Introduction

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Welcome to this report of the year 2006 at SCRI. From my perspective it was a year of thirds – the first part spent completing the science strategy and accompanying finance, estates, human resource and communications strategies; the second part ensuring that the research commissioned by our major customer,

the Scottish Executive Environment and Rural Affairs Department (SEERAD), got underway; and the last part dealing with issues affecting the longerterm sustainability of the Institute including restructuring some elements of our science and service programmes. The last third was clearly a difficult period as we stopped some longstanding activities, and I am grateful to all staff for their patience and understanding as we undergo that necessary change.

This year also saw a



agreed outputs and outcomes. This change of funding model, together with new requirements under Scottish law applying to charities, mean that SCRI is definitely no longer a "SEERAD Institute" but a research institute whose major customer is (and will continue to be for the foreseeable future) SEERAD. We have indicative

> funding from SEERAD for several five-year workpackages, some of which SCRI is responsible for delivering alone, but others are in partnership with the Macaulay Institute and Scottish Agricultural College. SCRI is particularly grateful to Professor Janet Bainbridge, Professor John Porter and Mr **Douglas Morrison** for agreeing to be external members of the Advisory Group overseeing the development of the workpackage research and delivery of the

major change in the way that SCRI is funded by its major customer, SEERAD. From 1 April 2006, SCRI no longer receives a block grant but is contracted to contribute to agreed programmes of research with

contracted outcomes. Simultaneously, we are working hard to broaden the base of funding, and were pleased to receive funding from the BBSRC Crop Science Initiative for three projects involving SCRI, and funding to lead a study of the barley genome involving European partners.

2006 was the first full year of operation of our four new science programmes, and we welcomed to the Institute Professor Philip White as Programme Leader for Environment Plant Interactions and Professor David Hopkins as Director of Science Planning. While the context of our work continually changes, we have continued to do excellent research and to fulfil our vision and mission. Details are in the narrative that follows, but I should like to draw particular attention to the progress that has been made to determine the persistence of GM herbicide tolerance traits in the environment, which has informed government policy on the management of GM crops, and the use of genome sequencing (combined with bioinformatics and functional genomics techniques) on Pectobacterium atrosepticum (formerly Erwinia carotovora spp. atroseptica) that have led to new insights into how this bacterium survives when no potatoes are present, and deepened our understanding of quorum sensing. Substantial progress has also been made in analysis of the barley genome, with the publication of results from elite northwest European barley cultivars demonstrating that repeated outcrossing has reduced the extent of linkage disequilibrium to a level where false positive associations of genes and traits is unlikely; this means that it ought to be possible to identify candidate genes for traits, and to develop markers for their selection during breeding. Our research on human health and nutrition continues to expand with the finding that ellagitannins from berry extracts had significant anti-cancer effects in cultured cancer model cells, and that raspberry extracts were effective against the initiation, growth and invasiveness of colon cancer cells. Who knows exactly what this stream of new scientific knowledge will lead to, but past science and innovation continue to deliver new products into the market in collaboration with our commercial partners. Noteworthy were the launch in July of the first new raspberry variety for ten years, Glen Doll, developed from a cross that was originally made back in 1990, and the launch in October by Greenvale AP of the phureja potato Mayan Gold. The science underpinning

the latter goes back many decades and involved genetics, physiology, agronomy and biochemistry in its development into a potential food; we shall follow the commercial development with interest.

One of the major strands of our science strategy is that we should seek to develop and strengthen appropriate partnerships and collaborative arrangements that will enable our mission to be carried out more effectively. I have spent quite a lot of my time trying to make that a reality at several levels. First, all of the directors of SEERAD's main research providers now meet regularly to discuss topics of mutual interest, and that is starting to lead to more coordinated approaches to policy matters. We are, for example, about to produce a brochure setting out the distinctive contribution that the Institutes make to Scotland and internationally. Second, SCRI is developing a network of links with universities throughout the UK through its new studentship programme that is broadening the skills base accessible to the Institute. Our partnership with the University of Dundee has been strengthened and extended beyond the plant sciences, and we shall be contributing research on plant mediated transfer of carbon to soils via the Scottish Alliance for Geosciences, Environment and Society. Third, SCRI is a partner with Rothamsted Research, the Institute of Grassland and Environmental Research, and the John Innes Centre in the BBSRC cross institute programme on cereal genetics, and is contributing some of its research activity on soils to a similar programme involving Rothamsted Research and the Institute of Grassland and Environmental Research. These programmes are important contributions to the UK science base and will strengthen our abilities to contribute internationally. Finally, during the year I visited the International Potato Center (CIP) in Peru and several institutions in China with which SCRI has been developing links. These international collaborations have much potential for development, but are already providing staff at SCRI with enlarged perspectives of the scope and applicability of their research endeavours.

I hope that you will enjoy reading about our year. I am very pleased to be leading such a dynamic group of people.