

### **Spot SW – Contact demo – grower summary**

This year's herbicide demonstration at SPot South West was investigating how the contact herbicide diquat can be replaced with a contact herbicide such as Shark, and the differences in application timing.

Two varieties – Georgina and Lanorma hand planted 1<sup>st</sup> May 2019 and a pre-emergence application of four herbicides was applied to all treated plots. Emerged 1<sup>st</sup> June (Georgina) and 5<sup>th</sup> June (Lanorma). A control and a hand weeded control plot for each variety were left untreated (the hand-weeded control for direct comparison with treated plots). The treated plots had either diquat (Retro) or carfentrazone-ethyl (Shark) applied at one of three timings (pre-emergence, 10% emergence, 50% emergence).

Phytotoxicity and crop vigour assessments were made.

#### **Phytotoxicity**

- Georgina showed very little phytotoxic symptoms, with the only minor damage seen at 14 days after application, in the plots treated with Retro at 50% emergence. No other phytotoxic symptoms observed.
- Lanorma was more affected, with chlorotic symptoms seen at the 14 day assessment in the plots treated with Retro at both the 10% emergence (10% damage) and 50% emergence (40% damage) timings. Severe symptoms were also seen in the treatment with Shark at the 50% emergence timing (75% damage). One week later, symptoms were only visible in the plot treated with Retro at 50% timing, and after this no further damage was seen.

#### **Crop vigour**

- Clear differences in crop vigour were observed across all plots of both Georgina and Lanorma treated at 10% and 50% emergence, for the duration of the trial.
- The later application timings (10% and 50% emergence) caused the greatest differences when compared to the untreated control.
- Georgina was less affected, but the 50% emergence application timing with Shark was still the worst affected, with a 55% reduction in vigour compared to a 40% reduction in crop vigour at the latest timings with Retro.
- As with Lanorma, symptoms gradually declined but a 20% reduction in crop vigour was still observed at the final assessment timing.

#### **Weed assessments**

- Wild oat, red dead nettle, common groundsel, ivy-leaved speedwell, and volunteer oilseed rape emerged across the site.
- Total control of all weed species was observed for the duration of the trial.

#### **Field digs**

- At the demonstration day in August, two plants from each plot were dug to see if there were differences in the number or size of tubers.
- Differences were seen in tuber formation, and growers felt that the 50% emergence application was too late and could be damaging to the crop and yield quality.

### **Elveden – Contact demo – grower summary**

This year's herbicide demonstration at Elveden was investigating how the contact herbicide diquat can be replaced with a contact herbicide such as Shark, and the differences in application timing.

4 varieties – Nectar, Maris Piper, Jelly, and Sovereign hand planted 16<sup>th</sup> April 2019 and a pre-emergence application of four herbicides was applied to all treated plots. A control and a hand weeded control plot for each variety were left untreated (the hand-weeded control for direct comparison with treated plots). The treated plots had either diquat (Retro) or carfentrazone-ethyl (Shark) applied at one of three timings (pre-emergence, 10% emergence, 50% emergence).

Phytotoxicity and crop vigour assessments were made.

#### **Phytotoxicity**

Table: Percentage phytotoxicity observed in plots at 6 and 13 days post application (24<sup>th</sup> and 31<sup>st</sup> May respectively).

<b>Variety</b>	<b>Jelly</b>		<b>Maris Piper</b>		<b>Nectar</b>		<b>Sovereign</b>	
<b>Assessment date</b>	24 <sup>th</sup> May	31 <sup>st</sup> May	24 <sup>th</sup> May	31 <sup>st</sup> May	24 <sup>th</sup> May	31 <sup>st</sup> May	24 <sup>th</sup> May	31 <sup>st</sup> May
<b>Retro (pre)</b>	10	5	0	0	2	0	0	5
<b>Shark (pre)</b>	10	10	0	0	5	0	0	5
<b>Retro (10%)</b>	10	20	0	5	10	5	2	10
<b>Shark (10%)</b>	10	30	2	5	10	5	4	5
<b>Retro (50%)</b>	30	50	15	15	30	15	25	40
<b>Shark (50%)</b>	40	60	20	20	30	20	25	50
<b>Handweeded</b>	0	0	0	0	0	0	0	0
<b>Untreated</b>	0	0	0	0	0	0	0	0

- The highest levels of phytotoxicity were seen at the 50% application timings.
- Overall the treatments with Shark at the 50% application timings showed slightly more damage than the same timing with Retro.
- The varieties varied in their levels of damage, with Jelly being the worst affected (maximum 60% damage) and Maris Piper being the least affected (maximum 20% damage).
- No further symptoms on crops were visible by 19 days post application.

#### **Crop vigour**

- Overall most severe symptoms seen at the 13 day assessment, at 10% and 50% emergence application timing, with 50% - 70% reduction in crop vigour.
- In general the application at the 50% emergence timing with Shark were the worst affected.
- By the 32 day assessment, only minor differences were apparent across the 4 varieties in the plots treated at the final application timing with Shark.
- Symptoms gradually declined and by the final assessment no differences in crop vigour were observed across any varieties or treatments.
- Jelly showed the most severe symptoms, with a 50% reduction in crop vigour at the final application timing with Shark. Maris Piper was the least affected variety with 40% reduction at the final application timing with Shark.

#### **Weed assessments**

Common lambsquarters, common fumitory, wild buckwheat, common groundsel, and stinging nettle were all present on the site and were observed in the untreated control and varying levels. All weeds were fully controlled by all treatments.

### **SPot N and W – replicated trial – grower summary**

This year's herbicide trials at SPot N and SPot W were replicated trials investigating the effect of different combinations of residual herbicides on weed counts and phytotoxicity, focussing on the new herbicide aclonifen (Emerger). The aim was to investigate the effectiveness of combinations of actives on certain weed spectrums.

At SPot N, two varieties were mechanically planted, Maris Piper and Sunita on 15<sup>th</sup> April 2019. The site is a sandy loam. At SPot W, Maris Piper was mechanically planted on 7<sup>th</sup> May 2019, the site is a clay loam.

Emerger was applied alone at the approved rate of 1.75l/ha, and then in 2-way combinations with Shotput, Praxim, Stomp Aqua, Gamit 36 CS, and a 3-way combination with Praxim and Defy. A standard treatment of Shotput+Praxim were included to compare against.

#### **Results:**

- For both SPot W and SPot N, no phototoxic symptoms or differences in crop vigour were observed on any of the varieties.
- SPot W saw very little weed burden. Fat hen, mayweed, groundsel and nettle were the main weeds that emerged across the site, but at such low numbers that good control was seen across all treatments, and no differences between treatments could be reliably observed.
- At SPot North, the weeds that emerged included knotgrass, oilseed rape and bindweed.
- At SPot N some weed control was provided by aclonifen alone (now put in the results). However the best results were seen when mixing Emerger with other herbicides.
- Full control of oilseed rape was seen across all treatments.
- Emerger alone provided partial control of knotgrass and bindweed, but it was felt that this was not sufficient enough to give commercially acceptable control.
- Emerger applied with any of the tank mixes achieved excellent control of knotgrass and bindweed. In the field, growers felt the best control included treatment 3 (Shotput+Praxim).

Trt. No.	Product / Formulation	Rate of product/ha	Dosage a.i. in g/ha	cost per ha (£)	cost per ha (total, £)
1	Untreated	-	-		
2	Emerger	1.75 L	1050	31.50	31.50
3	Shotput * Praxim	0.5 Kg 2.5 L	350 1250	14.40 64	78.40
4	Emerger Shotput *	1.75 L 0.5 Kg	1050 350	31.50 14.40	45.90
5	Emerger Praxim	1.75 L 2.5 L	1050 1250	31.50 64	95.50
6	Emerger Stomp Aqua	1.75 L 2 L	1050 910	31.50 17.66	49.16
7	Emerger Gamit 36 CS	1.75 L 0.15 L	1050 54	31.50 17.31	48.81

8	Emerger Praxim Defy	1.75 L 2.5 L 3 L	1050 1250 2400	31.50 64 21.90	117.40

**Take home messages:**

**Contact demo:** Shark not direct replacement for diquat. Need to be careful with timings, difference between 10% emergence and 50% emergence can be a matter of days, and makes a huge difference to crop. Also damage varies depends on variety.

Shark label only to 10% emergence, not 50% as we applied it. Always use recommended label rates.

**Replicated trials:** Emerger applied as a partner work effectively. Consider the costs of herbicide mixes and the particular weed burden at each site.

Old SPot East data on aclonifen: From Graham Tomalin – 2017 to 2018 trials: A.I. *aclonifen* looks a useful addition when used in combination with other actives – strengths: Fat hen, mayweed, s.nettle, annual meadowgrass, blackgrass, runch, charlock. Residual control only. Application required pre-emergence of the weeds. No phytotoxicity observed on any variety in 2017 (one site) 2018 (2 sites) when applied pre-emergence of the crop. Might be some summa