



RHASS Presidents' Initiative for 2023

The RHASS Presidents' Initiative for 2023 will raise awareness of the critical role science plays in our food and drink sector.

CASE STUDY:

Blackcurrant breakthroughs breed scientific success for Ribena



The James
Hutton
Institute

Case Study Partner

The James Hutton Institute is a well-respected and globally recognised research organisation delivering fundamental and applied science to drive the sustainable use of land and natural resources.

It makes a major contribution to the understanding of key global issues, such as food, energy and environmental security, and developing and promoting effective technological and management solutions to these.



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—
Dr Jontahan Snape, JHI

Overview

The James Hutton Institute (JHI) runs the world's leading blackcurrant breeding and research programme and is working alongside farmers to grow more resilient and sustainable blackcurrant crops.

The JHI works in partnership with Suntory Beverage and Food Great Britain and Ireland (SBF GB&I), makers of the popular Ribena blackcurrant drink, and almost half of blackcurrants grown around the world and almost all British-grown blackcurrants, are from varieties bred by the

institute.

SBF GB&I has invested more than £10 million in its research programme with James Hutton Ltd (JHL), the commercial research and consultancy arm of the JHI.

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Climate focused research

Head of James Hutton Ltd, Dr Jonathan Snape, has been working with generations of blackcurrant farming families, like the Husbands at East Adamston Farm, to help them breed new varieties that can cope with climate change.

“The impact of climate change is a huge threat, particularly to growers in the south of England

which has the warmest winters,” says Dr Snape. “Blackcurrants need cold weather in effect to reset their internal clocks to allow the buds to break evenly in spring, after a warm winter we see very uneven bud break which leads to uneven flowering and ripening, which for a crop which is harvested once by machine is a big problem”.



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This case study is one in a series, highlighting where farmers, across a range of different sectors, have benefited from scientific advancements.

The Ribena research programme developed a practical solution by breeding a new variety of blackcurrant called Ben Lawers which can thrive in warmer winters, helping farmers overcome a major sustainability challenge.

All JHL blackcurrants are named after Scottish mountains with the pre-fix Ben and protected under plant variety rights.

Then JHL scientists raise young plants in a glasshouse and test for viruses, protecting the health of the 'mother plant' and nurturing 'daughter plants' which are later bulked up by propagators to be grown commercially by farmers contracted to SBF GB&I.

The first commercial harvest of the new Ben Lawers variety took place in 2020, marking the Ribena programme's latest major

Disease resistant varieties

Other breakthroughs achieved by JHI scientists include breeding varieties which produce a higher fruit yield, as well as varieties with improved resistance to common pests affecting blackcurrants, such as gall mite.

"We were the first to develop molecular markers for breeding," continue Dr Snape. "That creates

a short cut to understanding the characteristics of each variety – such as which is resistant to one particular pest for example, and which is not.

"That reduces risk for the grower and ultimately for the partner reliant on the crop and it greatly increases the efficiency of the process.

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Working with farmers

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The Husbands who farm at East Adamston, by Dundee, are one of only four blackcurrant suppliers for Ribena in Scotland and together they supply 15% of all fruit for the company.

Andrew Husband received a contract to supply blackcurrants to Ribena in the late 1980s and has now been working with the company for 34 years, making significant changes to the varieties they grow to keep up with changes in the weather and disease pressures.



Scotland's cooler climate

Andrew explained that Scotland's climate is preferable for blackcurrant production but that they are constantly needing to work with scientists to identify the right varieties to temper climate pressures ahead.

"Blackcurrants need cool temperatures over the winter months, at least 2000 hours under seven degrees between September and February, otherwise you get uneven ripening which affects tonnage. UK winters are getting warmer, but Scotland will be in a stronger position going forward due to its cooler climate.

Breeding successes

"We have suffered with issues of blackcurrant reversion, which lead to reduced yields and bush infertility," explained Andrew. "The virus is spread by eriophyid gall mites, which we weren't able to control with chemicals. Working with JHI on a breeding programme we found that the Ben Gairn variety was the only variety resistant to reversion virus and instead of getting 10 years out of a bush rotation, we have a plantation that is nearing 23 years old.

"We have also been looking at two new varieties Ben Starav and Ben Kilbreck, which offer longer harvestability. Older varieties would ripen in two or three days and drop to the ground, where

"We are lucky here in Scotland that we farm close by to the JHI, where 98% of all blackcurrant varieties are bred, and we work closely with them, investing in R&D and taking part in field trials."

Andrew grows five varieties of blackcurrants on the farm, which all have different ripening periods. He is working with scientists at the JHI to look for varieties which are going to better suit the warming climate and don't need winter chill such as Ben Lawers, but has also had success in the past with disease resistant varieties.

these two varieties give a longer harvest interval and are tougher for machine harvesting.

"It is important for us to listen to the science as we are constantly thinking seven years ahead in planning. When we plant a bush, it is four years until we can fully crop it, so we need to be constantly working with the team at JHI, listening to forecasts and trialling new varieties which will better suit in the years ahead."

