solani*

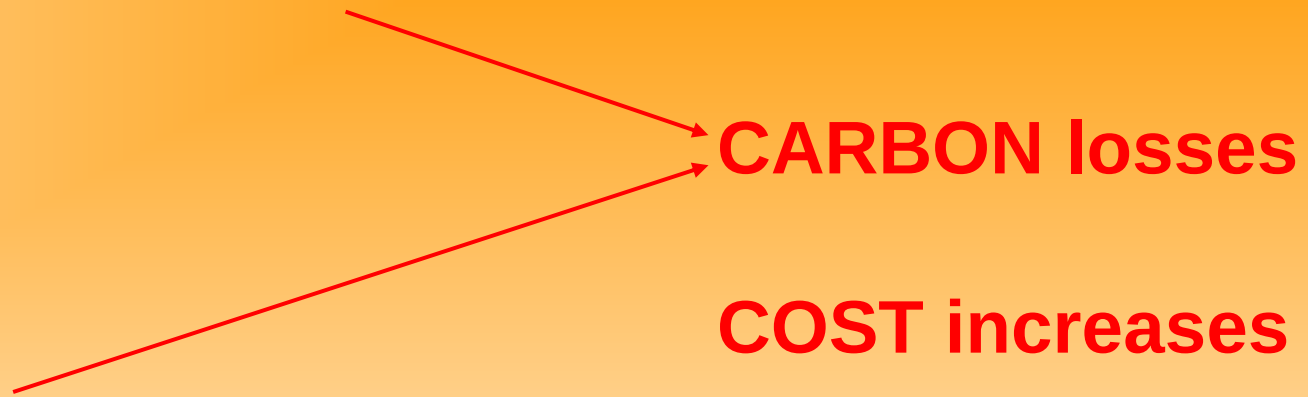
However in low levels weeds e.g. flowering weeds can increase beneficial insects populations – improve aphid control (Companion Crops)

VCS Potatoes Ltd

BCPC Weed Review – *Weed control in Potatoes*

Weed Control options

- Mechanical – Organic production (conventional production)



- Plant protection products
- Novel options (electric)

VCS Potatoes Ltd

BCPC Weed Review – *Weed control in Potatoes*

Weed Control options – Mechanical options

Widely used in organic production but also some conventional production

1. Thermal control prior to emergence

Vanhocke thermal weeder

BCPC Weed Review – *Weed control in Potatoes*

Weed Control options – Mechanical options

Widely used in organic production but also some conventional production

1. Thermal control prior to emergence
2. **Breaking ridge down (at rosette stage)–**
    - **Rake harrows – Opico, Trefler, Hachembichler**

VCS Potatoes Ltd

BCPC Weed Review – *Weed control in Potatoes*

Weed Control options – Mechanical options

Widely used in organic production but also some conventional production

1. Thermal control prior to (pre-emergence)
2. Breaking ridge down (at rosette stage)
3. **Star/finger rotary weeders (20% ground cover)**

VCS Potatoes Ltd

BCPC Weed Review – *Weed control in Potatoes*

Weed Control options – Mechanical options

Widely used in organic production but also some conventional production

1. Thermal control prior to (pre-emergence)
2. Breaking ridge down (at rosette stage)
3. Star/finger rotary weeders (20% ground cover)
4. **Combination tines/disc ridgers (20% ground cover)**

VCS Potatoes Ltd

BCPC Weed Review – *Weed control in Potatoes*

Weed Control options – Mechanical options

Widely used in organic production but also some conventional production

1. Thermal control prior to (pre-emergence)
2. Breaking ridge down (at rosette stage)
3. Star/finger rotary weeders (20% ground cover)
4. Combination tines/disc ridgers (40% ground cover)
5. **High clearance Re-ridger (up to 80% ground cover)**

VCS Potatoes Ltd

BCPC Weed Review – *Weed control in Potatoes*

Weed Control options – **Herbicide Timings** (plant protection products)

Courtesy Blackthorn Arable

- **Pre crop**
  - Creeping thistle
  - Couch grass
  - Volunteer potatoes
- **Pre-emergence** Residuals and Contacts
- **Post emergence** Limited BLW control, graminicides(not blackgrass)

VCS Potatoes Ltd

BCPC Weed Review – *Weed control in Potatoes*

Residuals Herbicides

Active	Trade Names	Weed control		Restrictions on Soil types	Varietal interactions	Following crop restrictions
		Strengths	Weakness			
aclonifen	**Emerger**	Fat Hen, S.Nettle, charlock, runch, mayweed	groundsel, nightshade			yes
clomazone	**Gamit 36 CS**	Cleavers, Groundsel	many	yes	yes	
metobromuron	**Praxim**	Knotgrass, b.bindweed, charlock, runch	cleavers, annual mercury			
metribuzin	**Sencorex flo**	charlock, runch, annual grasses, groundsel	b.bindweed pre em, nightshade, cleavers	yes	yes	yes
pendimethalin	**Stomp**	b.bindweed, fumitory, Fat hen, Red shank	mayweed, groundsel	yes		
prosulfocarb	**Defy**	Cleavers, B.Bindweed, Nightshade	s.nettle, groundsel, fathen			
Active only available in a co-formulation						
Flufenacet & metribuzin	**Artist**	blackgrass,cleavers in addition to metribuzin	nightshade	yes	yes	yes

BCPC Weed Review – *Weed control in Potatoes*

Potential new active (approval for potatoes) 2024??

improved groundsel, w.campion and nightshade control – pre-emergence in combination with other actives

Demonstration Trials 2022

VCS Potatoes Ltd

BCPC Weed Review – *Weed control in Potatoes*

Residuals – Current Regulatory position

Active	Trade Names ***	PSD expiry	EU 1107/2209 expiry	EU Notes	persistance in soil (DT_{50} days)**
aclonifen	**Emerger**	31/01/2026	31/07/2023	Candidate for substitution' PBT**	long (80)
clomazone	**Gamit 36 CS**	30/04/2025	31/10/2023	Endocrine assessment 3/9/21*	moderate (27)
metobromuron	**Praxim**	30/06/2027	31/12/2024		moderate (22)
metribuzin	**Sencorex flo**	30/01/2026	31/07/2023	Candidate for substitution' PBT**	moderate (19)
pendimethalin	**Stomp Aqua**	not set - default 2099	30/11/2024	Candidate for substitution' PBT**	long (101)
prosulfocarb	**Defy**	30/04/2025	31/10/2023		short (10)
Active only available in a co-form					
Flufenacet & metribuzin	**Artist**	30/04/2024	31/10/2023	Endocrine assessment 3/9/21*	moderate (39)

Potential future issues within EU with a number of actives

VCS Potatoes Ltd

* EU approval extension 3/9/21 ** University of Hertfordshire 'Pesticide Properties Database' *** Other Trade names with same active

BCPC Weed Review – *Weed control in Potatoes*

EU Future Proposals – plant protection products

'Sustainable use of plant protection products Regulation 2021/2115'
22nd June 2022

To revise and improve the *SUD - Sustainable Use of Pesticides Directive (as stated in 'A Farm to Fork Strategy' and 'European Green Deal')*

Options

- *Reduce pesticide use within EU by 50% by 2030 – legally binding EU*
- *Reduce pesticide use within EU by 50% by 2030 – legally binding EU and Nationally – Own National targets*

VCS Potatoes Ltd

BCPC Weed Review – *Weed control in Potatoes*

Consultation on the 'Revised National Action Plan for the Sustainable Use of Pesticides (Plant Protection Products)' December 2020 - DEFRA

Support the development and uptake of Integrated Pest Management (IPM)

We will develop improved metrics for IPM uptake and updated environmental indicators for pesticides to provide a suitable baseline against which we can establish appropriate reduction targets

We will establish a set of clear targets to support the reduction of risk associated with pesticide use by the end of 2022.

- *Consultation completed February 2021*
- *DEFRA response expected by end 2022*

VCS Potatoes Ltd

BCPC Weed Review – *Weed control in Potatoes*

Potato Herbicide Programs

Two Application Program

1. Residual approx. 14 days pre-emergence (generally products with 7 day pre-emergence recommendations) +/- glyphosate

2. Additional residual + contact @ up to 10% emergence

Single application (traditional) Program

Residual mix + contact @ up to 10% emergence

Post emergence only if required (either strategy)

VCS Potatoes Ltd

BCPC Weed Review – *Weed control in Potatoes*

Residuals – phytotoxicity

Particularly an issue with sands/light soils

Metribuzin phytotoxicity symptoms

VCS Potatoes Ltd

BCPC Weed Review – *Weed control in Potatoes*

Residuals – phytotoxicity

Particularly an issue with sands/light soils

Clomazone

Pendimethalin

VCS Potatoes Ltd

BCPC Weed Review – *Weed control in Potatoes*

SPot Farm East 2016-2021

Conclusions – Residual Herbicides

- Options for Linuron replacement exist but costs will increase

- Knowledge of weed spectrum present will aid cost effective control – target actives

- *Metribuzin* is the most cost effective *a.i.* for many weeds, include in most programs - **BUT** be careful of soil types and variety susceptibility

- 3 A.I. mixes provide a broader range of control of weed spp. particularly when only low rates of metribuzin can be used

Tollerant	Low Sensitivity	Moderate Sensitivity	High Sensivity
V.Sovereign	Royal	M.piper	Forza
Brooke	Daisy	Leontine	Innovator
Marfona	Lanorma	Eurostar	M.Peer
Saxon	R.Burbank	Melody	VR808
Challenger	Jelly	Nectar	
Soraya	Angelique	Performer	
Markies	Bambino	Gwenne	
	Gemson	Shepody	
	Rooster	Georgina	
		Iodea	

Metribuzin notes - Guidance not a recommendation!!!

VCS Potatoes Ltd

AHDB

BCPC Weed Review – *Weed control in Potatoes*

Non-Selective Contact

Active	Trade Names*	Weed control		Timing
		Strengths	Weakness	
carfentrazone	**Shark**	BLW	no grass weed control, poor mayweed, groundsel	upto 10% emergence
pyraflufen-ethyl	**Gozai**	Cleavers, Groundsel	no grass weed control	upto 10% emergence
glyphosate**	**Roundup Powermax**	broadspectrum inc. blackgrass	s.nettle (if beyond cotyledon)	7 days pre emergence

*** Other Trade names with same active** **** Ware crops only**

BCPC Weed Review – *Weed control in Potatoes*

Non-Selective Contact

AHDB Contact herbicide trials 2019-2020

- Assessment of contact options following loss of diquat – increased damage
- Delayed canopy expansion with **late** applications of PPO inhibitors

Application 10% em

Application 80% em

BCPC Weed Review – *Weed control in Potatoes*

Problem Weeds – Hairy nightshade *solanum physalifolium*

- Observed across UK but particularly Norfolk/Suffolk
- Widespread in carrot crops (loss of linuron)

VCS Potatoes Ltd

BCPC Weed Review – *Weed control in Potatoes*

Problem Weeds – Hairy nightshade *solanum physalifolium*

- Highly susceptible to ‘late’ blight

BCPC Weed Review – *Weed control in Potatoes*

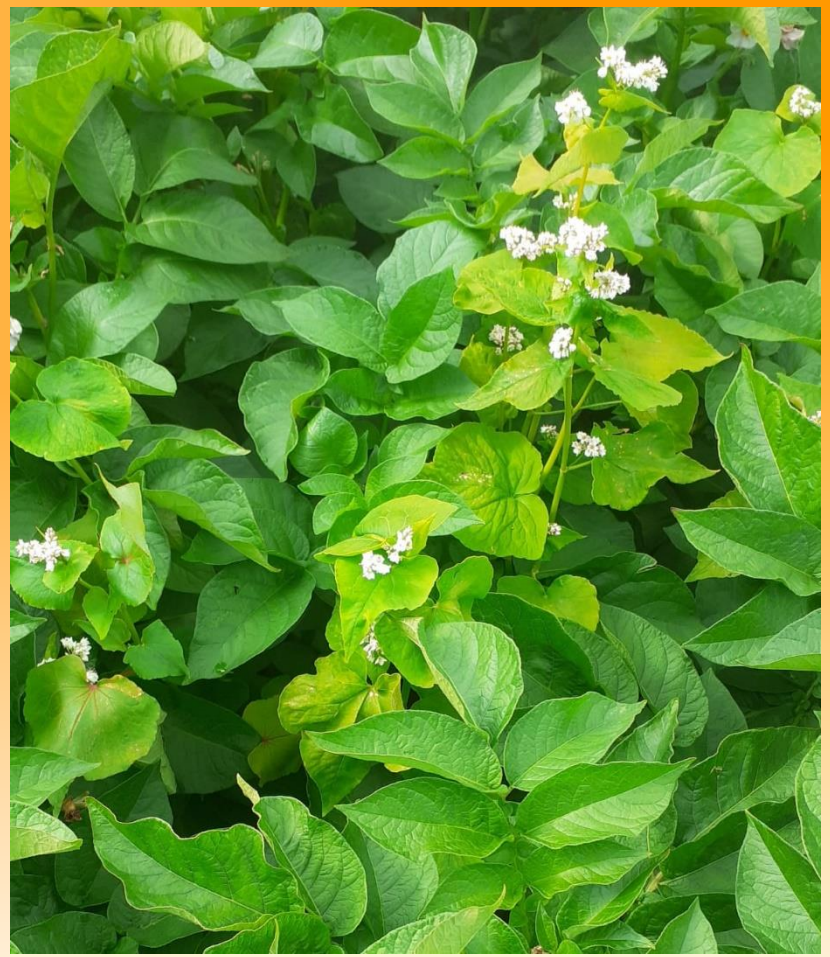
Problem weeds

B.Bindweed (non metribuzin tolerant varieties)

Courtesy Blackthorn Arable

BCPC Weed Review – *Weed control in Potatoes*

Companion Crops – Integrating Herbicides



VCS Potatoes Ltd

BCPC Weed Review – *Weed control in Potatoes*

Novel Approaches – Band spraying – reduce AI loading

BCPC Weed Review – *Weed control in Potatoes*

Novel Approaches – Electric Weeding?

VCS Potatoes Ltd

Thank you