Grower Summary

SF 012 (GSK194)

Winter chilling requirements of blackcurrants:
An assessment of the chilling requirements for a range of cultivars at the Bradenham Hall trial site

Annual 2003

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Further information

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GROWER SUMMARY

COMMERCIAL BENEFITS OF THE PROJECT

By assessing the chilling response of existing and potential cultivars in a formalised manner, it will be possible to predict their performance in seasons where low levels of chilling may be received. It is possible that with the onset of global warming, warmer winters could be more frequent and the selection of cultivars with a low winter chill requirement will be important.

BACKGROUND AND OBJECTIVES

There is increasing evidence that the amount of cold experienced by blackcurrant cultivars, in some regions, in some winters, is inadequate, leading to delayed and uneven bud break, with consequent adverse effects on yield and quality.

Following assessment of the chilling response, at the end of the trial it will be possible to rank all of the cultivars that are growing at the Bradenham Hall trial site, with respect to their winter chilling requirement. This information, taken together other parameters, will help growers to assess the suitability of a given cultivar for growing on a given site.

SUMMARY OF RESULTS AND CONCLUSIONS

Branches from each cultivar in the trial were cut twice weekly from January to March 2003, and kept at 20°C for 21 days. Following assessment using 75% bud break as the criteria for the chill requirement having been met, the following provisional ranking of cultivars was derived.

Table 1: Cultivar Ranking

Row	Cultivar	Date sufficient chill received for 75% bud break	Chill Units	Heat Units	50% Flower	1st Grape
32	9032-1	16/1/03	1331	269.7	18/4	3/4
22	88111-4	20/1/03	1409	264.5	18/4	7/4
31	Ben Gairn	20/1/03	1409	264.5	18/4	9/4
21	Ben Hope	28/1/03	1577	268.2	20/4	14/4
23	8922-11	28/1/03	1577	246.0	18/4	7/4
9	S18-10-18	31/1/03	1647	298.1	23/4	16/4
12	8944-13	3/2/03	1719	298.1	23/4	16/4
18	8972-1	3/2/03	1719	244.7	18/4	7/4
5	903-1	13/2/03	1918	352.5	28/4	17/4
17	Baldwin	13/2/03	1918	191.9	15/4	2/4
36	8999-9	13/2/03	1918	253.6	20/4	14/4
27	Ben Dorain+	17/2/03	2014	-	-	-
30	896-4	17/2/03	2014	295.4	23/4	10/4
14	S18-25-20+	21/2/03	2104	-	-	-
15	S30-13-35	21/2/03	2104	295.4	23/4	18/4
24	Ben Lair+	21/2/03	2104	-	-	-
3	8814-2	24/2/03	2157	294.6	23/4	14/4
26	Ben Avon+	24/2/03	2157	-	-	-
28	894-2	24/2/03	2157	272.8	22/4	16/4
33	8949-15	24/2/03	2157	294.6	23/4	14/4
20	Ben Lomond	28/2/03	2221	282.2	23/4	16/4
2	8962-1	3/3/03	2250	448.8	8/5	30/4
35	8942-5	3/3/03	2250	266.4	23/4	16/4
37	8966-9	3/3/03	2250	255.2	22/4	16/4
4	871-5	7/3/03	2296	306.7	28/4	19/4
8	8982-6	7/3/03	2296	355.3	2/5	25/4
10	S18-3-70	7/3/03	2296	411.3	6/5	30/4
11	S18-2-23	7/3/03	2296	411.3	6/5	28/4
7	8986-13	10/3/03	2328	309.8	28/4	18/4
19	8955-2+	10/3/03	2328	-	-	-
38	Ben Tirran	14/3/03	2397	-	-	-
39	Ben Alder	24/3/03	2550	-	-	-

+ These cultivars were grubbed due to reversion before completion of the trial, at 10/3/03 insufficient chilling had been received on 8955-2.

Chill Units – Total number of hours below 7^{o}C recorded from 1st October 2002 to the date on which sufficient chilling had been received for >75% bud break after 21 days at 20^{o}C
Heat Units – Total number of day degrees (base temperature 4^{o}C) accumulated from the date of sufficient chill to the date of 50% flower open in the field.

ACTION POINTS FOR GROWERS

- Cultivars Ben Gairn, Ben Hope, 9032-1, 88111-4, 8922-1, S18-10-18, 8944-13, and 8972-1 could be classified as having a low winter chill requirement and would be suitable for use in areas of minimal winter chill.
- Cultivars Baldwin, Ben Dorain, Ben Lair, Ben Avon, 903-1, 8999-9, 896-4, S18-25-20, S30-13-35, 8814-2, 894-2, and 8949-15 could be classified as having a moderate winter chill requirement
- Cultivars Ben Lomond, Ben Tirran, Ben Alder, 8962-1, 8942-5, 8966-9, 871-5, 8982-6, S18-3-70, S18-2-23, 8986-13 and 8955-2 could be classified as having a high winter chill requirement and would be likely to under perform in areas where minimal winter chilling is likely to be received.

ANTICIPATED PRACTICAL AND FINANCIAL BENEFITS

The winter chill ranking could be used to decide suitability of existing and potential new cultivars for planting in areas with different winter climates. Planting unsuitable cultivars can result in uneven bud break, uneven ripening and poor yields.