Grower Summary

SF 012 (GSK210)

Blackcurrant: Evaluation of Herbicides

Final 2007

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Before using all pesticides check the approval status and conditions of use.

Read the label before use: use pesticides safely.

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Further information

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GROWER SUMMARY

Headline

- Two promising new herbicide combinations have been identified for use in blackcurrants which offer viable alternatives to the standard programme using diuron + Stomp (pendimethalin).

Background and expected deliverables

Efficient and cost effective weed control is important in blackcurrants, both to prevent yield loss from competition for water and nutrients and to enable efficient harvesting without impedance by weed growth. The most recent Pesticide Usage Survey for soft fruit (2001) showed that the vast majority (92%) of blackcurrants destined for processing were treated with herbicides and that simazine was the most widely used herbicide at that time. Under the on-going European Commission (EC) review of pesticides (Directive 91/414/EEC), simazine has been reviewed and, having been omitted from Annex 1 of Directive 91/414/EEC, has since been withdrawn for use on most fruit crops. Application for emergency extension for minor use has only been made for strawberries, nursery stock and forestry.

The other low cost alternative to simazine is diuron, which is also being withdrawn and must be used up by 13 December 2008.

With the loss of both simazine and diuron for blackcurrants it is important to identify alternative herbicides for blackcurrants for economical weed control, particularly as the remaining approved products have incomplete weed control spectra, or are not cost effective for overall use.

This work is intended to benefit the industry by:

- Providing information on the effectiveness and safety of a range of herbicides and tank mixtures.
- Providing the initial screening of chemicals to enable subsequent GLP residue studies to focus on the most promising materials for specific off-label approval (SOLA) applications.

All of the proposed new herbicides will require SOLA applications, or approval through mutual recognition, to secure their use on blackcurrant crops in the UK.

Summary of the project and main conclusions

The work was conducted in a four year-old blackcurrant plantation grown for processing in East Norfolk. The experiment was done in one year only, with a range of 11 herbicide treatments (Table 1) being applied to weed-free soil at the bush base in late March at growth stage B2 (bud burst). Treatment efficacy was compared with an untreated control.

Phytotoxicity symptoms, weed control and harvested yield were recorded from April – July 2007. Samples were collected for later pesticide residue analysis.

Table 1. List of experimental herbicide treatments

Treatment	Product	Active ingredient	Product rate	Approval status
1.	Untreated control			
2.	Stomp 400SC + Unicrop Flowable Diuron	pendimethalin 400 g/L + diuron 500 g/L	5.0 L/ha + 2.0 L/ha	Label, SOLA
3.	Stomp 400SC + Artist	pendimethalin 400 g/L + flufenacet + metribuzin (24 : 17.5 % w/w)	5.0 L/ha + 2.5 kg/ha	Label, Approved on potatoes
4.	Stomp 400SC + Springbok	pendimethalin 400 g/L + metazachlor + dimethenamid-P (200 : 200 g/L)	5.0 L/ha + 2.5 L/ha	Label, Approved on oil seed rape
5.	Artist	flufenacet + metribuzin (24 : 17.5 % w/w)	2.5 kg/ha	Approved on potatoes
6.	Artist	flufenacet + metribuzin (24 : 17.5 % w/w)	5.0 kg/ha*	Approved on potatoes
7.	Springbok	metazachlor + dimethenamid-P (200 : 200 g/L)	2.5 L/ha	Approved on oilseed rape
8.	Springbok	metazachlor + dimethenamid-P (200 : 200 g/L)	5.0 L/ha*	Approved on oilseed rape
9.	Unnamed	flazasulfuron 25 % w/w	200 g/ha	Not approved
10.	Unnamed	flazasulfuron 25 % w/w	400 g/ha	Not approved
11.	BUK 9900H	Not disclosed	3.2 L/ha	Experimental
12.	BUK 9900H	Not disclosed	6.4 L/ha	Experimental

*2 x label rate

All treatments were applied on 27 March 2007 in 200 L/ha water at 2 bar pressure using a CO_2-pressurised Oxford Precision Sprayer with a 1.5 m boom and F03-110 spray nozzles.

The predominant weed species were annual meadow grass, blackcurrant seedlings, groundsel and mayweed. Cleavers, doves foot cranesbill, hairy bittercress, plantain and sowthistle were also present. Weed cover was slow to build up initially due to the dry April. However by harvest, following wetter weather in May and June, the weed cover on some untreated plots had reached 95%.

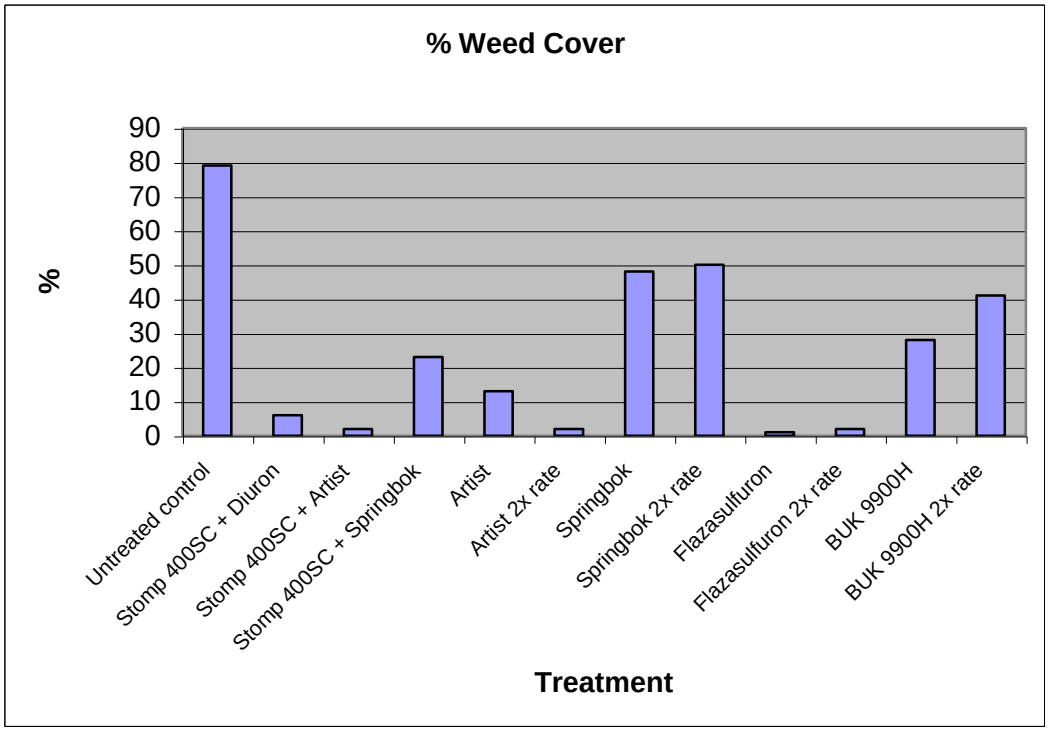
- The most effective treatments were the unnamed product (flazasulfuron), Stomp + Artist and the standard Stomp + Diuron (Figure 1).

- Flazasulfuron maintained almost complete weed control through to harvest. The few weeds that were present in these plots were mainly annual meadow grass and groundsel.

- The alternative Stomp mixture, with Artist, performed as well as the standard Stomp + Diuron. However by harvest, there were signs that the Stomp + Artist mixture was losing efficacy with a few groundsel plants appearing.

The crops were carefully monitored after treatment but no phytotoxicity symptoms were observed.

Figure 1. Percentage weed cover on 5 July 2007



The Springbok and BUK 9900H treatments did not give adequate weed control. Springbok failed to give adequate control of annual meadow grass and groundsel, and the latter two species developed extensively on these plots. BUK 9900H also failed to control groundsel and doves foot cranesbill but did control annual meadow grass.

Yields in the untreated plots were low at 4.1 t/ha. Differences in yield between treatments were relatively small.

Flazasulfuron has shown good potential for use as a blackcurrant herbicide. It is available in continental Europe as a vineyard herbicide and this active substance is on Annex 1. It has performed well in both the 2006 and 2007 blackcurrant herbicide trials with no sign of crop damage, even when applied at double rate and to crops already at bud break. Performance in other horticultural crop trials has been good, although elsewhere it has shown weakness in black nightshade control.

The Stomp + Artist mixture also shows good potential as an alternative to the current Stomp + Diuron standard. The use of Stomp with Artist improved the control of polygonum weeds and nightshades. Artist is already approved for use in the UK on potatoes and its active substances are listed on Annex 1. However it is not currently cleared for use in fruit crops in the EU. Samples from the Artist and Springbok treatments were taken for residue analysis. No residues of the active ingredients from these products were found.

Financial benefits

The Stomp + Artist treatment is £24/ha more expensive than the standard treatment Stomp + Diuron. The costs of these programs are compared below:

- Stomp (5 L/ha) + Artist (2.5 L/ha) = £77/ha
- Stomp (5 L/ha) + Diuron (2 L/ha) = £53/ha

However the Stomp/Diuron treatment will not be available after December 2008.

Compared with the typical “horticultural” products Flexidor 125 (isoxaben) and Ronstar Liquid (oxadiazon) the cost savings from using Artist are significant:

- Stomp (5 L/ha) + Flexidor (2 L/ha) = £141/ha
- Somp (5 L/ha) + Ronstar Liquid (4 L/ha) = £194/ha

The cost of a Casoron G (dichlobenil) treatment would be greater than above at £650/ha for an overall application at 125 kg/ha, but could offer a wider range of perennial weed control.

Because flazasulfuron is not yet available on the UK market it is not possible to compare its costs with other treatments.

Action points for growers

- When a SOLA is available for the use of Artist, this product should be considered the primary choice for row or alleyway weed control as a mixture with Stomp.
- If flazasulfuron becomes available in the UK either through SOLA or mutual recognition, this product could be considered as an alternative.