

BACK TO THE FUTURE: SOME THOUGHTS ON 21ST CENTURY AGRICULTURE AND THE R&D THAT WILL BE NEEDED TO SUPPORT IT

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Introduction

This paper is a personal (and biased) examination of the current agricultural and land use environment and the science that supports it. I'm very interested in how that environment might develop in the next few years and the implications that this will have for R&D. I start from the premise that there have been two "golden ages" for agricultural research in the UK. The first was powered mainly by private finance and occurred in the late 19th and early 20th century, when groups of influential people subscribed to establish a range of organizations dedicated to agricultural improvement by the application of scientific research. The major regional Agricultural Societies, the Lawes Trust and the Welsh Plant Breeding Station were all examples of this movement, which could be headlined as being "by farmers for farmers". The second was rather different. It was almost wholly governmental, was driven by wartime and post-war food shortages and reached its apogee around the time that I graduated in the late sixties. In production terms, both golden ages were spectacularly successful, giving Britain (and indeed much of Northern Europe) food security and easing the transition from a rural to an urban society. Interestingly, both were centered on Research Institutes rather than Universities and were linked to agricultural advisory systems that were essentially free to producers. Additionally, the post-war "Golden Age" was linked to a very clear policy for UK agriculture and food production that was implemented rigorously and that was entirely consistent with political and social drivers.

However, both systems contained within them the seeds of their own downfall. For complex reasons, increased security of supply in the UK seems inevitably to lead to a shift in value within the food chain away from the farm gate towards processors, wholesalers and retailers. This is much less true in other parts of continental Europe where co-operatives have allowed primary producers to retain a much greater stake in the food chain as a whole. In the 1960s this shift coincided with growing evidence (often presented highly partially but convincing none the less) that UK agriculture was impacting very significantly on those aspects of the environment that were being valued at the same time as the importance of home-produced food was declining. The current situation is that agriculture in the UK is of declining economic significance even though the food industry as a whole is one of our largest manufacturing sectors. To make matters worse, farmers are regarded by environmentalists, politicians and the general public as part of the problem rather than as part of the solution, despite the fact that the British countryside is essentially a by-product of farming rather

than some historical Arcadian creation being perverted by modern greed, corruption and inefficiency. Reform of CAP offers both challenges and opportunities but is likely to increase fragmentation of the industry and also broaden the range of R&D outputs that will be needed if UK farming is to deliver a wider range of societal goods

What then can be done to resolve this situation, given that all the major protagonists (farmers, environmentalists, politicians and the general public) have contrasting positions? One must also bear in mind that land-use R&D in the UK is overwhelmingly funded by government and thus inevitably does not represent all the stakeholder views equally.

The future needs of the industry

UK agriculture is, in my view, at a cusp in its development. CAP reform and the Curry report offered the prospect of liberating the farming community from the dead hand of essentially protectionist dogma. However, the innate conservatism of the industry, coupled with a largely dysfunctional relationship with its wider beneficiaries, has meant that Curry's vision of multifunctional land use is a long way from realization. Nevertheless, it represents a wholly laudable objective. The size of the market wholly controlled by farmers may be small in relation to the stranglehold exercised by the big retailers and processors, but it is growing and it has an excellent public image when compared to commodity production (particularly of animal products). In my view, the Industry needs to recognize the impetus that niche, high quality, high value systems give the sector as a whole and represent this in its political and commercial lobbying. Most of us do not own Rolls-Royces yet the effect that this tiny market segment has had on both the technological development and the marketing of automobiles has been immense. Where is the Rolls-Royce of British farming? Surely we can do better than let the Duchy Farm brand occupy this ground by default?

The major current driver for change in farming remains low world commodity prices, but I believe that UK farming also has to prepare for a time when that will no longer be true. There are already indications that this process has begun, stimulated by demand for biofuels. Global population is forecast to peak at 9 Bn, an increase of 2 Bn from today. This will be at a time when climate change will be adversely affecting yields at lower latitudes, when there will be increasing competition for both land and water for energy production and for urban development and when an increasing demand for animal products will require an extra 300 Mt of cereals by 2050. Currently Northern Europe enjoys cheap, safe and reliable food supplies. By the middle of this century I believe we will have to decide which two of these three we really want. If it ends up by being safety and reliability, then the increase in food costs could strongly favour Northern European producers.

Policy Drivers

One of the major problems currently in England and Wales (less so in Scotland and Northern Ireland) is that different parts of the Government machine that bears upon land use have different policy drivers. The Research Councils are linked to DTI and have broad remits that cross sectoral boundaries within the economy, have both innovation and scientific excellence as primary outputs and are increasingly linked to a Government view of a post-Industrial economy that can be caricatured as “Singapore-North”. Here, successful economic activity provides the leverage to buy, both now and into the future, all the goods that are not being generated from within. As summarised above, I have grave doubts as to the long-term applicability of this policy in a world that will be increasingly resource-limited and I also fear that food is the exception that proves the rule in terms of an open global economy dictated only by the relative capacity of different customers to pay the “going rate”. We are currently undergoing considerable paroxysms of policy doubt over securing our future energy supply; why should food supply be any different?

At a different level, the formation of Defra, although extremely well-intentioned and politically astute, has also made more complex the policy milieu within which both farming and agricultural R&D is being carried out. Defra has international obligations, linked to climate change and sustainable development, which are frequently in tension with the short-term interests of the UK agriculture and food sector. This has led to an R&D (Evidence and Innovation) policy that, in my view, fails to address many of the competing interests, does not strive for the best balance of benefits and disbenefits and values the development of policy above its successful implementation. In the case of sustainable land use, this is exacerbated by the fact that applied R&D to promote economic sustainability is still funded via the Levy Boards (albeit at a reduced level), but it is difficult to see the equivalent applied research that can deliver benefit in terms of environmental and rural sustainability. In short the sustainability stool has one leg that is longer than the other two; not a recipe for stability. In the 1940s, 50s and 60s, there was a strong, coherent and managed policy that ensured the exploitation of scientific excellence and the delivery “on farm” of real innovation. I believe that cohesion has now been lost and I do not see much policy appetite for restoring it. The Research Priorities Group in its Second Report argued very strongly for multilateral action to ensure greater cohesion. All the funders accepted the force of this argument, but I see little in the way of progress to date.

The Ultimate Challenge: Establishing Political and Social Credibility

Much of what is written above is not new, and reflects a widely-held, if not a majority view. However, many of the problems and challenges outlined above are also symptomatic of a wider problem in European society, which is the decline in support for science and technology as the engine of social and economic improvement. Nowhere has this been seen more clearly than in the

debate over GM crops. Even if one ignores the barrage of doom-laden inaccuracies from some of the more hysterical pressure groups, it is obvious that agricultural science is widely perceived as being a predominantly malign force linked to over-powerful multi-national companies with no sense of moral stewardship. Interestingly, there is much less pressure on medical science, even though many of the same arguments hold good. It is my firm belief that the industry and researchers need to treat the issue of lack of public confidence extremely seriously if we are to avoid a massive skills gap emerging at just the time in the development of global food and fuel chains when we need to re-focus on domestic production.

Given that most agricultural scientists are funded by the taxpayer to carry out our research, there is also a strong element of self-interest in engaging effectively with the general public, politicians and NGOs. However, even the Royal Society has admitted that this engagement is almost non-existent, and what little there is has been of limited effectiveness. I want to conclude by suggesting that winning this battle is essential if we are going to develop an effective R&D base in the UK. Such a base is needed to support a viable farming industry that can deliver the full range of products and services that people want, are proud of and are prepared to pay for. I strongly believe that it is part of the essence of being an agricultural scientist at any level to commit wholeheartedly to public engagement and dialogue, for the alternative is to lose what little elements of public support still remain. This commitment has to be supported by career recognition and by high-quality training if we are not to continue to lose ground to the single-issue pressure groups.

Britain will come once again to need local food produced safely and in sympathy with the environment. At that time, we will need committed, economically successful farmers to grow it, a quality-oriented food chain to process and market it and a much better-engaged R&D effort to sustain it. We can maintain our capacity to deliver such an outcome, but I am by no means certain that we will. It is everyone's responsibility to apply political pressure whenever possible to support such an outcome, and to promote a productive, economically buoyant countryside that is committed to delivering a wide range of goods.