

# Report to the Horticultural Development Council on Project No. SF/8B

## RASPBERRY & BLACKBERRY: THE BREEDING AND SELECTION OF IMPROVED CULTIVARS FOR THE UK

### Introduction

The withdrawal of Government funding from the near-market areas of research together with the threatened withdrawal of funding for strategic science associated with near-market areas if industrial funding is not forthcoming has made the support by the UK industry (through the HDC) imperative to the continuance of *Rubus* (raspberry, blackberry and hybridberry) breeding at the SCRI.

Although located in Scotland the SCRI soft fruit breeding and associated research programmes produce cultivars which have been and hopefully will continue to be of benefit to the whole of the UK soft fruit industry. For instance, the new spine-free blackberry cultivar Loch Ness, despite being bred in Scotland, actually performs much better under the warmer conditions that prevail in England and both the SCRI raspberry cultivars Glen Moy and Glen Prosen are widely and extensively grown north and south of the border.

The tangible support of the industry (through the HDC) for the SCRI *Rubus* breeding programme has also helped to persuade other organisations, namely Scottish Enterprise (Tayside) and Tayside Region Industrial Office, to contribute on at least a short-term basis towards the funding. In this fashion the soft fruit industry is actually receiving exceptionally good value for money.

### Results

Crossing at SCRI is normally performed in insect-proof glasshouses outwith the normal flowering season for raspberries. This is more efficient than field crossing in that it removes the need for many of the less productive tasks normally associated with breeding, eg applying and removing pollination bags, emasculating raspberry laterals in rain and strong winds. At present we have just completed the 1992 crossing programme in which some 70 crosses were made.

The main objectives of the programme have been virtually unchanged over the past five years with resistance to pests and diseases, good post-harvest shelf-life for the fruit, attractive well flavoured fruit, high yield and good plant habit receiving high priority. Of increasing importance is suitability for machine harvesting and several selections were evaluated for this in the 1991 season. These evaluations will be repeated in 1992 to give greater confidence in the veracity of the results and to determine if any selections are particularly prone to carry-over effects in the following season.

When the fruit from the crossing programme ripens it is harvested and the seed extracted with a liquidiser. The non-viable seeds float on water and are discarded whilst the 'sinkers' are

dried on filter paper ready for the subsequent seed treatment.

The crossing in 1991 was performed prior to the withdrawal of Government funding and hence does not constitute part of this report but the seed from those crosses was treated with concentrated acid and chilled for six weeks in moist sand to aid germination solely because of the industry funding post April 1991. The resulting seedlings, consisting of many thousands of genetically unique individuals, were first closely examined and selected so that only those that would mature to produce plants totally devoid of spines were left. When these young plants reached only a few centimetres in height they were inoculated with four aphids (greenfly). If the aphids subsequently multiplied to produce a colony on a seedling then that plant was discarded. The uninfested seedlings were hardened-off ready for field planting in early August.

Last year we planted approximately 4,000 seedlings in the field. These plantings could result in a cultivar for release to the industry in about the year 2010 since it takes 15-18 years from making the cross to releasing a new raspberry cultivar in commercial quantities to growers.

In the meantime, the SCRI programme has seedlings at various stages of selection which have resulted from the past 20 years or more of crossing and these were also further evaluated in the fruiting season of 1991. Twenty-five selections were regarded as worthy of further evaluation and root material from these was harvested so that clonal propagation could produce at least eleven identical plants of each of these selections. One plant was placed in a screen house to prevent contamination with virus and will ultimately be the mother plant which supplies the industry with healthy planting stock. The remaining ten were planted as two duplicate plots of five plants each. This will permit preliminary yield records to be collected in 1994 and 1995.

Of the advanced selections three were regarded as extremely promising and have been sent for further trial and registration as new cultivars. Final decisions on their release will not be made for another two years. Their SCRI breeding numbers are 44C9, 15A12 and 32A3.

The continued flow of new cultivars into industry from SCRI is totally reliant on the financial support of the industry and I am extremely grateful to the HDC for permitting SCRI to continue to provide this vital service.

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