



Forum for the Future

In pursuit of

the sustainable pea



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INTRODUCTION

More than five years ago, I started discussions with colleagues in Unilever and Birds Eye Wall's (BEW) about the notion of sustainable agriculture. Given that this particular phrase had mighty little resonance in those days, it was encouraging to see how quickly we were able to move to developing a project on the ground – with a group of BEW's pea growers in East Anglia and Humberside – to test out the concept. That project is the subject of this report.

I have authored it myself (together with a lot of help from environmental journalist Roger East and other Forum staff) because it has proved to be one of the most interesting projects that Forum for the Future has been involved in since its inception in 1996. It lends real substance to at least two of the Forum's key principles: the need for vigorous research in developing solutions to today's environmental and social problems; and the desirability of what might be described as applied partnership – i.e. not the kind of fluffy stuff where people talk eloquently of the benefits of partnership, but then do next to nothing to make it work in practice.

It is also useful for me to tell the story from the Forum's independent perspective, acknowledging difficulties and failures along the way as well as the successes. With the best will in the world, corporate PR professionals do find it extremely difficult to embrace a 'warts and all' approach to communications, and seem to get unnecessarily exercised about saying anything either controversial or 'less than fulsome' about their colleagues' work.

I also wanted to do this because I think it's a really important story. Farming is in crisis in the UK, and many individual farmers are in a state of despair. Public expectations of them rise even as their incomes fall. We desperately need some new thinking, rooted in practical reality but unapologetically visionary and ambitious.

An elusive combination – but one which I think this project gets pretty close to capturing. Both the sustainable agriculture team at Forum for the Future, and our counterparts in Birds Eye Wall's and Unilever, would really like to know what you think about it. So please, come back to us with any feedback to Jonathon Porritt, Forum for the Future, 9 Imperial Square, Cheltenham, Gloucestershire GL50 1QB (e-mail: a.paintin@forumforthefuture.org.uk; www.forumforthefuture.org.uk).



Programme Director
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CHAPTER 1 – SO WHAT THE HELL IS A ‘SUSTAINABLE PEA’ ANYWAY?

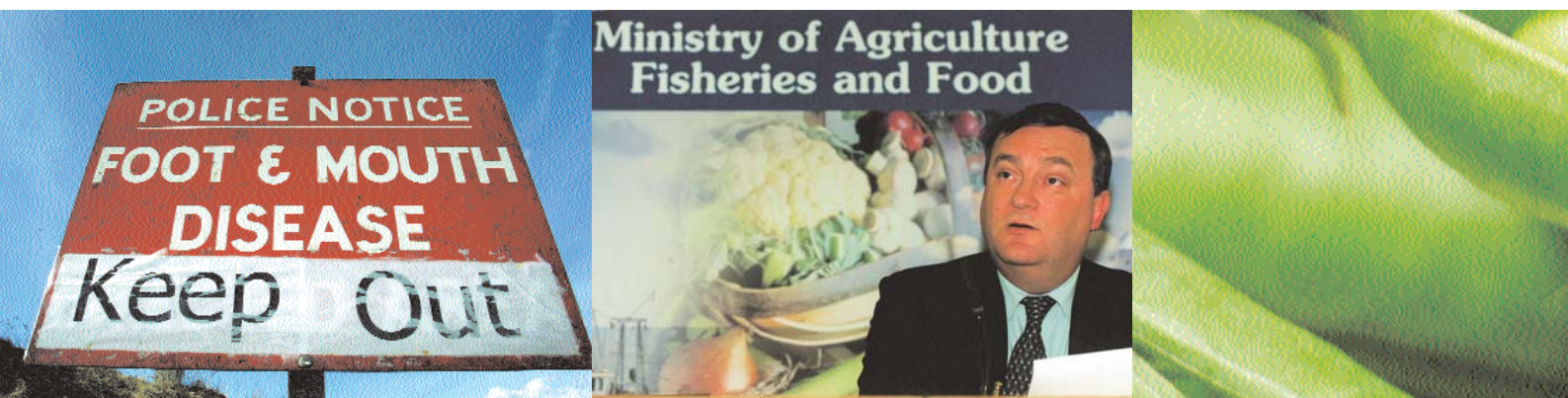
Believe it or not, it was with those very words that a particularly cynical civil servant in MAFF responded to my modest suggestion back in 1997 that the Government might have something to learn from the emerging Bird’s Eye Wall’s project. At that time, the whole notion of sustainable agriculture was a topic deemed suitable only for consenting academics, so I suppose I shouldn’t have been too surprised. And to be fair, MAFF did dip a reluctant toe into this particular pond a couple of years later when it came up with its own list of 35 indicators for sustainable agriculture. In essence, however, this amounted to little more than a different way of marshalling data already gathered by Government and its agencies, and the whole thing was promptly parked by the old guard at MAFF.

At exactly the same time, things went from bad to worse as far as UK farming was concerned, culminating in the outbreak of Foot and Mouth in 2001. Farmers’ incomes had plummeted; their standing in society was at an all time low; and from whichever direction you looked at it, the writing was clearly on the wall in terms of that particular model of subsidy-driven, intensive farming that had dominated European agriculture for the past half century.

Even MAFF got the message at that point. In the run-up to the General Election in 2001, the somewhat forlorn Agriculture Minister, Nick Brown, was suddenly to be heard waxing lyrical about sustainable agriculture. He himself did not survive the post-Election cull, but the concept of sustainable agriculture did. As one of a plethora of responses to the farming crisis and the Foot and Mouth outbreak in particular, the Prime Minister set up a high-level Policy Commission on the Future of Farming and Food to advise him on how best to create a “diverse, competitive and sustainable” farming industry in the UK.

So what does sustainable agriculture look like in practice? In essence, it means reconciling commercial food production and the management of the rural environment. It means promoting practices which meet the food needs of today’s expanding world population without depleting the earth’s resources to the point of bankrupting the next generation.

The Unilever company Birds Eye Wall’s (BEW), and a small group of arable farmers who grow peas for them in East Anglia and Humberside, are currently engaged in a project to do just that. As the debate on the future of farming unfolds, their ‘partnership for sustainability’ offers some valuable insights. It may come as a bit of a surprise to them, but if agriculture in the 21st century can be directed along the path to sustainability, BEW’s core group of pea growers may come to be ranked among the pioneers in the field.



The small group in question comprises 19 out of a total of some 480 farmers who grow the peas for Birds Eye. The relationship between them and BEW is a long-established one. As contracted suppliers, they must already meet three key criteria: the quality of the peas they produce; a readiness to work in a highly co-ordinated and co-operative manner within local pea-growing groups; and sufficient proximity to one of the company's two processing facilities, in Lowestoft and Hull, to satisfy the demanding 'two and a half hours from picked to frozen' time requirements for the brand's famous guarantee of freshness. It is this established relationship that BEW is now building upon, in an initiative directed at ensuring the long-term sustainability of its supply chain.

Sorting Out The Definitions

The BEW pea project is not an isolated experiment within Unilever, as you'll see in Chapter 5. It is, however, one of the largest and most advanced elements so far within the company's global Sustainable Agriculture Initiative (SAI), which has been in development since the mid-1990s. Running in parallel with initiatives on fisheries and water management, the SAI began with discussion and consultations to arrive at a definition of sustainable agriculture, and the four principles it should support.

And those principles are just for starters! Now that the concept of sustainable agriculture is coming into its own, we are going to see a host of definitions breaking out all over – just as we have for sustainable development itself. Conscious of the lack of rigour that characterises many of these initiatives, I was extremely keen in my capacity as Chairman of the UK Sustainable Development Commission to ensure that the Policy

Unilever's definition of sustainable agriculture

Sustainable agriculture is productive, competitive and efficient while at the same time protecting and improving the natural environment and conditions of the local communities.

Unilever's four principles:

- Producing crops with high yield and nutritional quality to meet existing and future needs, whilst keeping resource inputs as low as possible
- Ensuring that any adverse effects on soil fertility, water and air quality and biodiversity from agricultural activities are minimised and positive contribution will be made where possible.
- Optimising the use of renewable resources whilst minimising the use of non-renewable resources
- Sustainable agriculture should enable local communities to protect and improve their well-being and environments



Commission on the Future of Food and Farming should have access to the best possible advice in its own interpretation of sustainable agriculture. After extensive consultation, our 'Vision for Sustainable Agriculture' came up with the following objectives to ensure that sustainable agriculture must:

- Produce safe, healthy food and non-food products in response to market demands, now and in the future
- Enable viable livelihoods to be made from sustainable land management, taking account of payments for public benefits provided
- Operate within biophysical constraints and conform to other environmental imperatives
- Provide environmental improvements and other benefits that the public wants – such as re-creation of habitats and access to land
- Achieve the highest standards of animal health and welfare compatible with society's right of access to food at a fair price
- Support the vitality of rural economies and the diversity of rural culture
- Sustain the resource available for growing food and supplying other public benefits over time, except where alternative land uses are essential in order to meet other needs of society.

Though we provide a more detailed explanation of what is meant by each of these objectives (www.sd-commission.gov.uk), I have no doubt that they too will be challenged by those who interpret sustainability differently. Animal welfare activists, for example, are likely to be contemptuous of the way in which our advocacy of 'the highest standards of animal health and welfare' has been qualified to take price and equity issues into account.

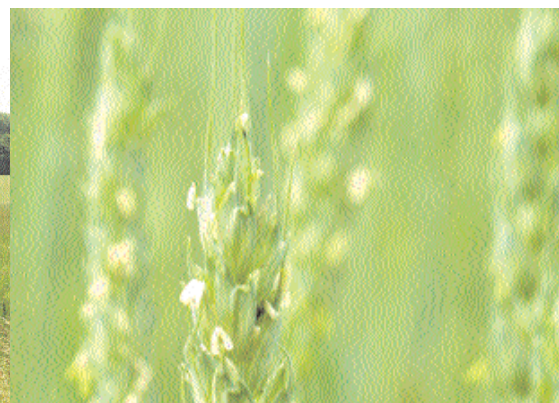
Moreover, objectives of this kind mean little until they get broken down into measurable indicators which enable us to judge the degree to which any objective is or is not being achieved. That was the challenge Birds Eye Wall's got on top of right at the start. Working with Forum for the Future and Professor Jules Pretty of the Centre for Environment and Society at the University of Essex, ten key performance indicators were identified as early in the project as possible, against which agricultural systems could be measured in terms of their productivity, efficiency, impact on the natural environment and contribution to local communities. (These indicators are explored in greater detail in Chapter 3).

Making Progress

The project itself got underway on the ground in 1998. The first pea crop affected by it was planted in the spring of 1999 and harvested that summer. Two years were devoted to testing current methods against the ten indicators of sustainability, establishing robust baseline performance data, and preparing to follow the impact of the pea crop through the whole (typically seven-year) rotation cycle. In year three, the project began progressively introducing and testing potential improvements in techniques and methods. Again, this was done with the intention of monitoring the consequences of these innovations as the successive wheat and root crops are planted, grown and harvested over the seven-year cycle.

For the core group of 19 growers directly participating in the pea project, it involves a long-term commitment to the monitoring process, and it also requires a willingness to introduce changes in the way they conduct their operations. Its impact, however, promises to be much broader:

- Within the BEW context, the pilot scheme is being prepared for eventual roll-out to the wider group of 480 pea growers. It is vital to the company that this wider group – made up of individual farmers with very diverse views – be brought fully on board. Just as they rely on BEW for the opportunity to grow peas as a profitable break crop, so the company in turn needs them, as reliable suppliers of Birds Eye’s single most important product and the UK’s favourite frozen vegetable.
- Within Unilever more widely, the knowledge and experience gained on the pea project, and other pilot schemes, will help take the whole Sustainable Agriculture Initiative forward. It contributes to refining the understanding of Unilever’s four principles of sustainable agriculture, testing its ten indicators of sustainability and developing the appropriate parameters for measuring and monitoring progress. And it is part of the continuing learning process through which Unilever will be seeking to add value and security to its supply chains and its brands.
- Within society as a whole, the project speaks directly to the current debate on the future of agriculture and the rural environment. BEW would certainly not want to claim that its pea project had reached decisive conclusions; however, it is already generating a valuable body of research, in a commercial setting, whose procedures and findings are available to be used and shared across the farming industry and the rural sector as a whole.



CHAPTER 2 – IT'S ALL ABOUT PARTNERSHIP

One of the recurring refrains about the current debate is just how isolated UK farmers have become – how ineffective they have been in terms of working with one another (in the kind of co-operative arrangements still common in continental Europe), how alienated they have become from the consumer, and how detached even from their own local community. It is understandable, therefore, that in this brave new world of sustainable agriculture there is a lot of talk about partnership.

The BEW Sustainable Agriculture Project

The SAP is a partnership between the company, the 19 core growers involved, and other key individuals who contribute particular expertise or represent environmental and other stakeholder interests.

Project Partners

Birds Eye Wall's, 19 pea growers, British Trust for Ornithology, Yorkshire, Lincolnshire, Norfolk and Suffolk Wildlife Trusts, Soil Survey and Land Research Centre, LEAF (Linking Environment and Farming), ADAS, Prof. Roy Brown, R&D Associates, Centre for Agriculture and Environment (CLM) in the Netherlands, Prof. Jules Pretty, Centre for Environment and Society, University of Essex, Forum for the Future



The project team, under general manager Colin Wright (once a Birds Eye fieldsman himself), had Jos van Oostrum (both pictured left) of BEW as its liaison manager through the first three years, while BEW's frozen foods business director Chris Pomfret took up the role of project sponsor within BEW as a whole in 1999.

BEW has placed its methodology in the public domain, to share its findings with the agricultural community at large and to extend the dialogue with a wider group of stakeholders, within government, in the academic community, among campaigning NGOs and so on.

However, it's all too easy to get carried away with the rhetoric of partnership. It's looked at rather differently in Forum for the Future, as our entire organisation revolves around the partnership work that we do with businesses, universities, local and regional organisations. Unilever has been one of our corporate partners from the start, and at every step along the way we have emphasised the centrality of effective partnership to the success of the Birds Eye Wall's project.

Experience to date from the project makes a powerful case for bringing together stakeholders with differing perspectives on the rural economy and environment, enabling them to work in a quite unique partnership. Year on year, initial scepticism has been replaced by an impressive degree of mutual respect and trust between key project partners – who include academic experts, agronomists, conservationists, economists and environmentalists, as well as the core group of growers, the company and its field staff.

This is a substantial commitment as far as BEW is concerned. The decision to appoint Jos van Oostrum as Liaison Manager in 1998 (later Agricultural Sustainability Manager) brought in a dedicated professional working on the project full-time – and its success has a great deal to do with that appointment.

The Origins Of The Partnership

In that regard, the origins of the Project are interesting. Forum for the Future was asked in 1996 to suggest a “suitable academic” to help advise Birds Eye Wall’s – which we interpreted as someone with all the right academic qualifications, combined with a readiness to engage directly with farmers, community activists, the media and so on. Jules Pretty (whose work over the last 15 years has inspired much of the thinking behind today’s interest in sustainable agriculture, even more so in developing countries than here in the UK), certainly fits that particular bill. In 1997, he produced a discussion paper entitled “Sustainable Agriculture: Emerging Trends and Challenges for Unilever”, which got things off to a good start.

There were two additional reasons why BEW was in such a good position to pioneer the first of a series of sustainable agriculture pilot projects, over and above the high profile of Birds Eye peas as a leading Unilever brand in the UK. First, producing frozen peas of the necessary quality and freshness requires a high level of co-operation between the company and highly organised local growers’ groups. These growers’ groups have developed into a strong co-operative structure. The group pools the ownership costs of the pea drilling and vining equipment, and has to agree when to drill and harvest their respective fields so they can supply the factory with peas across the whole of the short season. Within this co-operative framework, there is an arrangement for equalisation payments, so that a grower who agrees to drill at a less advantageous time, for example, is not penalised for the resulting lower yield. This fosters a strong common interest in encouraging better practice and sharing new ideas.

Secondly, the work already done by BEW on agricultural best practice and Integrated Crop Management (ICM), and the involvement of many of the growers in the work of LEAF (Linking Environment and Farming), made a huge difference. For one thing, it meant their growers were less likely to throw up their hands in horror at the prospect of working so closely with a bunch of environmentalists!

Nonetheless, a great deal of discussion went into getting the project off the ground. This was essential if it was to establish its credentials, not as a search for a quick fix on particular problems, but as a long-term and broadly-based investigation. Jules Pretty’s advice on setting up a Sustainable Agriculture Audit System placed great emphasis on quantifiable results. If each indicator could be measured on a scale of 0-10, a sustainability score would benchmark the performance of the operation as a whole, with a ‘perfect’ score of 100 corresponding to complete sustainability according to the BEW criteria. (See Chapter Three)



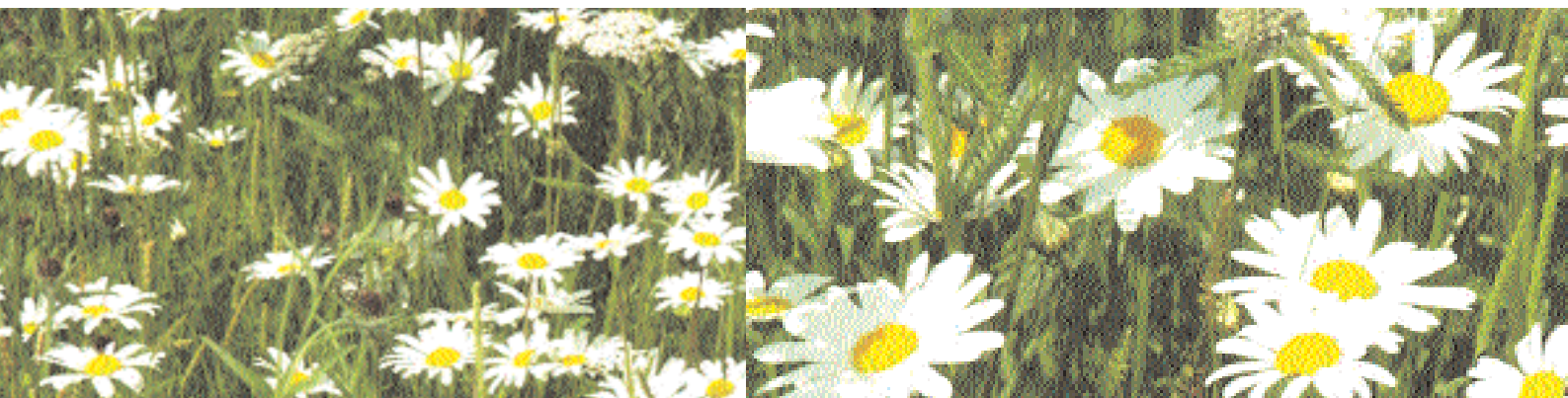
Further discussions with project partners fleshed out this construct via the design of specific monitoring systems. The chosen measurements had to address the concerns of different stakeholders, be they about product quality, biodiversity, pesticide levels, input costs, global warming, water pollution, or the impact on people's lives and the local economy. It was vitally important in all this to gain the confidence of the BEW pea growers. For these farmers, peas are certainly a worthwhile crop to grow, but they only grow peas on one seventh of their land at any one time, as a break crop in their rotation. Was the company seeking to develop its partnership with them in good faith? Was the project compatible with their own management of their farming operations? Would it involve them in apparently irrelevant and time-consuming activities – or could it be a channel for a real dialogue about issues that truly concern them in the countryside in which they live and work?

Natural Caution

Farmers are naturally wary of trying a new technique one year and finding they have been left to repent the consequences in succeeding seasons. For instance, the idea of not using weedkiller on field margins, or on strips within the crop, runs counter to their pride in growing a 'clean crop', and to the dire warning in the old axiom "one year of weeds, seven years of seeds". Even if BEW promised to fork out in compensation, if there were too many thistles to get the pea crop through its quality controls, could the company be expected to pick up the tab in subsequent years for thistle contamination in the wheat crop? Or would they simply apply more herbicide to the wheat, cancelling out any benefits from reduced applications on the peas?

BEW can take credit for taking these issues on board to a degree that has surprised and impressed its project partners. It was agreed early on that 1999 and 2000 would be used to obtain as robust a set of baseline data as was practicable for performance on 19 farms, chosen as representative of the different location factors, soil types etc across the group of 480 BEW pea growers as a whole. Work would continue on this baseline data through the seven-year crop rotation, but the initial 1999-2000 baseline would also be used from 2001 to begin testing certain innovations and changes in practice.

An annual conference brings the core growers together with other team members at the end of each year of the project, to share information on the latest results and discuss future directions. Other policy and technical workshops have also been held at different times, while the wider group of all BEW pea growers are kept informed through the Agricultural Sustainability Manager, BEW field staff and an occasional newsletter.



CHAPTER 3 – THE INDICATORS IN ACTION

The best way to grasp the complexity and extent of the project so far, is to look at each of the performance indicators, at what is being tested (and how), and at the findings which are starting to emerge. As drawn up by Jules Pretty, each performance indicator relates to at least one of Unilever's four sustainable agriculture principles (see page 03).

INDICATOR	SIGNIFICANCE	BENEFITS OF SUSTAINABLE AGRICULTURAL PRACTICES	TYPICAL PARAMETERS FOR MEASUREMENT
Soil Fertility/Health	Fundamental to agricultural systems. Rich soil ecosystems contribute to crop and livestock performance.	Improve beneficial components of soil ecosystem.	numbers of beneficial organisms; soil organic matter
Soil Loss	Soil eroded by water and wind can lose both structure and organic matter.	Reduce soil erosion.	soil cover index (percentage of time soil is covered by crop); soil erosion
Nutrients	Need for balance of nutrients, some created locally (e.g. nitrogen), some imported. Nutrients are lost through cropping, erosion and emission to air.	Enhance locally produced nutrients, reduce losses.	amount of inorganic nitrogen/phosphorus/potassium applied; balance over crop rotations
Pest Management	When pesticides are applied to crops or livestock, a small but significant proportion can escape to water and air (impacting on ecosystems, killing beneficial or non-target wildlife), or accumulate in foods.	Substitute natural controls for some pesticides, reducing dependence on externally introduced substances.	amount and type of pesticides (active ingredient) applied
Biodiversity	Can be improved or reduced by agricultural practices. Some biodiversity is highly beneficial for agriculture.	Improve biodiversity by 'greening the middle' of fields as well as 'greening the edge'.	level of biodiversity on site; habitat for natural predator systems; cross boundary effects
Product Value	A measure of the desired outputs of an agricultural system.	Maintain or improve product value.	total value of produce per hectare; nutritional value, including minerals; ratio of solid waste re-used/recycled/disposed to landfill
Energy	Energy of sunlight is a fundamental input to agriculture, but energy balance of agricultural systems depends on addition of energy from non-renewable sources for fuel etc.	Improve energy balance, keep it positive, i.e. more energy coming out than going in.	total energy input/total energy output; ratio renewable/ non-renewable energy inputs.
Water	Some agricultural systems use irrigation water, others pollute or contaminate ground or surface water with pesticides, nutrients and soil.	Improve targeting of water inputs, reduce losses.	amount of water used, leaching and runoff of N/P/K to surface and ground water
Social/human capital	Learning to use natural resources sustainably demands initiatives in social sphere such as collective action, sharing of new knowledge, continuous innovation.	Improve social/capital, with realistic actionable targets. Prime responsibility for livelihoods to remain with local community.	group dynamics/ organisational density of rural community; rate of innovation
Local economy	Sourcing agricultural inputs (goods, labour, services) from local economy helps to sustain local businesses and livelihoods.	Help make best use of local and available resources, to increase efficiency.	amount of money/ profit spent/reinvested locally; employment level in local community

This, of course, is where the partnership really came into its own, with a lot of the data gathering process being designed and carried out by experts in each different area. To give a flavour of just three of those involved, we have put together three mini-profiles.



Will bird populations thrive if pea growers leave unsprayed field margins? The first field margin experiments, in year three of the project, show some promising if modest initial signs. Ian Henderson of the British Trust for Ornithology (BTO) is understandably anxious not to overplay them. "Slightly higher densities, especially among insectivorous species", he reports, but he was looking at small numbers of birds, and reckons another summer at the least is essential to identify any significant effects. Field margins are most important to species such as thrushes, buntings and finches, which occur at higher densities there. As for lapwings and skylarks, the main reason they frequent the pea fields is because they prefer the sparser spring vegetation of a developing pea crop, rather than winter wheat, as a breeding habitat. Ian Henderson does have at least one specific suggestion to benefit them, arising from the BTO breeding bird survey. If the birds settle to breed between drilling and rolling, he says, there is an especially high threat that rolling will threaten the clutches of skylarks or lapwings. This problem would be minimised by rolling within no more than a week or so after drilling. It's another case of potential benefit arising from a small change in husbandry practice.



To monitor the leaching of nitrate and phosphates, Simon Groves of ADAS used Teflon pots buried 90 cm below the soil surface – below the point where a crop might still be taking up nutrients. After heavy rainfall, a vacuum pump draws in water which then goes for analysis. The pots have so far been in place in the same fields to monitor the cereal crop preceding the peas, the pea crop itself, and (for nitrate) the post-pea wheat crop.

As it happens, the first three years of the BEW project have been so wet that 15-20 readings have been taken each winter, and even some in the summer too – about double the number he expected. Measurements have been taken on 10 farms, representing the range of geographical locations and soil types.

Nitrate leaching is a particularly interesting issue for pea growing. It isn't a matter of controlling input levels, since there is no nitrate added for the pea crop – it fixes what it needs from the air. The problem is the surplus it leaves behind. In one sense that is 'zero cost nutrient' for the next wheat crop; but the research is suggesting ways of reducing the problem of excess nitrate leaching into ground water. Possibilities include discouraging the application of manure on bare ground prior to the pea crop; sowing the next crop as soon as possible after the peas to mop up as much of the nitrogen as possible; and applying nitrogen during the rest of the rotation only when low levels are revealed by soil analysis, rather than 'by the book'.



“A very robust database for monitoring change”. That is Neil Ravenscroft’s assessment of the BEW project data on the (relatively impoverished) diversity of butterflies and flora within the pea crop. Over the first three years, over six thousand samples have been taken!

As for the experiments with changes in farming techniques, those are admittedly at an early stage, and need to be expanded to get really worthwhile results. All the same, the debate thrown up by the work on leaving field margins untreated has already got some people talking about trials being applied to half the crop, or leaving untreated strips within the crop – a far cry from the caution he encountered at the beginning of the project.

As a consultant to the Wildlife Trusts, he has grown increasingly enthusiastic since those early days. He sees the project now as a process with unique potential, particularly as it extends throughout the whole farm rotation and broadens to include all the BEW growers rather than just the 19-member core group.

Acknowledging the real problem of the ‘perniciousness’ of some weeds, Ravenscroft sees the possibility of a consensus solution based on the rigorous selection of chemicals and highly specific targeting. Improving biodiversity with no commercial cost is obviously a win-win outcome. And when Ravenscroft talks about “the value of partnership in dialogue”, he is thinking of how far that dialogue has already moved on. Where there had been initial and understandable suspicion, there is now the basis for a common search for the best ways of balancing the benefits.

(For a more detailed account of how each of these indicators has been used, you will need to check out Appendix One. It’s worth bearing in mind, as you look at this, that even this Appendix is only the tip of a huge data iceberg that has been built up over the last four years, all carefully recorded and stored for further academic work. A much fuller academic paper is now in preparation by Jules Pretty and colleagues at the University of Essex.)

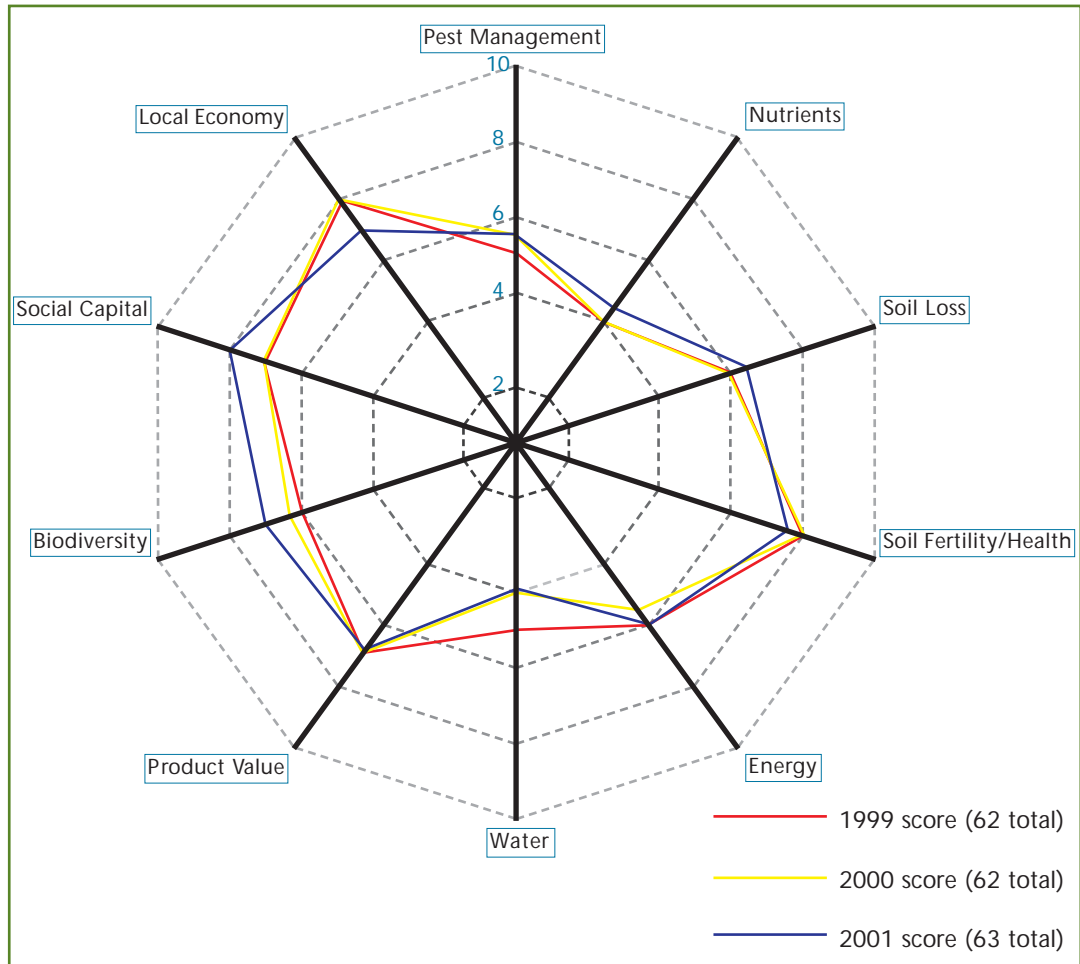


So how is it all turning out in practice?

As everyone involved in the project recognises, this is still a fairly crude tool. The scores for 1999 and 2000 capture the base-line monitoring data (i.e. what was going on before any changes were introduced), and the 2001 data is still being externally reviewed by Jules Pretty.

Moreover, there is still a lot of work to be done between the point at which the raw data is aggregated, and the way in which an actual score is allocated against the ten indicators. For all sorts of reasons, this cannot be a purely empirical process, in that it still requires judgement as to the weighting of the data and any qualitative improvements made. The benchmark values against which each year's data are measured are themselves constantly evolving, based on current best practice and experience. A more robust methodology for allocating a final score (i.e. one that is completely transparent and can be replicated by others) is now in preparation.

However, the approach has already demonstrated its value both as a way of revealing trends over time, and of quantifying specific movements on any one indicator. You'll see, for example, that the score on the water indicator is actually worse in 2000 and 2001 than it was in 1999 – as a direct consequence of very high rainfall in those years resulting in higher levels of pesticide and nitrate leaching. And the chart as a whole certainly highlights where there is most room for improvement.



CHAPTER 4 – REASONABLE PROGRESS, BUT COULD DO BETTER....

I used to hate that comment on my wretched school reports, not just because it stated the blindingly obvious, but because 'reasonable' seemed such a mealy-mouthed assessment of all my hard work. So I am conscious that colleagues at BEW may not take too kindly to a similar judgement being made of them. As it happens, it's their own judgement of what the project has achieved so far.

At the beginning of 2002, with three full crop years now behind it, the project stands at something of a crossroads. Internally, it has established its credibility as a serious and sustained science-based initiative to assess and improve current practice. It has matured as a partnership, building up respect and trust between project partners, and it has identified general agreement on the need for more data, monitoring and investigation.

Maintaining momentum is a critical ingredient of all such projects. The December 2000 annual conference agreed that experimentation in the 2001 growing season would focus on the potential of unsprayed 6m margins around pea fields, new selective weeding programmes, and a greater use of biological controls to optimise input levels. These were adopted readily by the growers as the main new themes. Potentially impacting on a number of the ten indicators, these innovations offered the prospect of positive improvement in the "sustainability score" while being relatively simple to pursue in terms of technique.

A 'farmers' action matrix' was also put together, emphasising the idea that farmers had a 'menu of options' of possible action. The matrix looked at what might be done within three timescales – immediate, soon (2-3 years) and later (4-5 years), and in three categories:

- what growers could do themselves with existing resources;
- what they could do with additional support (money/advice, from BEW or external sources); and
- what they could not do, but someone else could (in many cases via changes in government or EU agricultural policy).

One year on, in December 2001, there were initial results to report on these experiments, with more ideas to share on extending the field margin work in particular. Wide-ranging discussions covered other possible modifications to existing practice, such as avoiding ploughing after peas. For 2002, however, there was no major fresh impetus on the technical side. Apart from an emerging consensus that it would be desirable to pay more attention to soil structure issues, it was to be mainly a matter of taking the same work onwards, following the monitoring through for a further year of the whole farm cycle.

Does that imply a loss of momentum – or just a period of consolidation? The project certainly faces new challenges. The dynamics of that partnership will inevitably be affected by extending it from the core project group of 19 growers to the entirety of the company's pea supply chain. Encouraging the interest and input of that wider group of 480 is now a key issue. Gaining their 'buy-in' to the project will require more dialogue than has so far been achieved through newsletters, meetings and open days. Ultimately, as Unilever's Sustainable Agriculture Steering Group chairman Jeroen Bordewijk reminded the December 2001 conference, a set of standards will need to emerge from the project, and the company will need all its suppliers to measure up.

Challenges ahead

For the core group of 19, this raises two sets of issues. First, will they come under pressure in the coming years to experiment with, and even adopt, techniques for pea growing about which they may still harbour real doubts in the whole farm context? Beyond that, how reasonable is it to ask them to champion the project with a wider public? The roll-out to other local farmers will be a sensitive matter for them, and presumably a time-consuming one. Ideas for involving them in more outreach to schools, and other local public awareness initiatives, too, will inevitably entail both inconvenience and significant demands on their time. Yet nobody pays them for the time they put into the project – and they do have farms to run.



At Cawkeld Farm in East Yorkshire, Mark Flint says that growing peas is “modestly profitable year on year” as part of his six-crop rotation (two years of wheat, then the vining peas, followed by two more years of wheat and then a root crop). It fits nicely into the farm calendar, since the pea crop is “done and dusted” when it is time for the heavy work on the potatoes in the autumn. And his links with the other farmers in his pea growing group (not just professionally, they play football together too!) are a valuable antidote to the often solitary business of farming.

He was keen when BEW approached him about the project, and remains one of its most enthusiastic participants, although on the economic front “it pays nothing and there are no obvious savings”. He reckons he puts in seven or more days a year discussing and explaining it – as well as a little extra work fitting in with the various tests and data-gathering exercises on his farm. Citing the monitoring of carabid beetles as an example, Mark Flint acknowledges that it has encouraged him to take more notice of their role, such as in cleaning up aphids. “Just being around that kind of work is a beneficial thing for someone in my position”, he says. And he needs no convincing about the importance of an attractive and varied habitat for birds. “I just like it.”

As keenly aware of the bottom line as any farmer, Mark Flint knows that his position is less precarious than many. He owns his farm, and it is good, productive land. He holds out the possibility of future generations of Flints farming here, as his father did. Mark still holds the tenancy, too, on a nearby farm, run by his family since the 17th century. Sustainability, for him, fits in with a long-term perspective.

“I used to think that I made my money up here (in the six large fields farmed in the arable rotation) and did my conservation down there (around the farmhouse and the less productive land below it). I’m starting to change how I think about it now.” Mark Flint, BEW grower at Cawkeld in East Yorkshire.

These more personal details help to drag people like me back from the rather mind-numbing generalities about ‘the average farmer’. But no one should be too surprised that such issues are paramount for all the farmers involved in the project. Indeed, ask any group of farmers what they think is meant by sustainable agriculture, and you can pretty much guarantee the instant response: “To be sustainable, you’ve got to be in business, and that means you’ve got to be able to make a profit. No profitability, no sustainability.”



And they're right. If we want our land managed sustainably, our food produced sustainably, then those who take on those tasks (and carry them out efficiently and responsibly) have no less a right to a sustainable livelihood for themselves and their families than any other professional or wealth creator. At that level, everything else does indeed depend on structuring farming in such a way as to secure those livelihoods.



David Rush, Laxfield, Suffolk

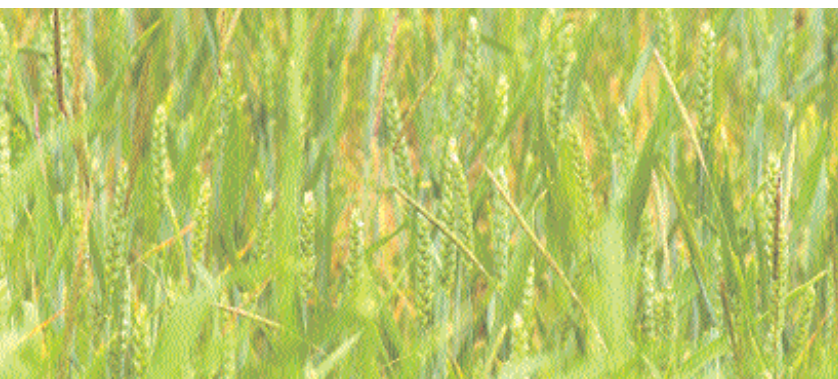
David farms a total of 136 ha on an 8-year rotation of rape, wheat, peas, and wheat, set aside and barley. His father bought the farm in 1942, and he then joined the family business after finishing at agricultural college. The farm has grown peas as a break crop for many years, but has only been producing for BEW for the last 7 years.

When approached to take part in this project, David was at first concerned about possible constraints that the project might impose upon the running of the farm. "I had visions of being asked to farm without chemicals and I worried that the project could become detrimental to my business". After much discussion with field staff, David agreed to be part of the project. He feels very strongly that a balance should be maintained between the environmental needs of wildlife and the viability of the farm business. He is supportive of the project; however he feels it is important to challenge the decision-making to "keep it real".

Like all growers taking part in the project, David is a member of LEAF (Linking Environment and Farming). Although completing a LEAF audit has not meant any significant change to the management practises used on the farm, it has served to increase awareness of the possible environmental impacts of certain practices. "Once you get past the jargon, the LEAF audit just formulates what we're doing already, but it makes me question "why". For example, we usually pile up odds and ends, branches and other bits and then in July pile on the empty spray cans and have a huge fire. It gets very hot and I suspect that there isn't a problem, but it's not ideal. The LEAF audit just makes me think."

Press coverage of farming often paints a very bleak picture with reports of declining farmland bird numbers and loss of habitat. The initial wildlife monitoring on David's farm recorded 34 species of bird (including skylarks), as well as Great Crested Newts and water voles - 2 species that are on the UK Biodiversity Action Plan priority species list. This shows that a fairly intensive arable farm can support a range of wildlife.

David has some strong views on the government's implementation of policy and the role of active environmental lobbying groups. "I don't agree with this business of holding the countryside in trust for the nation". I believe I am holding this farm in trust for the next generation that will either farm it or live around it". He has little time for environmental lobbyists and policy-makers based in Whitehall who don't necessarily understand the complexities of farming.



The same kind of 'realpolitik' can be heard within BEW and Unilever as a whole. The fact that Forum for the Future has the privilege of working with the companies' sustainability champions does not obscure the fact that there are still many sceptics for whom all of this "green stuff" is driven more by airy-fairy emotion and political correctness than by scientific rigour and mainstream commercial interest.

From Single Crop To Whole Farm

Just as the project now needs to expand in order to embrace all the growers, so too does the research need to reach out beyond a single crop (peas) to embrace the notion of sustainable production across the whole farm. It makes little sense to encourage one-off green oases within a surrounding desert of chemical-intensive business as usual.

Encouragingly, another sustainable agriculture project is now underway at Unilever's Colworth research farm in Bedfordshire. The work here, which was managed by David Pendlington from 1998 to 2001, provides a valuable extra dimension... to the fieldwork being done with the pea growers; monitoring nitrate and phosphates in the groundwater, assessing the impact of wide field margins, leaving areas within the crop untreated with herbicides – these and other tests are carried out in 'real world' conditions at Colworth as in East Anglia and Humberside.

The Colworth project's five principal themes are:

- Validating soil health and exploring the feasibility of further improvements;
- Determining optimum sourcing of nitrogen as a nutrient in the context of a downward trend in synthetic nitrate inputs;
- Achieving renewable pest management with a downward trend in synthetic pesticide use;
- Maintaining an upward trend in on-farm biodiversity;
- Demonstrating a commercial costs equation to make a convincing case internally within Unilever, and among its growers, that sustainability is a sound business proposition.

The trials are designed to keep resource inputs as low as possible, while maintaining high yields. The idea is to build up a whole-farm model, throughout the rotation, in which all the costs are monitored – both internal costs and what farming has traditionally regarded as the 'externalities' such as the need for water treatment (not paid for by farmers) and the emission of greenhouse gases.

But there's the rub. If you stop externalising a cost, you have to internalise it – and there are obviously limits to how much of this you can do without paying a whole lot more. For some, that's when the alarm bells start ringing. Growing peas is a fiercely competitive business. If BEW growers have to do all sorts of things (to internalise those costs) that their competitors don't have to do, then either they or BEW end up getting a lower margin, or BEW peas end up costing more – with the growers ultimately getting a 'sustainability premium'. Rocks and hard places certainly come to mind!

CHAPTER 5 – GOING GLOBAL

This is a dilemma being faced not just in the offices of Birds Eye Walls, but in Unilever premises the world over – it's important to remember that the pursuit of the sustainable pea is just one part of a much bigger project. Unilever is profoundly involved with agriculture around the world as the source of the majority of its products. More than two thirds of the raw materials it uses across its businesses come from arable, vegetable and plantation crops, livestock, fisheries and other potentially renewable sources.

Unilever involvement in agriculture

Sources 75% of its raw materials from agriculture

Buys on the open market

Operates tea and palm oil plantations

Has vegetable growers working under contract worldwide

Principal products and brands:

Tea – Brooke Bond

Vegetable oils and spreads – Flora

Frozen peas & spinach – Birds Eye

Tomato-based sauces & pastes – Ragu

Share of world market by volume:

Black tea 15%

Palm oil 6%

Frozen peas 13%

Frozen spinach 15%

Tomatoes 5%

Unilever already places great emphasis on its reputation and responsibility for corporate leadership, taking justifiable pride, for example, in its listing as the top food company on the Dow Jones Sustainability Index. The Unilever Corporate Purpose states that it “has a long tradition of responsible corporate behaviour both internally and externally” and that it will “strive to be a trusted citizen, fulfilling our responsibility to the environment and to the communities in which we operate”.

That's pretty much standard corporate puff these days, but the company's Sustainable Agriculture Initiative tells a much more interesting story about its long-term overall approach to supply chain security and its corporate responsibilities in the early nineties.

A bit of history first. Having signed up to the International Chamber of Commerce's Charter for Sustainable Development, the company set out between 1992 and 1998 to assess the 'Unilever Imprint'. This entailed a life cycle analysis of all its key operations, to understand and quantify their environmental impact (from sourcing to final consumption) compared with the economic value added. What the company was looking for, could be summarised crudely as “more from less” – adding more value while reducing resource use. Water, fisheries and agriculture were identified as three key areas where impact on the environment was disproportionately large. Accordingly, sustainability initiatives now focus on these three aspects of its supply chains.

In some ways, the story it has to tell on fisheries is the most immediately compelling. For a food company with major markets in fish products, what was at issue was finding a suitable response to the crisis of rapidly declining fish stocks. If there are no fish in the sea, there will be no fish on our plates, and no business to be done. Captain Birdseye down and out – it's as simple as that!

Through a partnership with WWF, what emerged was the creation of the innovative Marine Stewardship Council (MSC). This organisation's independent certification procedures provide a direct link between the fishery and the consumer. The MSC logo (which an as yet small but growing number of sustainably managed fisheries around the world are now entitled to use) provides an assurance: "eating this fish", it says in essence, "is not contributing to the destruction of yet another vital stock by overfishing." Unilever itself gains no immediate advantage in the marketplace. Indeed, as a large-scale operator, it cannot switch to MSC-certified fish as quickly as some of its smaller competitors, who thus gain the opportunity to create niche products based on what are currently small-scale supplies. However, the company has really taken the plunge with the commitment that all its fish supplies will come from sustainably managed fisheries by 2005.

Could Unilever now do something equally clear-cut in respect of its agricultural supply chain? It is, after all, among the world's largest users of agricultural raw materials such as tea, vegetables and vegetable oils. But there's a problem. Whereas the fundamental issue of overfishing is clearly identifiable, and the message of sustainable management of stocks can readily be communicated, the concept of 'sustainable agriculture' is both more complex and less well recognised.

International Progress

The company's market research in certain countries, notably in Germany, shows that there is a high level of interest in issues such as reducing pesticide use, protecting biodiversity, or reducing water contamination from nitrate fertilisers. 'Sustainable agriculture' as such, however, barely registers at all on the public consciousness.

The problem of communicating a complex concept such as "sustainable agriculture" inevitably generates a lot of debate about commercial priorities – I've already mentioned the fact that there are plenty of sceptics around! Without the consistent and outspoken support of both Unilever's joint Chairmen, I very much doubt the same kind of progress would have been made, with seven pilot projects now underway.

Pilot Projects in Unilever

Crop	Country	Project	Status
Peas	UK	Field	Started 1997
Spinach	Germany/Italy	Field	Started 1999
Tea	India*/Kenya/Tanzania	Field	Started 1999*/2001
Oil Palm	Malaysia/Ghana	Field	Started 1999/2001
Tomatoes	Australia/Brazil/USA	Field	Started 1999/2000
Rape Seed	Poland/Germany	Desk	Started 2001
Sunflower	Hungary/France	Desk	Will Start 2002

But why start with peas? Not because they are more important to the company than other agricultural products – they are not. Palm oil and tea are more significant in terms of Unilever's overall business. Nor are there any especially inflammable issues surrounding pea-growing. Here too the contrast with palm oil is evident.

The rapid expansion of palm oil plantations in Indonesia has been heavily criticised for destroying traditional lifestyles and as a major driver of deforestation. The use of so-called "controlled burning" to "convert" the land also risks setting off devastating fires, such as those which afflicted the whole region in 1997 in particular. Part of Unilever's approach is that the company (which gets its palm oil from both Malaysia and Indonesia) seeks to share its views on the sustainability of palm oil with the entire palm oil community in those countries. At the same time, Unilever works towards establishing tighter control over the supply chains for its own palm oil, including some tracking and tracing, which will facilitate selecting preferred suppliers in the future.

Unilever's work has already attracted interest from the world's other major food producers. Jules Pretty, who sits on the company's top-level Sustainable Agriculture Advisory Board set up in 2000, makes the point that buying from sustainable resources can "of course make a difference to a company's own operations and reputation, but it can also point the way to the sector as a whole". Keen to share its learning process with others in the industry, Unilever is already in discussions with Nestlé and Danone, and is actively looking to broaden this network. Jan Kees Vis (leader of Unilever's sustainable agriculture programme) says that the issue of sustainable agriculture at the global level is "obviously much bigger than Unilever" and that "we welcome the participation of others, including those whom we normally regard as our competitors". The structure of such a partnership approach could potentially go beyond just a private sector collaboration to involve international organisations such as the UN Food and Agriculture Organisation and UNEP.

PROGRESS IN TEA

Most tea bushes in commercial production are those that were planted when the plantations were first established – many are over 100 years old. This longevity has encouraged the adoption of a wide range of conservation measures, but there is scope for improvement and the wider adoption of best practice.

Since early 1999, the Brooke Bond Tea estates in Kericho, Kenya, have been running a pilot study to test the indicators. The specific indicator set has been developed with the initial emphasis on agricultural indicators, such as soil conditions, pest management and biodiversity. Early results confirm the contention that the levels of organic matter are well sustained by current practices and good pest management is able to avoid the use of pesticides on the tea crop. Although tea is a monoculture, the retention of over 10% of the property as riverine forest strips and conservation areas is supporting natural biodiversity.

Energy consumption is largely met from the estate's own hydro schemes and fuel wood plantations. The measurement of social capital and economic contribution is more difficult to benchmark but the tea industry is at the heart of both the local and national economy, and tea estates support a wide infrastructure in respect of medical care, education and general welfare.

The project is being substantially driven by the Brooke Bond agricultural team in the initial stages, but the findings will be used to develop guidelines which will be offered as an example of best practice to others in the industry. If others agree, this platform could be used to encourage the many Unilever suppliers, from large estates to small-holders, to adopt sustainable practices.

Growing for the Future: Unilever and Sustainable Agriculture

The pea project has done more than any other to date in testing the ten indicators as a coherent way of capturing data on sustainability. It has begun to address the single most prominent issue of UK food consumer concern in respect to vegetables, namely pesticide levels, with its investigation of the potential for optimising inputs. It has produced interesting initial results on increasing biodiversity as a result of the experiments with varying management of field margins.

But what about the consumer? Unilever's own booklet on sustainable agriculture ends with the following brave words: "The pilot project on sustainable agriculture will eventually be followed by the definition of standards for sustainable agriculture, and the development of market mechanisms to allow buyers and consumers to express their preferences." We need to test that in a little bit more detail.

CHAPTER 6 – CONNECTING WITH THE CONSUMER

In the end, however much Unilever's sustainable agriculture initiative may be focused on supply chain considerations, you are never very far from the issue of how it can, ultimately, support the value of the company's brands. It is something the pea growers themselves keep asking about, some of them evidently hankering for the chance of a price premium, which could feed through into what they get paid for their crop. It is what Unilever chairman Antony Burgmans is talking about, too, in a much broader sense, when he says: "We can only reconnect with the consumer if Unilever is seen as a company that pursues sound environmental practices and is able to address in an open and honest way consumer concerns about the manner in which our raw materials are grown and delivered. If we get this wrong we will increasingly find ourselves in an unsustainable relationship with society."

At the moment, this is very much a conviction-led rather than a consumer-led process, to establish sustainability as a core value for Unilever. Birds Eye has not tried to tell its customers much about the search for the sustainable pea. It does now get a very general mention, in a new and discreet note on the packet next to the bar code, but hardly what you'd call a high-profile pitch. This is what the packet says:

"Birds Eye has been working in partnership with the same farmers for many years to ensure the peas grown are as nature intended, full of delicious taste and bursting with goodness. We work together to take into account the protection of the environment as well as the long term health and sustainability of the land."

Significantly a new committee was set up at the end of 2001 on "connecting with the consumer" throughout the whole of Unilever. Chaired by Chris Pomfret (frozen foods business director), this committee is charged with looking at all the implications of sustainable agriculture, and bringing home the message that it is fundamental to the future identity of the company. He knows that nothing could be more counter-productive than to make a pitch to consumers without first being sure that it is based on firmly established results in the supply chain. What has come out of the pea project so far, he stresses, even after three full years, must be regarded as only a very small laboratory test in this regard. Nor has the project produced any conclusions firm enough to promote as product benefits. At this stage, he says, it is "the existence of the project and the almost unique nature of the partnerships" that BEW can be publicly proud of; the process, in other words, but not yet its impact on the product.

The Marketing Challenge

But here's a conundrum for a marketing director. The public image of Birds Eye frozen peas is already a positive one, in terms of quality, freshness, purity. Would a message about making the supply chain more sustainable be received as an unwelcome minus sign against the way they have been grown hitherto? And there are real problems about explaining what sustainable agriculture is all about.

Indeed, it's a perfectly reasonable thing to ask if sustainable agriculture will be seen as a sufficient response to concerns about the unacceptable external costs of 'conventional' intensive farming? Or will it remain a little-understood and mistrusted grey area, a halfway house without the apparently simple 'unique selling proposition' enjoyed by the proponents of organic farming? On this last point, it is clear that the BEW team would dearly love what they call a 'wow factor' to communicate the project's values more widely, both to consumers and to those directly engaged in the UK policy debate on the future of farming.

Yet there are robustly-held convictions within the BEW project team that organic farming is not an appropriate answer. Mirroring Unilever's global perspective that organic methods cannot deliver the high productivity that the world's need for food requires, BEW stresses that it is producing a quality product for the mainstream consumer rather than a premium priced item for a niche market. The team also defends the integrity and coherence of its approach, contrasting this with an organic message that concentrates on the evils of synthetic inputs without enough reference to aspects such as energy usage. Among the growers, too, it is clear that 'organic' is seen as an oversimplified mantra, a slogan which may be playing to a lack of real understanding among consumers, and which does not take sufficient account of farming issues with which they are intimately concerned.

The Organic Dimension

I have to admit here to my own bias as a passionate advocate of organic foods, although I understand both where BEW and its growers are coming from. To be honest, I have always been somewhat mystified at Unilever's deep scepticism about (and occasional hostility to) organic farming. There's a bit of the Unilever's business brain that sees organic farming as 'backwards', almost unscientific, geared far too much to market niches rather than mainstream consumers. As a result, it has been uncharacteristically dilatory in finding out more about organic farming and its very direct relevance to Unilever's commercial future.

And one can't help but contrast this with the enthusiasm for the potential of genetically modified crops – which they see as high-tech, progressive and capable of making a substantial contribution to meeting future food needs. Despite having commissioned some quite excellent consumer research from Lancaster University in the mid 1990s, Unilever executives found themselves completely baffled by the massive protests that engulfed Monsanto and other biotech companies two or three years ago.

I think this is quite an uncomfortable place for the Unilever mindset to have settled; it is certainly not the same place where a very large number of consumers find themselves. But that in no way invalidates the work that BEW is doing on sustainable agriculture. Indeed, I too resist the idea that organic farming is absolutely the only way of making farming sustainable, and have no difficulty warmly endorsing both private sector and Government efforts to explore what sustainable agriculture means for all farmers – organic and non-organic. That's one of the things that makes this project even more valuable.



Opening Up The Dialogue

Which brings us back to Chris Pomfret's problem: that sustainable agriculture so signally lacks resonance in the public mind. This is why he stresses the value of engaging in the public debate on sustainability now, building up an awareness that will ultimately be part of the dialogue between BEW and its customers. As he puts it, BEW's aim "to be the most respected food company in the UK" will be enhanced by the core value of sustainability. Making this value part of BEW's brand positioning will in time reinforce the company's overall 'contract with the consumer'.

For me, this opens up all sorts of interesting ideas about the nature of the marketing challenge for BEW. It's no good thinking about communicating sustainable agriculture in terms of some conventional sales pitch to the consumer. If there is no real knowledge or indeed natural curiosity (and why should there be, after all?), and possibly insufficient trust between BEW and the consumers of its products to take anything for granted by way of claimed benefits or advantages, then simply telling people that buying a sustainable BEW pea will be better for them, better for the environment, and better for future generations, than buying any old bog-standard pea, may not work out that well.

More and more marketing experts are coming up against the same sort of barriers, with their smart gimmicks discounted and their trustworthiness automatically doubted. In his most recent book ("After Image: Mind Altering Marketing"), John Grant suggests that this could provide the spur to a whole new way of thinking about branding, with the somewhat patronising, top-down style of communications based on a "trust me, I'm the expert" mindset gradually giving way to a much more interactive exchange, playing to people's natural curiosity and interest, opening up a genuine dialogue between consumers and producers:

"The very word "communication" is anti-learning. "Communication" implies a passive receiver. Learning involves active not passive minds – often in some form of dialogue. You have to turn media planning inside out to engage people on this level. You have to plan a whole chain of events, experiences, interventions that your audience can pick up and use, and help them build their knowledge, concepts, beliefs in some new direction."

And if there's one area where dialogue is desperately needed, then it surely has to be farming and food – where consumers have developed higher levels of mistrust and cynicism than in almost any other part of their lives. It will be fascinating to see whether Unilever's genuinely innovative approach to the supply side of this particular value chain can be matched by an equally innovative approach on branding and marketing.

But that of course depends not just on Unilever's marketing brain getting excited, but on the speed with which the policy process promotes real change in agriculture and rural policy.



CHAPTER 7 – FEEDING INTO THE NATIONAL DEBATE

Four years into the pea project, BEW now feels that it has the makings of an interesting story to tell to a wider audience. The company remains acutely aware, of course, that its experiments are very much still ‘in progress’.

Yet the timing could hardly be more apposite. As I described in Chapter One, Britain’s crisis in the countryside ‘went critical’ with the 2001 Foot and Mouth epidemic, but it was already abundantly clear before then that we needed a radical overhaul of public policy. On the interlocking problems of the rural environment, farmers’ livelihoods, food production, and consumer confidence, there is valuable material to be found within the BEW project. At the same time, one of the project’s strengths is that it was not conceived in crisis. It is not about firefighting, but about preparing to face the future on a more sustainable footing. It is local in its specifics, but framed as part of a long-term initiative on a global scale.

BEW’s experience with peas reinforces three main messages:

- in a partnership which creates mutual trust, stakeholders with differing perspectives can make common cause in pursuit of a shared objective;
- the crucial issues are linked, and need to be seen as part of a coherent overall picture;
- defining indicators, and quantifiable measurements, is vital for assessing current practice and monitoring progress.

These are messages that apply across the board in debating the future of the countryside. They are in no way specific to the issues surrounding commercial pea-growing as a break crop on East of England arable farms. The emphasis on partnership is now a ‘given’ of public policy, and the success story that the BEW project represents in this regard should stand as an encouragement to make the rhetoric a reality. It is also important that the indicators used in the pea project are well linked to other indicator sets developed, for example, within the OECD, the Countryside Agency, and indeed DEFRA itself.

Those old MAFF indicators of sustainable agriculture (which I referred to back in Chapter One) have now been pulled out of the filing cabinet and dusted down. In conjunction with LEAF (Linking Environment And Farming), and the University of Hertfordshire, the 35 indicators have been discussed at a couple of consultative workshops, and will now be brought together in a new software package to help farmers to at least get their heads around what remains a very alien concept to most of them.



Warnings of 'indicator chaos' need not be a cause for too much concern at present, if everyone is prepared to learn from one another in what is after all still very much an emerging discipline. As is sustainable development itself: "the pursuit of sustainable development is our key role; weaving together social and economic as well as environmental concerns." Those are Margaret Beckett's words on the raison d'être for the creation of DEFRA.

As Chairman of the Sustainable Development Commission, you can imagine that I concur wholeheartedly with that view! But there's a really interesting divergence opening up in terms of what people mean by sustainable development: is it just another way of managing inevitable "trade-offs" between economic benefits on the one hand and environmental and social concerns on the other? Or is it (as I would strongly argue) a much more coherent and comprehensive framework in which economic, environmental and social benefits can all be optimised – without automatically trading one off against the other?

Distinctive features of the BEW project

- **Indicators allow progress to be measured over time**
- **Real information is being generated on sustainability**
- **Indicators well linked to other indicator sets**
- **Research findings give credibility in policy debates**
- **Potential to link with sustainable development strategies at the local to regional level**
- **Project is already creating practical tools for change**
- **Part of an education process – for farmers and non-farmers**
- **Raises profile of sustainable agriculture**
- **Feeds concept of sustainability into practical farming changes**

The fact that the pea project is in essence a commercial project is particularly interesting in this regard. It emphasises that sustainability is not just a matter of attaching more weight to environmental and social externalities in a trade-off against productivity – the traditional pattern of thought in intensive farming. It is a matter of recognising that all the aspects of sustainability, reflected in the ten indicators, are equally indispensable. And of seeking solutions where they do not conflict. The concentration on optimum use of inputs, for example, can reveal the importance of timing and precision of application, allowing growers to achieve the desired result for their crop, at lower cost, while minimising the undesired outcomes. It can be win-win-win.



Critics will almost certainly characterise the BEW project as advocating a way forward which lacks the radical conviction of the organic farming lobby. It will not be easy to persuade the sceptics that the project's concept of sustainable agriculture has an equal, or greater, rigour to it. On the other hand, it is a concept to which BEW's pea growers are more receptive, at least as far as the evidence of the core project group suggests. Come what may, the project's distinctive features mean that it deserves to be taken as a serious and worthwhile contribution to the wider debate.

Many of the key decisions in farming and rural policy come down to questions about subsidies – how much we, as taxpayers, are prepared to pay for 'public goods' that the market can't provide unassisted. Unfortunately, the Common Agricultural Policy will not be open to fundamental change in the short to medium term, and even when the policy does come up for reform in 2006, there is no assurance that its longstanding supporters will be won over from the production-based subsidy system that is its cornerstone. A mid-term review of the CAP, however, is expected to begin in mid-2002. This should provide at least some scope for enhancement of the so-called 'second pillar', providing further resources for schemes aimed at improving the environment and the rural economy, and diversifying farm businesses. Margaret Beckett is already laying out some of the groundrules for that process:

"Surely the Government should help the industry to do its business and pay for what the nation requires of the industry through our environmental and conservation agenda, not by subsidising the industry to produce goods not wanted in the marketplace. Demands on the budget for agricultural support are coming under greater scrutiny across not just the EU, but the world. The pressure to reduce market-distorting subsidies is probably at an all-time high. And with pressure to reduce subsidies and curtail budgets comes the pressure to identify our real priorities – to choose where funding should go, when it cannot and will not go everywhere." (Oxford Farming Conference, January 2002)

The BEW project does not specifically set out to address the issue of subsidies. However, it does provide useful data, and is beginning to test practical innovations which could be supported on a much wider scale by well-targeted incentive schemes and subsidies. The possibilities for highly specific support schemes range across the board, from techniques to increase biodiversity, to support for farmer knowledge networks, and educational and farm access initiatives in the local community. The discipline of quantifying progress on a 'sustainability score' is also highly relevant here.



CONCLUSION

I hope by now that the reasons for my enthusiasm for this project have become a little clearer. It is solutions-oriented, science-based, and practical in its nature. Its aim is to establish a process that will take the supply chain forward towards sustainability. Moreover (and I've stressed how important this is for Forum for the Future), at the heart of the project is the partnership approach. The company, the farmers, environmentalists and other stakeholders, who have important common objectives but differing motives, are working together to find and implement ways of achieving them.

Unilever has committed the time and resources to this project (and to the other pilot schemes identified in its Sustainable Agriculture Initiative), to enable them to come up with robust, scientifically-based data on existing best practice. It is a measure of the long-term nature of the project that BEW is making no claim to have found answers in the first three years of field-work. What it has done is to create a continuous learning process, which can guide the participants along a path of sustainable development. The idea of a 'completion date' is hardly relevant in this context.

Ultimately, the project aims to reconnect with the consumer, of Birds Eye peas in particular and of Unilever products in general. The objective is that the brand should be identified with the core value of responsibility, locally and globally, in farming to meet food needs. That's why I've been banging on so much, both about the public policy context and the marketing challenge.

This is long-range thinking, given that 'sustainable agriculture' as a concept currently enjoys little or no consumer awareness. 'Making sustainability win in the market place' is a challenge to which Unilever's marketing strategists are beginning to apply their minds. The focus of its Sustainable Agriculture Initiative may be very much on the supply chain, but this is precisely because the company sees this as the key to the whole issue – to develop an environmentally sustainable supply chain that delivers profit, creates value for stakeholders, and meets consumer needs now and in the future. We look forward to remaining involved in such a crucially important piece of work.

APPENDIX ONE – FURTHER INFORMATION ON INDICATORS

Soil fertility/health

Measures used: diversity and density of earthworms, carabid beetles, other organisms such as springtails, and levels of pea rhizobia micro-organisms.

Earthworm numbers rise with increases in organic matter. Populations responded well to pea crop, particularly post-harvest vining matter left on fields. Densities were significantly higher than in preceding winter wheat crop. Especially sensitive to catastrophic cultivation (ploughing), earthworms are also sensitive to the application of certain pesticides and inorganic fertilisers, particularly those that lower soil pH. In 2000/2001, a series of experiments showed that refraining from ploughing, and not applying herbicides and aphicides on field margins, increased the diversity and density of both earthworms and carabid beetles.

Carabid beetle diversity and numbers were much greater in the pea crop than in winter wheat; population density appeared high compared to other UK studies. Breeding behaviour and life cycle makes carabids particularly sensitive to timing and severity of cultivations, and to the number of winter and spring crops within the rotation. Highly sensitive also to insecticide applications, so monitoring can indicate efficiency and accuracy of insecticide inputs. Numbers also reflect availability of favourable habitat (beetle banks). Changes in numbers of other insects, e.g. springtails at bottom end of food chain, are an indicator of disturbance within the ecosystem.

Pea rhizobium levels are an indicator of soil fertility, so monitoring helps assess soil's suitability for growing peas. Obstacles remain on quantifying and qualifying different rhizobium species in soil. Very sensitive to pollutants such as heavy metals. Unusual ability to form nitrogen-fixing symbioses with legumes.

Soil loss

Measures used: erosion, and levels of soil organic matter (OM). A possible third measure, soil cover index (proportion of year for which soil has some vegetative cover rather than being left bare) was discarded by BEW team as not a proper direct measure, and strategies to improve the soil cover index. Cannot be considered in isolation from soil loss, or leaching, which are directly affected by how long soil is left bare.

Erosion is a natural process, but its rate and severity can be affected by the type of agricultural activity, soil, slope, crop and amount of rainfall. Measuring erosion increases farmers' understanding and awareness of the process and

allows individual farms to target realistic risk mitigation strategies. The baseline study showed that there were areas on each of the farms with some risk of soil loss.

Soil OM takes time to accumulate, varies among soil types, and rises and falls with continual crop cultivation. OM directly influences soil's workability, drought resistance, nutrients and fauna, thus in turn affecting yield. Loss of OM can also aggravate erosion, by reducing soil cohesion and aggregate stability, thereby reducing soil surface permeability and infiltration capacity.

Nutrients

Measures used: kg/ha applications of inorganic fertiliser, and on-farm nitrogen balance.

Baseline study showed average 55kg/ha use of synthetic or inorganic nitrogen, phosphorus and potassium (NPK), non-renewable inputs which consume energy in their manufacture. This is relatively low compared with other arable crops in UK. Most of it is maintenance dressings of phosphate and potassium, applied to pea crop for fertility of whole rotation, and needed because these nutrients are not in a form readily available to plants in the soil.

Nitrogen balance helps measure efficiency of nutrient use on peas, and can help growers to develop whole farm fertiliser strategies, replacing imported synthetic nutrients with those generated on-farm. Insight on nitrogen fixation from atmosphere by peas (helping to build up soil fertility) can lead to adjusting nitrogen applications for other crops within rotation. However, the BEW team discarded a third measurement parameter – the proportion of nitrogen fixed on-farm to imported – because enhancing this depends on a management system for the whole rotation; you cannot look just at the pea crop, for which the nitrogen carry-over is not relevant.

Pest management

Measures used: kg/ha of pesticide active ingredient, and pesticide profiling /scoring.

Pesticides are often derived from non-renewable resources, and their manufacture is energy intensive. More sustainable practices require minimising external non-renewable inputs, in favour of use of renewable resources such as biological controls. Pesticide application per hectare (monitored in last six years over all 20 farms) remained reasonably static, falling slightly in sixth year. Current usage is considered to be minimum necessary to produce pea crop within conventional arable rotation.

Measuring kg/ha usage does not take account of levels of toxicity of specific pesticides. BEW team has used pesticide profiling, however,

to compile a preferred list of selective pesticides for pea crop. The objective is minimum adverse impact on both human and environmental health. Avoiding non-selective insecticides, for example, enables growers to target pest species such as pea midge, while leaving beneficial species such as ladybirds and carabid beetles unharmed.

Biodiversity

Measures used: numbers of species, and population densities, for butterflies, plant, wildlife and birds. If soils and water are being affected by agricultural operations, this will be reflected in numbers and diversity of wildlife species. The BEW project gave a unique opportunity to investigate, together with conservation groups, opportunities for maintaining / improving biodiversity within an agricultural system.

Butterflies – good indicators of environmental quality, and easily identified – were generally scarce throughout the farms studied. This reflects overall downward trends in insect and plant species associated with arable farming. In the 1999-2000 baseline pilot study, numbers of recorded species fell, and those found in the pea crops, as in other crops studied, were highly mobile wider countryside species. Only two species, the large and small whites, used the pea crop to breed. Overall butterfly numbers tended to be greater over pea crops – attributable to open structure of pea canopy and tramlines through the crop, allowing individual butterflies to move freely and providing opportunities for basking. Laying their eggs on rape plants.

Baseline surveys showed that plant wildlife diversity was (a) higher in pea fields than in winter wheat, and (b) concentrated in the margins around the crop and the field boundaries. Results over three years show an increase in diversity, particularly where field margins have been left unsprayed (the impact of this on the crop is yet to be analysed). However, the correlation between diversity and the overall environmental quality of the farm suggests that it is farmers' attitudes, and the management systems used, which have most bearing on biodiversity.

Many farmland birds are in serious long-term decline. Bird populations in Britain are well studied and can provide a barometer of change in the wider environment. Increased pesticide use affects food resources, particularly for species whose young rely on insect food. The grubbing of hedgerows, and the reduction of winter stubble through sowing winter wheat, has reduced suitable nesting and winter-feeding grounds. The BEW pilot study did find a greater diversity of species in pea fields than in cereals,

particularly during flowering, and that pea fields supported a greater number of bird species post harvest, particularly skylarks and lapwings. Pea crops also extend the breeding season of skylarks by up to three months. However, bird densities were relatively low compared to what could potentially be achievable on farmland. The 2001 survey of pea fields provided the first data on bird populations in the test strips along field margins which were not sprayed with pesticide. Densities were indeed slightly higher than in pesticide-treated field margins, especially among insectivorous species. Overall, the mosaic of heterogeneity created by pea crops, cereals and other crop types on rotational farms may help to maintain both foraging and breeding habitats for a longer period over the summer than would be available from winter-sown cereals alone.

Product value

Consumers are increasingly concerned about how food is produced. How can BEW link the way its agricultural raw materials are grown – the process quality – and measurable indicators of product quality?

Tangible quality can be quantified using measures such as the presence of contaminants, or the ratio of complaints to packets of peas sold. Perceived product quality could be tracked in terms of brand market position, and, more broadly, the success of the business – share value, and the company's position on stock market indexes such as Dow Jones sustainability index.

The commercial cost of achieving and maintaining product value needs to be factored into the overall assessment of sustained economic viability, and balanced with continuous improvement in environmental and social performance. Data from Unilever's research at Colworth is being used to generate a whole farm cost model not only of conventional arable crop gross margins, but the external costs that agriculture is charged with. The rationale is threefold – promoting change among BEW suppliers, influencing policy makers, and reinforcing the argument within Unilever itself that sustainability makes good commercial sense.

Energy

Measures used: farm audits of energy use (megajoules per tonne of product) and energy balance (metabolised energy output from peas, divided by energy used to produce them); total greenhouse gas emissions from drilling to harvesting; and waste management ratio (proportion of waste reused, recycled and/or disposed of safely).

Audits on 10 farms showed that harvesting was the heaviest use of direct energy (diesel and other fuels), accounting for over 25% of the total.

Indirect energy use was mainly in seed and pesticide production. Recommendations include more detailed audit and further investigation of harvest strategies and the energy efficiency of harvesters.

Energy balance for peas was low compared to UK-grown staple crops, but caution is necessary in making this comparison since peas are not a staple but only a break crop in a cereal-dominated rotation.

Greenhouse gas emissions are principally carbon dioxide (from consumption of direct and indirect energy) and nitrous oxide (from the breakdown of nitrogen). As a greenhouse gas, nitrous oxide is 320 times more potent than carbon dioxide, and it also contributes to acidification. Although peas require no additional nitrogen applications, the nitrogen they fix during growth will go through the same chemical breakdown process, so pea production could have a significant impact here.

Farmers view peas as a 'minimal waste crop', but the study flagged up a need to develop better practices for reuse, recycling and safe disposal, particularly for seed bags and pesticide cans which currently go for incineration.

Water

Measures used: irrigation water use, nitrate and phosphate leaching (associated with water pollution, eutrophication and fish kills), pesticide leaching. Data was gathered at 'field' level, but scaling up to catchment level could give better picture of potential overall impact of pea growing. Work on leaching can also help growers assess impact and efficiency of nutrient and pesticide application.

Peas are mainly rain fed, except occasionally in extreme heat. Irrigation water was used by only one farm in the study, which has free draining very light sandy soils.

Nitrate and phosphate leaching are natural processes, but are increased by application of both organic and inorganic fertilisers. Setting targets is complicated by complex relationships between levels of losses and severity of impacts. Vining peas, as legumes, fix own nitrogen and require none in fertiliser form., but leaching can still be serious, as BEW study confirms. Nitrate attributed to breakdown of pea crop residues, and manure remaining in soil after harvest, resulted in concentration in ditches at fieldside well above EU limit of 50mg/litre. Nitrate leaching is being monitored across all sites in 2001/2002.

Phosphate fertilisers are applied to pea crops. Leaching varied between sites, but no relationship was found between phosphorus status of fields, and concentrations leached. Main factor appeared to be heavy rainfall, resulting in

suspension of soil particles and associated phosphorus molecules in drainage water. During winter of 2000/2001, water soluble phosphorus concentrations were in line with Environment Agency guidelines for running water. However some total phosphorus concentrations exceeded all guidelines for phosphorus in surface water. Since particulate-bound phosphorus leaching to surface waters is the greatest environmental threat, monitoring in 2001/2002 is only on sites with field drains.

Leaching characteristics of pesticides differ between products; risk depends on persistence of chemical in soil after application, and how tightly the chemicals are bound to soil particles. Study recorded leachate concentrations for a range of pesticides used. Total loss in leachates was always less than 1% of amount applied, but concentrations varied between sites, often exceeding EU limits for drinking water. Largest losses were at two sites that had field drains, suggesting that field drains were allowing pesticides in solution to drain freely away from the crop and its intended purpose. BEW team will conduct further investigation to know whether leaching from pea fields is disproportionate compared to other crops.

Human/social capital and the local economy

Originally formulated as two separate sustainability indicators, but work within pea project came up with suggestion to group them together. Local economy is intrinsically linked to human and social capital; investment in people and society generally increases local economic wealth.

Measurement parameters: not yet developed. BEW team perceives need for specifically constructed framework rather than generic one. Some work done on theoretical framework for social capital, suggesting focusing on existence of structural rules – agreements which exist independently of individuals concerned, such as contracts between employer and employee. Not because BEW team disregards significance of harder-to-define cognitive components of social capital (based on the relationships and social trust that facilitate co-ordination and co-operation), but because it finds the methodologies required to measure them impractical within the pea project. In general terms, the local group structure, which BEW uses for practical co-operation among pea growers, contributes to social capital as a valuable network for sharing resources, knowledge and experience.

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An important part of Unilever's work has been to produce an education pack highlighting sustainability issues to the consumers of tomorrow : "From field to fork".

Further information can also be obtained from:

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