Rural Policy Centre

SRUC

Feeding the Future – Innovation Requirements for Primary Food Production in the UK to 2030

SRUC, January 2013

Consultation Response

Leading the way in Agriculture and Rural Research, Education and Consulting

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Introduction

SRUC (Scotland's Rural College) welcomes the opportunity to contribute to the consultation on 'Feeding the Future – Innovation Requirements for Primary Food Production in the UK to 2030'.

SRUC is an innovative, knowledge-based organisation that supports the rural sector through research, education and expert consultancy services. SRUC wishes to see, and contribute significantly to delivering, a sustainable agricultural and rural land use sector in Scotland. SRUC staff work in a broad range of areas (for more information see www.sruc.ac.uk) and our responses to the questions below reflect this broad expertise, but draw on specific research projects where appropriate.

Several SRUC staff have contributed to this submission[1] which has been co-ordinated by SRUC's Rural Policy Centre. The submission is divided into three parts: the first provides some general comments on the report, the second discusses some more specific issues, while the third section focuses on suggestions for improving the clarity and impact of the report.

SRUC would also like to make reference to our (as SAC) response to the House of Lords Inquiry on Innovation in EU Agriculture which contains some further points that are of interest and relevance to this Consultation.

[1] Professor George Marshall, Professor Geoff Simm, Professor Alistair Stott, Dr Andrew Barnes, Dr Cath Milne, Dr Chrysa Lamprinopoulou, Dr Fiona Burnett, Dr Steve Hoad and Dr Jane Atterton.

General Comments on the Report

- SRUC strongly supports the general nature of the priorities and recommendations in the report. In particular, the report sets out well the generic priorities required for applied UK agricultural R&D needed to address global challenges and opportunities in the food sector. The report sets out the key drivers of and barriers to important changes in the nature, commissioning and deployment of research in this area.

- Given the mounting evidence for the renaissance of agricultural research across many independent authorities the report is timely and informative.

- SRUC acknowledges the support from RESAS (Scottish Government) and other UK/European funding bodies as exemplified in Figure 1 to grow our research, extension and KTE portfolio for the benefits of UK agriculture. Overall, we consider that the document could be realistically more ambitious for the future needs of research and properly seek to secure a general increase in the availability of research funding from a range of sources, including industry. Overall, it would be good to see more discussion in the report as to how this might be done. How might more resources be secured for research in this area? Has applied research not had the investment it needs to prove its full potential?

- The challenges outlined in the document are significant and require to be addressed using existing and novel approaches given the sustained decimation of funding for agricultural research.

- We support the need to extend the training of researchers and practitioners and would like to offer the 'Scottish system' as a good practice example of all forms of knowledge exchange.

- It is not really acceptable that the UK is now only 60% self-sufficient for food. A key issue that must be recognised is the role of the global market and the pressure of cheap imported food on UK supermarket shelves - particularly at a time when consumers are facing economic hardship.

- The document should seek to exemplify innovation as the practice and philosophy of choice to ensure effective progress and productive change.

Specific Comments on the Report

- Current SRUC work has revealed strong evidence of a mismatch between the needs of industry and the research being undertaken. One example is in relation to developing integrated management of crop and animal diseases within farming systems. This is hard to do in crops sectors driven by markets and commodities and there is a need to link research and farming and industry bodies to evaluate novel approaches (e.g. the increasing diversity of crop species and within crop species). This is one approach to overcoming the widespread problem of inadequate linkages and therefore poor understanding amongst researchers of the key issues that industry is facing, and the need for researchers to extend innovations further into the applied field. A fresh examination of research priorities is required in some areas to ensure that the benefits of investment in research are more fully realised. Applied research is currently underfunded and undervalued. A good example is the demise of the Sustainable Arable LINK programme. There remains a gap in the funding of such

research as TSB funding is more 'product' focused and is less about the generation of knowledge.

- Socio-economic research is hugely important across all of the research priority areas identified. We argue for the importance and application of social science research generally (i.e. beyond economics), in order to really explore attitudes, potential for behaviour change, spatial variations, etc. This might need work by sociologists, geographers, psychologists, etc - often working in collaboration with economists. For example, there is a role for socio-economic researchers in identifying technologies that are cost effective or the price at which they will become cost effective. Again this is a key finding emerging from SRUC's current work on innovation in the land-based sector. Similarly, there is a role in identifying more effective improvement strategies, through work on factors that affect adoption. At the same time, care is required to avoid placing too much focus on 'average' data which may lead to misleading results. Using real farms and real data is the most accurate and compelling approach and often advisors and vets are the most effective 'conduits' of information on innovation and its cost effectiveness to (and from) farmers.

- This social science work should not be separated from the development of technology, but rather should be intrinsic to ensuring that the uptake of technology, such as technologies to improve the precision and efficiency of agricultural practices, is maximised. The report tends to see these as separate activities. Current SRUC research using an innovation systems approach is taking a participatory approach to developing new technologies.

- There is a real need for more behaviour change work to understand why some robust scientific and research ideas are simply not properly exploited in practice – or indeed rejected. Specific work that would be useful, includes studies on communication, the framing of issues, attitudes and underlying farmer decision-making which, as noted above, is wider than simply social and economic sciences (e.g. psychology). Work in these areas is going on through SRUC's Carbon Management Centre, for example.

- The structure of industry is frequently a barrier to progress – overcoming fragmentation and achieving a better understanding of who the different players are, the extent/quality of working relationships and networks and where the barriers to these exist and why. How can we change this?

- Effective knowledge exchange is required at all stages of the research process. Research agendas (and associated funding programmes and strategies) need to be shaped in discussion with all stakeholders, with industry representatives involved from the start in terms of deciding priorities, methods, timescales, approach to dissemination, etc. In short, knowledge exchange is about much more than industry being asked to comment on research priorities or to 'receive' disseminated research findings. There are existing examples of producer involvement in research itself – over and above involvement in funding, evaluating and overseeing the strategic management of research programmes - including the SFC-funded Paraban project for example. Such work need not be less scientifically rigorous but is likely to have increased relevance, credibility, uptake and hence impact. An interesting example is the Countdown Downunder project which turns the research process on its head by setting an impact target and working back from there. This moves away from the usual 'top down' philosophy implicit in some strategic and applied research programmes which lead to the development of 'technical fixes' followed by extension work, that fails to match the 'solution' to the 'problem'.

- Clarity and accessibility of the vision stated are critical, and setting joint agendas is more effective than numerous strategies and messages. Terminology that all players can understand must be used so that they can all sign up and clearly see their role.

- Key questions exist around how research can be made more participative? For example, how can we design better mechanisms to enable key stakeholders to interact and integrate their efforts? How can we identify and tackle gaps in the required brokering, facilitating and networking skills? Can we support undergraduate and postgraduate students more effectively to develop these skills? SRUC's current innovation research (in collaboration with AgResearch) is addressing such questions.

- A specific omission from the report is pesticides and elicitor products. Losses and reductions in pesticides are one of the most significant threats to future UK yields and, while they carry some costs in terms of ecosystem services, it is an omission to leave this technology out. In relation to this, Item III, 2 expresses a desire for 'durable plant resistance' and 'no spray' crops. This is at odds with the later stated desire for integrated management options. To try to encompass durable resistance to all disease and pest risks whilst including desirable marketable traits and acceptable yield, in all situations is ambitious but carries the attendant risks of pathogen and pest adaptation. Canopy architecture can help supress weeds but we cannot yet breed for durable resistance to weeds. New varieties, even with new breeding technologies, have long lead times and to go for a single strategy (durable resistance) leaves growers vulnerable to a new pest or disease or to current pest and disease adaptations if spray options are not available. The aim is admirable but needs to be reworded as one aim in an integrated management system.

- Item III, 3 discusses sharing data and rightly identifies the need for systems capable of storing and analysing such data. SRUC supports the need for disease, pest and weed surveillance and monitoring, to assist with new risk and decision support systems. Better integration and utilisation of available data (e.g. on yield mapping and recording, soil, crop and animals) will help to develop better decision-support tools for integrated farming systems. This was a key finding of the recent HGCA-Defra yield plateau report led by NIAB TAG and involving SRUC and Cambridge University.

- The document is 'light' in its reference to climate change. Mitigation is mentioned in section V (External influences affecting uptake) in the context of greenhouse gas emissions but not adaptations and there is no mention of adaptation elsewhere in the document. There is brief mention of opportunities under climate change but no mention of threats.

- In relation to Research Area 2, 'Use better understanding of plant architecture…', a key debate is whether or not we can make a step change in yield, including GM, and/or focus on specific issues (e.g. nutrient use efficiency). Improvements in plant architecture and partitioning could still contribute to breeding targets, especially in relation to changes in plant development (i.e. responses to light and temperature). Progress made in model plants like Arabidopsis is beginning to feed into crop improvement. The big challenge, and potentially the biggest reward, is to improve the conversion efficiency of light energy into biomass, this is likely to involve GM. Another important aspect is that phenotyping and evaluation of G x E must keep pace with advances in genotyping and genetic understanding.

Clarity and Impact of Document Presentation

- What is the difference between a systems approach (priority 3) and an integrated approach (priority 4)? The report would benefit from stronger linking between the priorities and more thought to ensure clarity of vision to achieve buy-in from all key stakeholders. At present, institutional and disciplinary-based initiatives do not fit well with the proposed integrated and holistic approach – in reality, agrifood innovation in the UK is much more fragmented. Studies of other countries which have adopted such integrated mechanisms may be useful. Appropriate incentives for different stakeholders (including researchers, consultants, etc) may be required.

- There are some conflicts in the descriptions of crop breeding goals between what is practical and what is desirable.

- The dwarfing gene example leading the recommendations section sets a rather dated tone.

- The ambiguity with respect to the inter-changeable use of the terms industry, commodity groups, producers etc. needs to be clarified.