



Agriculture & Horticulture  
DEVELOPMENT BOARD



# **Grower Summary**

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## **SF 012 (GSK204)**

Blackcurrant: Evaluation of  
Herbicides

Final 2006

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Only officially approved pesticides may be used in the UK. Approvals are normally granted only in relation to individual products and for specified uses. It is an offence to use non-approved products or to use approved products in a manner that does not comply with the statutory conditions of use, except where the crop or situation is the subject of an off-label extension of use.

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

Read the label before use: use pesticides safely.

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**Project Number:** SF 012 (GSK204)

**Project Title:** Blackcurrant: Evaluation of Herbicides

**Project Leader:** John Atwood, ADAS UK Ltd

**Contractor/(s):** ADAS UK Ltd

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### **Further information**

If you would like a copy of this report, please email the HDC office ([hdc@hdc.ahdb.org.uk](mailto:hdc@hdc.ahdb.org.uk)), alternatively contact the HDC at the address below.

HDC,  
AHDB  
Stoneleigh Park  
Kenilworth  
Warwickshire  
CV8 2TL

Tel – 0247 669 2051

## **GROWER SUMMARY**

### **Headline**

- Four promising new herbicide combinations (free of diuron) have been identified including Calaris, Flazasulfuron, Stomp 400 SC + Butisan S, Stomp 400 SC + Artist. These may be viable alternatives to the standard programme using diuron + Stomp 400 SC if the use of diuron is restricted in the future.

### ***Background and expected deliverables***

Efficient and cost effective weed control is important in blackcurrants, to prevent yield loss caused by competition for water and nutrients and to enable efficient harvesting without impedence by weed growth. The most recent pesticide usage survey for soft fruit 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 EU review of pesticides (91/414), the use of simazine has been reviewed. Having failed to be listed in Annex 1, it has been withdrawn for use on most fruit crops. Essential use derogation for continued use on Beans, rhubarb, asparagus, hardy ornamental nursery stock, hops, strawberries has been authorised until 31.12.2007, use on other fruit crops is not permitted.

The continuing use of diuron, a low cost alternative to simazine, is also under threat although a final decision has yet to be made. If withdrawn, initial indications suggest that essential use derogation for continued use in blackcurrants would not be granted.

With the loss of simazine and impending loss of diuron for blackcurrants, it is important to develop alternative herbicides for blackcurrants for economical weed control, as the remaining approved products provide incomplete control of the weed 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 be focused on the most promising materials for SOLA applications.

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

## Summary of the project and main conclusions

The project was carried out on a four year old blackcurrant plantation grown for processing in East Norfolk. The experiment was carried out for one year, with a range of nine herbicide combinations being applied to weed free soil to the bush base in early April at growth stage B1 (bud burst) compared with an untreated control.

Phytotoxicity symptoms, weed control and harvested yield were recorded from April – August 2006. Fruit samples were collected for later residue analysis. The treatments are summarized below:

### Treatments

Treatment	Product	Active ingredient	Product rate	Approval status
1.	Untreated control			
2.	212H 50WP	Not disclosed	200.0 gm/ha	Experimental
3.	Flazasulfuron	Flazasulfuron 25 % w/w	200.0 ml/ha	Not in UK
4.	Goal	Oxyfluorfen 2 g/L	4.0 L/ha	Not in UK
5.	Calaris	terbuthylazine + mesotrione (70 : 330 g/L)	1.5 L/ha	Approved on maize
6.	Goltix WG	Metamitron 70 % w/w	2.0 kg/ha	Approved on sugar beet
7.	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
8	Stomp 400SC + Butisan S	Pendimethalin + 400 g/L Metazachlor 500 g/L	5.0 L/ha + 2.5 L/ha	Label, Approved on fruit nursery stock
9.	Stomp 400SC + Linuron	Pendimethalin 400 g/L + Linuron 500 g/L	5.0 L/ha + 1.9 L/ha	Label, Approved on vegetables
10.	Stomp 400SC + Diuron	Pendimethalin 400 g/L + Diuron 500 g/L	5.0 L/ha + 2.0 L/ha	Label, SOLA

All treatments were applied on 12 April 2006 in a water volume of 200 L/ha at 2 bar pressure using a CO<sub>2</sub>-pressurised Oxford Precision Sprayer with a 1.5 metre boom and F02-110 spray nozzles.

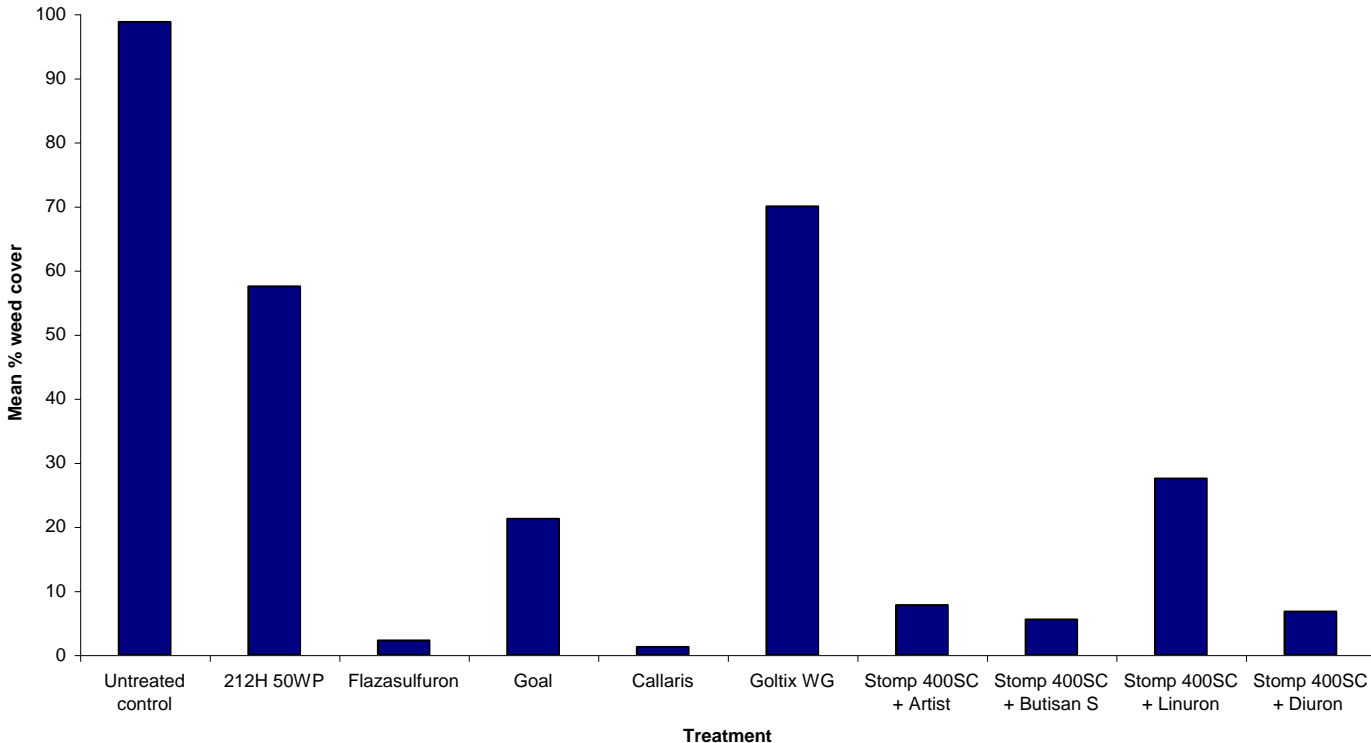
## Results

The most effective treatments were Calaris, Flazasulfuron, Stomp 400 SC+ Butisan S, Stomp 400 SC + Diuron and Stomp 400 SC + Artist. Both Calaris and Flazasulfuron maintained almost complete weed control through to harvest. The few weed species that were present

in these plots were predominantly annual meadow grass. The alternative Stomp 400 SC mixtures, with Butisan S or Artist, performed as well as the standard Stomp 400 SC + Diuron. The Stomp 400 SC + Artist and Stomp 400 SC + Butisan S mixtures allowed a few annual meadow grass weeds to germinate as did the standard Stomp 400 SC + Diuron treatment. The latter also completely failed to control groundsel and redshank. A few redshank and groundsel weeds also developed later in the Stomp 400 SC + Artist and Stomp 400 SC + Butisan S plots.

The predominant weed species were annual meadow grass, blackcurrant seedlings and mayweed. Redshank, black bindweed, knotgrass and groundsel were also present. Weed cover was slow to build up. However by harvest the weed cover on the untreated plots had reached 100%. The results are summarized in the graph below.

**Blackcurrant herbicide - Mean % weed cover, 04/08/06**



The 212H 50 WP, Goal, Goltix WG and Stomp 400 SC + Linuron treatments did not give adequate weed control. 212H 50 WP failed to control blackcurrant seedlings, annual meadow grass and knotgrass. The latter two species developed extensively in these plots. Goal failed to control annual meadow grass and blackcurrant seedlings. The Linuron mixture with Stomp 400 SC was less effective than the other partners Butisan S or Artist, failing to adequately control annual meadow grass, blackcurrant seedlings and groundsel. Black bindweed and mayweed also developed later in these plots.

Two weeks after treatment slight marginal yellowing was noted on the lowest leaves of bushes in the Calaris treated plots. At subsequent monitoring the symptoms disappeared. No other phytotoxic symptoms were noted.

Yields in the untreated plots were 14.5 T/ha. Differences in yield between treatments were relatively small. There was an indication that the standard treatment Stomp 400 SC + Diuron had reduced yield slightly at 13.8 T/ha.

Calaris has shown good potential for use as a blackcurrant herbicide. The product is already approved for use in the UK on Maize and its active ingredients are listed in Annex 1 of 91/414/EC. One of the active ingredients, terbuthylazine is already used on blackcurrants in New Zealand. Flazasulfuron could also be developed for use in blackcurrants, but at present is not sold in the UK. It is available in continental Europe as a vineyard herbicide and the active is on Annex 1. Two other products, Butisan S and Artist could be developed for use in blackcurrants, principally as tank mix partners with Stomp 400 SC which adds improved control of polygonum weeds and nightshades.

The weed control spectra for the products tested is show below for reference. Information was taken from the manufacturers' product labels. For some products not sold in the UK the information on UK weeds is incomplete. No information relevant to UK conditions was available for Flazasulfuron

S = Susceptible

MS = Moderately susceptible

MR = Moderately resistant

Blank = No information available

Common name	212H	Calaris	Goal	Goltix	+ Stomp Butisan	+ Stomp Artist	+ Stomp Diuron	+ Stomp Linuron
Bindweed, black		S	S	MR	S	S	S	S
Bugloss								S
Charlock				MS				S
Chickweed, common	S	S		S	S	S	S	S
Cleavers			S	R	S	S	S	S
Corn marigold				S	S	S	S	S
Corn spurrey				S			S	S
Crane's-bill, cut-leaved			S		S			
Deadnettle, henbit					S	S	S	S
Dead-nettle, red		S		MS	S	S	S	S
Dock(seedling), broad-			S	S				
Fat-hen	S	S	S	S	S	S	S	S
Fool's parsley				S		S		
Forget-me-not, field		S		S	S	S	S	S
Fumitory, common			S	MS	MS	S	MS	MS
Gallant-soldier								S
Groundsel	S		S	S		S	S	S
Hemp-nettle, common		S		S	S	S	S	S
Knot-grass		MS	S	S	S	S	S	S
Mayweed, scented	S	S	S	S	S	S	S	S
Mayweed, scentless	S		S	S	S	S	S	S
Nettle, small			S	S			S	S
Nightshade, black	S	S	S	MR	S	S	S	S
Orache, common		S	MS	S		S	S	S
Pansy, field	S	S		S	S	S	S	S
Parsley piert					S	S	S	S
Pennycress, field	S	S		S			S	S
Persicaria, pale		S	S	MS				S
Pimpernel, scarlet				MR	S	S	S	S
Pineappleweed	S			S	S	MS	S	S
Poppy, common				S	S	S	S	S
Redshank		S	S	MS	S	S	S	S
Shepherd's-purse		S	S	S	S	S	S	S
Sow-thistle, smooth	S		S		S	S	S	S
Speedwell, common, field		S	S	S	S	S	S	S
Speedwell, ivy-leaved				MS	S	S	S	S
Sun spurge				S				
Thistle, creeping				R				
Wild radish				MR				S
Annual meadow-grass	S	S		S	S	S	S	S
Black-grass					S	S	S	S
Brome, barren								
Wild-oat								
Volunteer oil-seed rape					MS	MS		MS

## Financial benefits

In this experiment the best treatment for weed control Calaris, was £20/ha cheaper than the standard treatment Stomp 400 SC + Diuron. The costs of some programs are compared below:

- Calaris (1.5 L/ha) £35/ha
- Stomp 400 SC (5 L/ha) + Artist (2.5 L/ha) £77/ha
- Stomp 400 SC (5 L/ha) + Diuron (2 L/ha) £53/ha

Compared with typical “horticultural” products Flexidor 125 and Ronstar Liquid the cost savings from using Calaris are more significant:

- Stomp 400 SC (5 L/ha) + Flexidor (2 L/ha) £141/ha
- Stomp 400 SC (5 L/ha) + Ronstar Liquid (4 L/ha) £194/ha

The cost of a Casaron Granule 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.

## Action points for growers

- When a SOLA becomes available for the use of Calaris, this product should be considered the primary choice for row or alleyway weed control. Should any SOLA become available to the industry, care would need to be taken given that some slight phytotoxicity occurred to the crop using this product. All SOLAs are used at growers own risk.
- If Flazasulfuron becomes available in the UK either through SOLA or mutual recognition, this product could be considered as an alternative to Calaris.