



# **CULTIVATING UNDERSTANDING**

THE GROWTH, SPREAD AND USES OF KNOWLEDGE  
WITHIN FARMING

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ATP Briefing Paper No 3

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## ABOUT THE CONTRIBUTORS

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Christopher Jones gained a first class degree in Agriculture from Oxford University in 1959. He has a long association with the Church Mission Society (CMS): from 1963-68 he was involved in agricultural development work with CMS in Nigeria; from 1969-70 he had a similar role in Kenya; in 1971 he worked with the Christian Council of Nigeria as Agriculture coordinator for war affected areas; and from 1972-74 he continued agricultural development work. Since 1975 he has farmed in Northamptonshire, UK. From 1984-95 he was Chair of the CMS Standing Committee and from 1994-2007 was National Coordinator of Farm Crisis Network. He was chairman of the UK Food group from 1996-98.

Dr Dan Taylor has been Director at the development agency *Find Your Feet* since 1995. Previously he was Director of the Centre for Low Input Agricultural Research and Development, which provided agricultural support to low resource farmers in KwaZulu-Natal, South Africa. He has a degree in Agriculture and a PhD in Anthropology (on local agricultural knowledge and practice of low resource farmers in South Africa).

In 2010 ATP published "*An Unsafe Distance*" ([www.agriculture-theology.org.uk](http://www.agriculture-theology.org.uk)) an examination of relations between governments and farmers. Subsequent wide discussions about this report frequently raised issues to do with agricultural research and knowledge sharing within farming. This report has therefore been written in response.

Knowledge is not morally neutral. The ways in which it is developed, shared and used can enrich relationships, enhance social capital, and enable the struggling, as well as contributing general material benefits. In England and Wales, in the 25 years after the Second World War, the closely linked experimental husbandry farms and advisory service built up a network of farm-related research and knowledge sharing within trusting relationships. This undergirded the restoration of the fabric of British agriculture after the long slump from 1870 to 1938, together with a transformation in animal health and food supply. Universities fuelled this with basic independent and objective research. Extension work, which introduced the growing of swamp rice to the then eastern region of Nigeria, provides another example of effective knowledge sharing from the same era.

However, knowledge and the way it is used can divide and exclude, underpin unaccountable power and further marginalise the struggling, as well as contributing to danger and environmental harm. An example of this is the use of patents on genetic material and their related technologies. These can turn natural assets into corporate property and impede the general growth of understanding, knowledge and related skills.

In the context of farming, in the UK or anywhere else, we need to ask what is the purpose of the knowledge we want to share, and under that question lies the very basic one of what are the purposes of farming. We need a wider understanding of this. Farming must produce food and it must care for the long-term sustainability of farmland. It is the custodian of much wildlife habitat, landscape and watershed. It provides employment and livelihoods and very often provides the social fabric that enables cohesion in rural communities. These functions need to be performed without damage to environmental, human or animal welfare and those doing it need not only a livelihood, but also the scope to generate the resources needed to progress.

### What kind of knowledge is needed?

Professor Beddington, among others, has spoken of a "perfect storm" of problems facing farming worldwide. Population numbers are rising, human activity is changing the climate, many soils are in a poor state and many farmers are ageing, increasingly marginalised and demoralised. Meanwhile, there are the ongoing issues of monitoring and controlling plant and animal diseases and weeds. There are clear knowledge gaps, many centering on farming and climate. These include:-

- i) **Nitrogen.** In modern farming, Nitrogen is the key to yield. With nitrogen fertiliser, there are issues around the carbon dioxide emissions arising from its manufacture and nitrous oxide emissions arising during its use, not to mention the increasing scarcity of oil and gas. Does this point to a reduced use and if so, to reduced crop yields or to an increased use of legumes in pasture and in arable rotations with better use of (well rotted) farmyard manure?
- ii) **Methane.** Do we aim to reduce methane production from ruminants by keeping fewer of them, or by trying to influence the operation of their digestive systems? What is the balance of the benefit, from the retention of carbon in the soil with permanent pasture, over and against harm from the emissions of methane from the animals grazing the grass?
- iii) **Soya.** If it is true that much of the soya imported to the UK is associated with clearing of tropical rain forest, then how should livestock be weaned off it?
- iv) **If crop yields decline** and the substitution of imports is not an option, what will be the future of pigs and poultry? Might we need to return to using waste food for feeding pigs? How would that be done safely?

v) **Renewable energy.** Farmers are already trying to turn into producers of renewable energy. However, they are faced with technologies about which they know very little and with no truly independent research or body of knowledge readily available to guide them. This in turn makes it harder to raise the necessary capital.

vi) **Adaptation.** What are the ways in which our farming will have to change in response to the climate change which does occur? What crops will be appropriate? What livestock will thrive? What skills and knowledge will be needed?

### Sources of Knowledge

There is a danger of thinking of 'Knowledge Transfer' in terms of centralised researchers as producers of knowledge for wider dissemination and farmers as passive recipients and adopters. This is an incomplete picture. The work of such researchers is enhanced and made more useful if they have a real knowledge of the problems and situation of those farming, and of the circumstances in which the results of their work would have application. More than that, the farmers themselves, and the people they employ, have long term skills and experience, which need to be fused with scientific research in the development of useful technologies. They need, also, to be involved in deciding the direction of research. All research, which is not of a 'blue sky' nature, needs to have the involvement of all those who might have a stake in its outcomes. This needs to be right at the beginning of a piece of research as problems are being framed. Also, the stakeholders need to be those engaged in the areas concerned, not just elected representatives to bodies who may be divorced from practicalities and over-influenced by the agendas of their organisations. Thus close contact and interaction is necessary at all levels. In addition, government, and those involved in devising policy, need a close involvement in this interchange if they are to have the necessary foresight to anticipate current and future needs and make useful workable long-term policies.

### Obstacles and Opportunities

i) **Ownership of research and its results.**

In addition to the danger of research being isolated from farming, there is great danger in it being funded and controlled by the wrong sources so that the lead motivation is to develop things for farmers to buy and use. This may, indeed, be contrary to farmers' actual needs and incur substantial opportunity costs given the scarcity of funding in today's economic climate. Solutions to some of the questions already raised may not require farmers to buy anything and so these questions may be ignored in a largely privatised system of scientific research. Linked with this, is the increasing tendency for the results of research to be seen and treated as intellectual property to be exploited rather than as a contribution to the free interchange of knowledge for the common good. Even work done by public research centres and/or academic institutions is not easily available to farmers and others<sup>1</sup>. Someone familiar with trying to disseminate accurate and digestible information comments: – "I have two issues about publication of ongoing research. Firstly, that academics are pushed towards 'prestigious' journals, which are too expensive to be accessed by farmers or even consultants and journalists and people like me who might get information across widely. Secondly, that almost all published papers are about very small pieces of the overall jigsaw. There is too little prestige involved in bringing this all together into formats which tackle more of the 'system' and can be used by farmers".<sup>2</sup>

ii) **The limitations of self-interest.** In reality, although in some ways competitive and individualistic, farmers often enjoy sharing ideas and knowledge. In the UK, a long history of agricultural societies, farmers' discussion clubs and conferences testify to this. However, getting groups of farmers together on a regular basis is difficult given the nature and demands of farming.

1 Michael Nielsen, Princetown University Press 280, *Reinventing Discovery*, reviewed by Jack Stilgoe, The Guardian Weekly 30.12.11

2 Alan Spedding, Personal comment, 1 February 2012

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Nonetheless it is important to understand the range and mix of motives and not to assume that the “bottom line” rules all and applies in all cases.

This is now true in a very particular way. Curbing climate change will almost certainly require people to act in ways that go beyond immediate benefit to them, and which will not even benefit their grandchildren unless others simultaneously follow suit. This particular moral challenge is a part of the context in which knowledge must be exchanged.

**iii) Conceptions of 'efficiency'.** We tend to see efficiency overwhelmingly in terms of £'s in and £'s out, and often in quite a short-term perspective. From there it is easy for certain yardsticks, for example, yields per cow or per acre, or output per unit of labour to become delinked from the other important functions of agriculture already alluded to earlier and to which we return later. This narrow perspective has come to dominate our efforts to improve our agriculture. These can mask present realities and would certainly divert us away from the need for a broader understanding of the longer term impacts of current farming techniques or systems. For example we cannot continue replacing labour with oil.

**iv) Limitations of 'the market'.** Financial and livelihood incentives influence choices very greatly, but no market can of itself lead people to do things, which must be done for the sake of others. “The market” alone provides no means of paying for this or for care for the environment, or for the needs of future generations. This reality has led to an increasing role for...

**v) ...Regulation.** Whilst a broad framework of regulation is essential, it can be robotic, telling people what to do without explanation of the reason, and burdening them with forms, statements, rules and inspections. These are time

consuming and often stressful.<sup>3</sup> Government can seek to influence farming with or without the support of the farming community. A contrast can be drawn between bureaucratic directives, often producing grudging compliance, and the role of extension and advisory work, which elicits willing participation. A purely rule based approach is also apt to be much more expensive in the medium to long term. In 1971 the UK's National Agriculture Advisory Service had a staff establishment of 1,982<sup>4</sup>. Now the Rural Payments Agency alone greatly exceeds this number of personnel to which Natural England and parts of the Environment Agency would have to be added. Multiplicity of regulations has contributed in England and Wales to...

**vi) ...very poor grass roots relations between farmers and government.** This has been documented elsewhere<sup>5</sup>. This is a formidable obstacle to the voluntary uptake of ideas and practices being promoted by government. At the same time the real emergence of an effective knowledge exchange system, could contribute much to the healing of this situation.<sup>6</sup>

**vii) 'Farming is a business like any other'.** This is probably an inadequate view of most economic activity and it is certainly an unrealistic and incomplete view of farming. Of course it is a business, but a unique one. It is very largely a family affair, which of itself differentiates it radically from many businesses. For sustainable long term production, it is dependent on healthy relationships among people, between people and the land and its resources. All this requires a more co-operative than competitive approach. It is also of particular and far reaching importance. It, we re-iterate, produces food, manages landscape, wildlife habitat, water catchment and run off, and its interaction with the climate is critical. This broader view contradicts the more limited

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3 Farm Crisis Network, 2007, *25 Regulations per acre*

4 Neil McCann, Providence Press, 1989, *The story of the National Agriculture Advisory Service*

5 Agricultural Theology Project, 2010, *An Unsafe Distance*

6 Hall, J and Pretty J, 2008, *Then and Now: Norfolk farmers changing relationships and leakages with government agencies*, *Journal of farm management* 13(6) p. 393 – 414

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viewpoint common in official circles and even among some farmers. It has affected government's attitude to knowledge transfer profoundly and also the approach of some leading farmers. As a view of how farmers do behave, and ought to behave, it would also affect the way in which any scheme for knowledge transfer might be conceived. The most important point about this view, however, is that it is wrong and misleading. An appropriate knowledge exchange system would contribute to affirming and enabling farmers to fulfil their roles co-operatively as individuals and as active members of their communities.

**viii) The extension of the knowledge** built up by farmers over many generations to the next generation is a particular concern, especially given the demise of agricultural colleges. Other forms of knowledge transfer, building on locally generated skills and technologies, could be considered.

### **The role of governments**

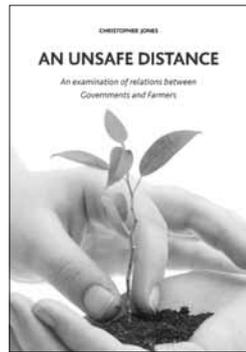
It would help if there was a broad and realistic national consensus about the direction that farming is to take. For this to come into existence, government would have to promote and participate in discussion at a meaningful level. Government resolve, initiative and insistence is also needed to ensure that knowledge generation in the form of research findings is made public and easily available, particularly when it is the outcome of publicly funded research. There is a critical role for government in facilitating and mediating any process leading to improved knowledge sharing. It will need to be supportive and enabling whilst affirming the value of what is being done. In the light of the financial and social cost of its current approach, which is predominantly limited to regulation, it would be well advised to consider input of personnel and funds. A change of approach might well save money, as well as improving relationships: this will also provide governments with the opportunity to learn from the interchange of knowledge, ideas and practical experience so that it can devise policies, which really work towards the common good. Agricultural administration and policy, devised in isolation, and remote from day to day farming realities, has negative consequences.

### **First steps and conclusion**

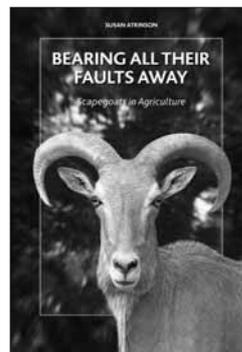
The first step is a review of the current situation, simply to understand and value what is already happening. This would involve looking at Defra and its agencies, universities, private farm consultants and farmer discussion groups. It would then be profitable to learn lessons from an earlier period of knowledge transfer in this country and to look at other countries as well. This would probably reveal and bring together promising ideas and practices, which could provide a bridge towards improved arrangements for knowledge transfer. The RELU programme, some of the work by the Royal Agricultural Society, the work of Eblex and that of the Welsh Red Meat Promotion Council, are good examples of what can be done and could provide constructive starting points. A really searching brain storming process, set in the context that we have outlined, is indicated.

### **Conclusion**

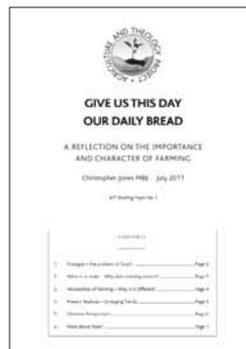
Producing food, conserving farmland, protecting wildlife and its habitat, cherishing landscape and dealing with the advancing reality of climate change, are tasks of supreme importance. Farming is an area of life that governments ignore at their peril and a sector of the economy that cannot be left to market forces alone. Furthermore, as we have shown there are aspects which demand government involvement to promote the long-term common good – and not for any other reason. To promote and nurture a knowledge exchange system, which is open, impartial and participatory, and which also engages (potential) new entrants to farming, is a difficult task. In view of the national and global challenges that lie ahead, this is an urgent task, but one to be undertaken in full cognisance of the moral issues involved.



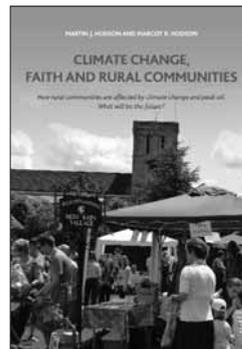
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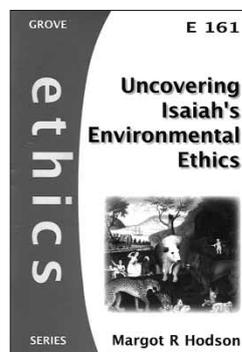
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The Agriculture and Theology Project seeks to bring biblical and ethical principles to bear on issues and trends in world farming. It is a joint venture between the Agricultural Christian Fellowship (ACF), the Church Mission Society (CMS) and the John Ray Initiative (JRI)

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