Mylnefield Research Services Ltd., The Mylnefield Trust and Mylnefield Holdings Ltd.

N. W. Kerby and J. B. Snape

Introduction Mylnefield Research Services (MRS) Ltd., the wholly owned subsidiary of the Scottish Crop Research Institute (SCRI), was established in 1989 as the commercial arm of SCRI to enhance competitiveness, understand and fulfill the needs of the life sciences and "agro" industries.

MRS aims to match the outstanding quality of science at SCRI with excellence in technology transfer and commercialisation.

MRS works to help SCRI fulfill its mission by supporting SCRI's Corporate Plan and the SEERAD Strategy for Agriculture, Biological and Related Research (1999-2003). It does this by providing links between end-users and the Institute, providing funds that can be reinvested in strategic areas of research and by marketing the activities of the Institute internationally. The Mission Statement of MRS is:

"To develop commercially the Scottish Crop Research Institute's scientific expertise, resources and intellectual property, and to improve the quality of services to achieve new standards of excellence".

Our overall intention is to be a significant part of the creation of the knowledge economy in Scotland and in terms of the local economy, to create the base from which new, innovative technology-based businesses will be established, and reinforce the success of existing companies.

The business of MRS can be divided into six complementary activities, namely:

Contracts Office

Project Management

Contract Research

Analytical Services

Sale of Products

Licensing and IP management

Finances From the time of incorporation, MRS has been self-sufficient in providing its own accommodation and staffing, achieved without Government start-up funding, subsidy or venture capital. Turnover increased from £0.7 million in 1992/1993 to more than £2.5 million in 1999/2000 which was maintained in 2000/2001. The turnover for financial year 2001/2002 was £1.94 million. The percentage of income derived from contract research was down compared with the previous year, whereas royalty income continued to grow. The drop in turnover was attributed to four main causes: (i) public perception of GM crops causing several customers and many potential customers to discontinue research in this area; (ii) restructuring of all the major life science companies involving first consolidation and then divesting of ag-biotech activities, a phenomenon especially pronounced in the UK; (iii) low profitability in the whole of the agricultural sector, especially in the UK and; (iv) revaluation of technology stocks and lack of R&D investment in technology.

Despite the drop in turnover, MRS still managed to gift £138k to SCRI and £20k to the Mylnefield Trust. A further drop in turnover is predicted in 2002/2003 due to continuing difficulties in the agriculture and ag-bio industries.

The Lipid Unit continues to be profitable and is currently adapting its procedures so that it is compliant ith Good Laboratory Practice (GLP). In 2002, MRS signed a three-year contract with Laxdale Ltd of Stirling to provide serum lipid analysis services. The Unit continues to offer a wide range of specialist analytical services, offers training courses and undertakes contract research. The Unit also successfully tendered for a Food Standards Agency project on maize oil authenticity.

Position	Variety	Crop
1	Symphony	Strawberry
2	Ben Hope	Blackcurrant
3	Ben Alder	Blackcurrant
4	Glen Ample	Raspberry
5	Ben Gairn	Blackcurrant
6	Caledonian	Kale
7	Loch Ness	Blackberry
8	Ben Tirran	Blackcurrant
9	Spey	Potato
10	Claret	Potato

Figure 1 MRS royalty earners.

Royalty income grew from £200k in 2000/2001 to over £220k in 2001/2002. Figure 1 shows the top ten royalty earners for MRS in 2001/2002.Sales of Symphony remained more-or-less constant in the UK but new licenses granted in the rest of Europe started to generate income. The real success story of the year was the new blackcurrant varieties, Ben Hope and Ben Gairn, bred by Rex Brennan for Glaxo SmithKline. The demand outstripped supply and the varieties attracted considerable interest throughout Europe and beyond. The raspberry variety Glen Ample became established as the industry standard in

Territory	Title	Inventors	Application No	Status	Priority Date	International Filing date
European	PHYTOPHTHORA PCR PRIMERS	A Dolan J M Duncan D E L Cooke	EP96303105.9	Undergoing Examination	4.5.95	2.5.96
USA Japan EU Canada Australia New Zealand	METHOD (PHAGE TYPING)	B Hyman I Toth	PCT/GB99/01363	Proceed to Grant Pending Pending Pending Pending Pending	2.5.98	2.5.99
PCT Eu Australia Canada New Zealand USA	METHOD OF PRODUCING CHIMERIC PROTEINS	S N Chapman S P Santa-Cruz K J Oparka T M A Wilson	PCT9501443 EP95934228.8 AU36598/95 CA2202761 NZ294014 US844045	 Pending Granted Granted Granted Granted (6232099)	18.10.95	18.10.95
USA EU	TRANSPORTER PROTEIN	M E Talianski E V Riabov D J Robinson T M A Wilson	PCT/GB99/02424	Pending	29.8.98	29.8.99
PCT	GENE SILENCING SUPPRESSOR	M E Talianski E V Riabov S A MacFarlane B Reavy	0101513.0	Pending	19.1.01	19.1.02
GB	NUCLEOTIDE PYROPHOSPHATASE	R Viola R Hancock H Ross C Simpson A De Matteo	0219931.3	Provisional Filing	28.8.02	28.8.03
PCT	PROTECTION AGAINST GENE SILENCING	M E Talianski E V Riabov S A MacFarlane B Reavy	0101505.6	Pending	19.1.01	19.1.02
PCT (Biosource Genetics Corporation)	EXPRESSION OF FOREIGN GENES FROM PLANT VIRUS VECTORS (IRES)	S P Santa Cruz G P Pogue R L Toth S N Chapman F Carr	PCT09/758,962	Pending	08.1.01	08.1.02
PCT (Norsk Hydro)	AGRICULTURAL COMPOSITION AND METHOD FOR TREATMENT OF PLANTS THEREWITH	A C Newton G Lyon K Holmes W Smith K Osnes	PCT/NO01/00322	Pending	28.7.00	28.7.01

Table 1 SCRI IP portfolio.

Agbiotech Market Bayer's acquisition of AventisCrop Sciences means that in 2002 there were just six agrochemical multinationals with sales of more than $1,000 million compared with 11 in 1995. The recent wave of consolidation left the second tier of agrochemical majors even further behind the market leaders. The deployment of enabling genomic, proteomic, and metabolomic technologies across the agricultural and pharmaceutical sectors to form global life science companies was no longer accepted by investors and analysts – the life sciences concept of the late 1990s has been truly buried. The payoff and profits are very different for the two sectors. The pressure to consolidate business interests is still strong and agricultural activities are being consolidated into separate free-standing companies (e.g. Monsanto, Syngenta and Bayer Crop Science).

About 85% of the revenue of the agriculture market is generated by sales of pesticides and other crop protection products. The remaining revenue comes from seed and intellectual property.

The seven largest agrochemical companies accounted for approximately 80% of global sales (Table 2). The current market leader Syngenta experienced the largest decline in sales among the majors in 2001. Syngenta shut 10 of its manufacturing and supply facilities and 6 of its technology centres following a world wide review of its capacities. Bayer and Aventis recorded the greatest sales increase from existing business. Bayer and Aventis were out performed only by BASF and Dow AgroSciences, who grew mainly due to the acquisition of Cyanamid and Rhom and Haas's agrochemical business respectively. Monsanto agrochemical sales suffered from lower sales of Roundup. However, seed and genomics increased from $1,608m to $1,707m an increase of approximately 6%. Monsanto reduced its earning forecast for 2002 by 30% due to a slow start to the season in the US and worsening economic problems in Latin America. Monsanto and BASF both posted double-digit sales declines in the first half of 2002.

Rating 2000	Rating 2001	Company	2000 Sales ($M)	2001 Sales ($M)	% Change
1	1	Syngenta	5,888	5,385	- 8.5
3	2	Aventis	3,659	3,842	+ 5
2	3	Monsanto	5,493	5,462	- 0.6
6	4	BASF	2,228	3,105	+ 20.0
4	5	Dow	2,346	2,612	+ 11.3
4	6	Bayer	2,252	2,418	+7.4
7	7	DuPont	2,009	1,917	- 4.6

Table 2 Agrochemical Sales of the Leading Companies (Agrow 29 March 2002).

The customer base for contract research in ag-genomics and sale of proprietary intellectual property is dominated by 6 (note merger of Bayer and Aventis) major ag-bio players.

the UK and Caledonian kale continued to gain market share, primarily for game cover use.

Our current patent portfolio consists of 9 patents (either applied for or granted), and in excess of 45 cultivars protected by Plant Variety Rights (or rights applied for) (see Table 1)

Following its launch in January 2001, the Management Advisory Package for Potato (MAPP) has attracted considerable interest, both in the UK and overseas. This interactive computer package, which helps with critical decisions related to optimizing financial returns from potato production, has been purchased by growers, agronomists, food processors and for educational use. MAPP has a critical role to play in transferring knowledge from the science base to the end-user to increase productivity and maintain margins.

To consolidate and grow MRS from its stable foundations, our strategy can be summarised as follows:

- Continue to build relationships with key customers to maximize value.
- Win new contracts, diversify the funding base and increase financial returns to SCRI.
- Identify, build and exploit innovative platform technologies and IP.
- Develop new products and capture greater value.
- Deliver high quality, profitable services and consultancies.
- Create strategic alliances, partnerships, joint ventures and businesses.
- Ensure MRS offers value for money both for SCRI and its customers.

To implement our strategy, we will satisfy customers; attract new business; invest in people; reward success;

deliver quality services; conduct technology audits and implement technology foresight; and manage risk.

New Appointments New appointments in 2001/2002 include Ruth Razzo in the lipid analysis unit, Derek Coyle (potato breeding) and Nikki Wood, Tiina Martila and Velia-Matti Rokka (externally-funded projects). MRS would like to congratulate Lesley Beaton on achieving her MBA at the University of Abertay Dundee.

Acknowledgements MRS gratefully acknowledges the cooperation of SCRI scientists, administrative and field and glasshouse staff for their contribution to the success of the company. MRS would also like to thank all the companies and other sponsors of work at SCRI for their continued support.

The Mylnefield Trust

The Mylnefield Trust was registered in 2000 as a charity with objectives to: - promote research and scientific work in the life, environmental and related sciences, in particular production of agricultural, horticultural and forestry crops, methods of limiting or eradicating pests and diseases, wood sciences and biomathematics, methods of increasing production or growth, improving cultivation and research into improved cultivars; - promote the dissemination of such research. The Trust, as of 1 April 2002 has funds in excess of £225,000.

Nigel Kerby discussing MAPP with the Rt Hon Michael Meacher MP at the Royal Show 2002.

The Trust has recently supported the following:

An Incentive Fund to provide further support for scientists actively winning external contracts.

Funds to support an Education Officer at SCRI

A hardship fund for an overseas PhD student

Mylnefield Holdings Ltd.

In February 2000, Mylnefield Holdings Ltd. was incorporated as a wholly owned subsidiary of The Mylnefield Trust. A new company PhyGene Ltd. was also incorporated as a wholly owned subsidiary of Mylnefield Holdings, but has yet to trade. Mylnefield Holdings was established to facilitate the creation of new ventures such as “start-up” and spin-out companies.