



LINKING ENVIRONMENT AND FARMING
Integrated Farm Management

LEAF - DRIVING SUSTAINABILITY

A review of our impact, achievements and challenges 2013



the international
food & drink event



LINKING ENVIRONMENT AND FARMING
Integrated Farm Management



Our vision... a world that is farming, eating and living sustainably

Our mission... to inspire and enable sustainable farming that is prosperous, enriches the environment and engages local communities.



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MEASURING SUSTAINABILITY IS KEY TO PROGRESS

Caroline Drummond, LEAF Chief Executive

LEAF's vision is a world that is farming, eating and living sustainably. Refreshed and ambitious, we are looking to contribute towards the achievement of our vision through three areas of work:

- **Facilitating knowledge generation and exchange** amongst farmers and researchers through our network of LEAF Demonstration Farms and Innovation Centres, farm business management tools and technical events.
- **Developing market opportunities** through the LEAF Marque assurance system - the leading sustainable food label.
- **Engaging the public in sustainable food and farming** through Open Farm Sunday, the Let Nature Feed Your Senses project and educational materials.

This report demonstrates LEAF's position as the leading organisation delivering sustainable food and farming. It shows the role of LEAF management tools (including the LEAF Audit and LEAF Marque Standard) in supporting farmers to produce food and other products to high environmental standards, while ensuring that their businesses are robust and resilient for the future.

This report also introduces the 'LEAF Sustainability Dashboard', which demonstrates how LEAF Audit users fare in delivering **Economic Performance**, **Environmental Quality** and **Social Health**. The dashboard draws on 24 objectives (see Table 1 on page 9) which relate to Integrated Farm Management. LEAF Audit responses which relate to each objective are scored from 0 to 3, where 0 indicates that no progress towards an objective has been made and 3 represents full achievement.

Objectives are grouped under **Economic Performance**, **Environmental Quality** and **Social Health**, and average scores for each are presented in the dashboard.

The dashboard shows that farmers who complete the LEAF Audit have an impressive average sustainability index rating of 2.50 out of 3, indicating that the majority of LEAF Audit users' businesses are economically, environmentally and socially robust. LEAF farmers are strongest when it comes to Environmental Quality with an average score of 2.57, followed closely by Economic Performance at 2.53 and Social Health at 2.13. Although Social Health, which includes engagement with the community, has a lower rating, it is in this area that the greatest gains have been made over the last three years.

Also unveiled in this report are the results of two unique farming and food industry surveys.

The first survey shows that a large majority of LEAF farmers believe that their business is more environmentally, economically and socially sustainable than it was five years ago. The greatest improvement has been in environmental performance with 81% reporting that their business is more environmentally sustainable than it was five years ago.

The second survey questioned nearly 1,000 contacts in the farming, food and hospitality industries. More than 80% agreed that sustainability is very important to their business, with a similar proportion aware of global food security issues, but only 42% thought that their business is completely financially, environmentally and socially sustainable.



*Caroline Drummond, MBE,
LEAF Chief Executive*

LEAF is committed to supporting and inspiring farmers, the food industry, scientists and consumers, to deliver sustainable farming that is prosperous, enriches the environment and engages local communities.

metrics. This report represents a starting point in our work to develop a robust set of indicators to show progress against the 24 objectives that we have identified as important in delivering sustainable farming practices.

For LEAF and our members, it is essential that we measure our contribution to sustainability using robust methods, clear and consistent language and reliable

We welcome comments and involvement from across the food and farming sector in the future development of this work.



Caroline Drummond, LEAF Chief Executive

MEASURING SUSTAINABILITY

“Sustainable farming delivers a site-specific farming system supporting the integration of the environment, society and farm economic viability over the long term.” ~ LEAF 2012 (Adapted from the US Congress 1990 “Farm Bill” definition of sustainable agriculture)

Since 1991 LEAF has been committed to the delivery of more sustainable farming practices by encouraging the uptake of Integrated Farm Management (IFM)¹.

Our work with farmers, the food industry, retailers, environmentalists, government departments and consumers has led us on an exciting and productive journey to ensure that we can deliver our mission, to inspire and enable sustainable farming that is prosperous, enriches the environment and engages local communities.

We know it is increasingly important to demonstrate how our members across the globe are developing more sustainable farming businesses. It is vital that we extend and duplicate approaches that are successful in delivering sustainable food and farming systems. Our natural resources - water, soil, biodiversity and nutrients - are all under pressure against a background of climate change. As an organisation, we need to monitor and evaluate our performance, build on our successes, and learn from our mistakes.

Economic performance

“When it comes to conforming to regulations, by completing the LEAF Audit it means we are ahead of it. We’ve certainly addressed the issues even if we haven’t solved them before any regulations become statutory... certainly with pesticides... we were already going through the processes, so we didn’t have to make a massive change”.

Environmental quality

“Adopting IFM has helped change my attitude and helped cement some of those ideas in my head. It has progressed my attitude to the environment, rather than let it get stale”.

Social health

“People have found us more approachable; people will stop and talk and have a look over the fence at the cows”.

LEAF members on how their farming has been affected by sustainable practice

¹IFM uses the best of modern technology and traditional methods to deliver prosperous farming that enriches the environment and engages local communities, which in turn helps build trust and understanding amongst consumers.

LEAF'S IMPACT

A Countryside and Community Research Institute report in 2010² found that LEAF membership had helped UK farmers deliver sustainable farming systems and actively engage consumers. The report states examples of member's experiencing:

- Growth in business performance (economic, environment and social) through the use of LEAF management tools and the adoption of the LEAF Marque
- Improved recognition of on-farm environmental value and the motivation to be active in agri-environmental schemes
- Improved training and skills development in areas such as communication and marketing
- Access to new markets
- Better public understanding and trust through participation in Open Farm Sunday

Other sources of information evidence:

- New skills development and enhanced beneficiary wellbeing through the Let Nature Feed Your Senses project³
- The lead that LEAF Demonstration Farmers and key supporters take in developing sustainable farming systems for the industry⁴

LEAF provides a structured approach that delivers a framework for farmers to meet regulations and grow their businesses. We have also worked with the food and agricultural supply chain to develop Corporate Social Responsibility opportunities and other assurance systems.

"As a whole farm management philosophy LEAF and the principles of IFM are the cohesive thread which run through everything we do and serve as a sound reference point for effective decision making and essential community engagement"

Chris Newenham, LEAF Demonstration Farmer



SO, HOW ARE WE DOING?

In co-operation with other organisations, and by utilising research findings and experience, we have identified a set of 24 objectives that feed into the nine themes of Integrated Farm Management: Organisation and Planning; Soil Management and Fertility; Crop Health and Protection; Pollution Control and By-Product Management; Animal Husbandry; Energy Efficiency; Water Management; Landscape and Nature Conservation and Community Engagement.

The IFM themes have then been placed into three groups, which are recognised as the pillars of sustainability: Economic Performance; Environmental Quality and Social Health. These pillars are visually represented in the 'LEAF Sustainability Dashboard'.

The report draws on the following sources:

- LEAF Audit returns⁵ (established 20 years ago, with annual update and continual development, this report looks at the three year trend of performance from 2010 to 2012).
- LEAF Marque statistics and returns (2012).
- Online LEAF membership from surveys in 2008 and 2010 to assess the benefits of adopting IFM and LEAF membership.
- Statistics from Open Farm Sunday, the LEAF Water Management Tool and the Countryside and Community Research Institute (CCRI) report in 2010.
- A survey of our farmer members (2013) which sought to find out how the sustainability of their business compares to five years ago and what measures have been taken over the last year to build up the resilience of their business.
- A survey of contacts in the farming, food and hospitality industries (2013) which sought respondents' opinions on sustainability and sustainable sourcing within the food industry.

"Open Farm Sunday and LEAF Demonstration Farms have been instrumental in changing the public's attitudes and misconceptions of farming. LEAF's work in delivering and communicating the true picture of how farmers feed the British nation and care for the countryside is invaluable"

Ian Pigott, LEAF Demonstration Farmer

Methodology for the LEAF Self Assessment Audit data

The LEAF Self Assessment Audit has been completed by about 1100 LEAF members in 2012. It consists of 375 statements of best practice. Across a continuum of responses, the user selects one of the following: 'Not Applicable' (N/A); 'Not Started'; 'Some Progress'; 'Considerable Progress' or 'Fully Achieved'. In the report, four of these responses have been scored in the following way: 0 for 'Not Started'; 1 for 'Some Progress'; 2 for 'Considerable Progress' and 3 for 'Fully Achieved'. 'Not Applicable' responses are **not** scored, therefore are not used in the scoring system.

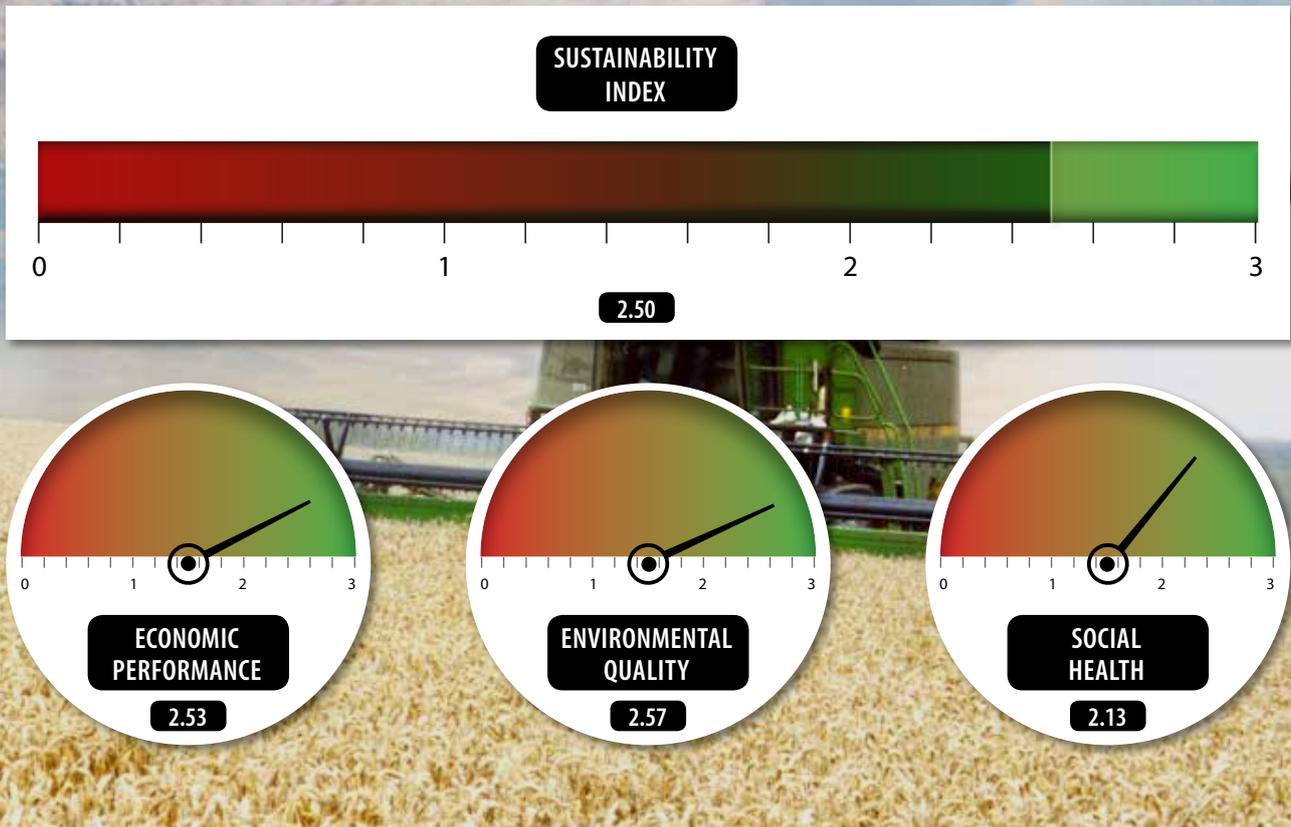
For each of the 24 objectives we have selected the appropriate LEAF Audit statements that aim to deliver the objective. These are then averaged to give that objective a score. These objective scores are then used to give an average score for the sections of Integrated Farm Management and the Sustainability Dashboard. Some LEAF Audit statements are used more than once as they are relevant to multiple objectives.

² http://www.leafuk.org/resources/000/563/370/The_Benefits_of_LEAF_Membership.pdf

³ <http://www.letnaturefeedyoursenses.org/letnature/home.eb>

⁴ Details available upon request from LEAF

⁵ The LEAF Audit provides a comprehensive health check of the farm business. It is a self-assessment management tool based on the themes of Integrated Farm Management and includes 376 (2013) statements. Features include benchmarking and action plans. The LEAF Audit is available in English and Spanish, with 6% of returns in Spanish.



THE LEAF SUSTAINABILITY DASHBOARD

We are using this report to introduce the 'LEAF Sustainability Dashboard', which demonstrates how LEAF Audit users fare in delivering Economic Performance, Environmental Quality and Social Health.

The dashboard draws on 24 objectives (see table 1) which relate to Integrated Farm Management, scoring LEAF Audit responses which relate to each objective from 0 to 3, where 0 indicates that no progress towards an objective has been made, and 3 represents full achievement of an objective. Objectives are then grouped under the three pillars of sustainability - Economic Performance, Environmental Quality and Social Health - and scores for each are presented in the dashboard.

Examples are also given from LEAF Marque producers. The LEAF Marque is an assurance system recognising sustainably farmed products, based on LEAF's principles of Integrated Farm Management. All LEAF Marque certified farms are independently inspected. Currently, 24.9 % of UK fresh produce (fruit and vegetables) is LEAF Marque certified, and much of the produce available from UK retailers has been certified to LEAF Marque standards, even if it does not always carry the logo. There are 167 different crops grown to the LEAF Marque standard, from apples, potatoes, carrots, grapes, avocados, oranges and broccoli to litchi, sweet potato, okra and pak choi.

The LEAF Sustainability Dashboard figures demonstrate the consistent efforts LEAF farmers make to farm sustainably. There is a particularly strong commitment to Environmental Quality, with the highest score of the three pillars at 2.57. This reflects the efforts LEAF farmers make to protect and enhance environmental resources such as soil, water, and biodiversity. It also highlights the results of implementing an integrated crop protection and health strategy. Economic Performance also scored strongly at 2.53. At a time of economic recession, market volatility and rising input costs, business performance is obviously critical and this score demonstrates the importance LEAF farmers place on efficiency. The Social Health score was lower than the score for Economic Performance and Environmental Quality at 2.13, but this is perhaps not surprising as engagement with the community often takes place in addition to normal farming activities and requires different skills to the production of crops and the preservation of the environment.

We are encouraged by the LEAF Sustainable Dashboard scores. The data that accompanies them allows us

to identify areas of good performance and areas for improvement. We are keen to ensure that we are helping LEAF farmers deliver even more resilient farm businesses: economically, environmentally and socially.

Objectives and sustainability scores for Integrated Farm Management

To follow are the set of 24 objectives that have been correlated to the nine main themes of Integrated Farm Management. The themes have in turn been placed into three groups, which are recognised as the pillars of sustainability: Economic Performance; Environmental Quality and Social Health. These pillars are represented in the LEAF Sustainability Dashboard.

Table 1 - 24 Objectives and sustainability scores for Integrated Farm Management (source: LEAF Audit returns 2012)			
Objective	Sustainability score	IFM theme	Sustainability index
To implement appropriate planning and review processes	2.54	Organisation and Planning	Economic Performance
To enhance productivity and efficiency (yields and biodiversity)	2.38	Organisation and Planning	Economic Performance
To improve management performance	2.29	Organisation and Planning	Economic Performance
To increase staff performance	2.70	Organisation and Planning	Economic Performance
To actively develop market opportunities for sustainable food	2.55	Organisation and Planning	Economic Performance
To implement appropriate financial systems	2.52	Organisation and Planning	Economic Performance
To improve efficiency from grassland	2.69	Organisation and Planning	Economic Performance
To improve the business financial status	2.37	Organisation and Planning	Economic Performance
To demonstrate good animal health & welfare	2.75	Animal Husbandry	Economic Performance
To improve soil health	2.72	Soil Management and Fertility	Environmental Quality
To enhance nutrient management efficiency	2.73	Soil Management and Fertility	Environmental Quality
To improve pesticide stewardship	2.83	Crop Health and Protection	Environmental Quality
To implement responsible waste management	2.65	Pollution Control and By-Product Management	Environmental Quality
To improve air quality	2.68	Pollution Control and By-Product Management	Environmental Quality
To improve water quality	2.62	Pollution Control and By-Product Management	Environmental Quality
To effectively employ GHG mitigation measures	2.48	Energy Efficiency	Environmental Quality
To improve energy efficiency	2.52	Energy Efficiency	Environmental Quality
To improve water use efficiency	2.41	Water Management	Environmental Quality
To source water sustainably	2.09	Water Management	Environmental Quality
To actively increase biodiversity	2.47	Landscape and Nature Conservation	Environmental Quality
To enhance management at a landscape level	2.63	Landscape and Nature Conservation	Environmental Quality
To improve well-being of management, staff and contractors	2.56	Community Engagement	Social Health
To build social capital	1.85	Community Engagement	Social Health
To demonstrate effective business marketing and communication	1.98	Community Engagement	Social Health

CHANGE OVER TIME

In Table 2 we have mapped the trends over the last three years (2010 to 2012)⁷.

Table 2 - Scores for the nine key areas of Integrated Farm Management				
	Average of 2010	Average of 2011	Average of 2012	Average change 2010 to 2012
Environment	2.60	2.61	2.57	- 0.03
Crop Health and Protection	2.81	2.85	2.83	0.02
Energy Efficiency	2.45	2.55	2.50	0.05
Landscape and Nature Conservation	2.54	2.55	2.55	0.01
Pollution Control and By Product Management	2.64	2.68	2.65	0.01
Soil Management and Fertility	2.69	2.73	2.72	0.03
Water Management	2.56	2.38	2.25	- 0.31
Financial	2.49	2.55	2.53	0.04
Animal Husbandry	2.62	2.75	2.75	0.13
Organisation and Planning	2.47	2.53	2.51	0.04
Social	2.00	2.11	2.13	0.13
Community Engagement	2.00	2.11	2.13	0.13
Grand Total	2.48	2.52	2.50	0.02



⁷ Although described as a trend, it must be noted that the average figures for each year include some new LEAF Audit users, so a comparison between years does not refer to the same sample of LEAF farmers.

Countryside and Community Research Institute Report and LEAF Membership Surveys

Economic Performance: More than half of farmer members in the 2008 and 2010 member surveys agreed that LEAF had brought them direct financial benefits. Changes in machinery use had reduced fuel costs by up to £5,000, the use of minimum tillage cultivation had reduced machinery use by 10% in some cases, and recycling waste products had reduced disposal costs.

Environmental Quality: Over three-quarters of respondents in the 2008 and 2010 membership surveys considered LEAF membership and IFM principles to have improved their environmental performance. Similarly, 77% of respondents in the CCRI study agreed that LEAF farmer membership and IFM practices had improved biodiversity and landscape management. Examples listed included an increased number of bird species and field margin flora, benefits to soil and water, improved water storage, and ideas for alternative energy and energy recycling.

Social Health: In the CCRI report 91% of respondents agreed that LEAF farmer membership and IFM practices had improved understanding among the local community, compared with around 50% as recorded in previous LEAF surveys. Membership survey respondents said that the public now regarded them as being more approachable, and that there had been an increase in people's understanding, appreciation and tolerance of farming practices.



HOW SUSTAINABLE IS YOUR BUSINESS?

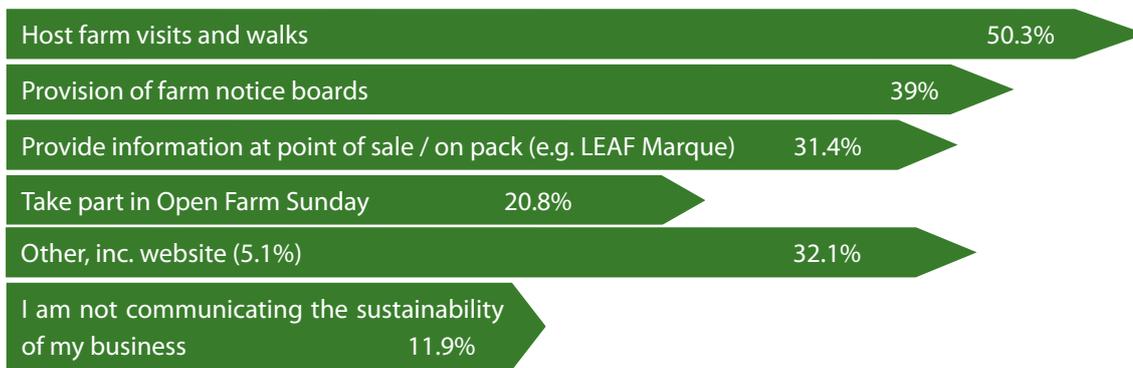
What the farmers said...

In 2013 LEAF conducted a survey of our farmer members. Amongst the 159 respondents, the level of confidence and commitment to sustainability was strong and the mood was upbeat.

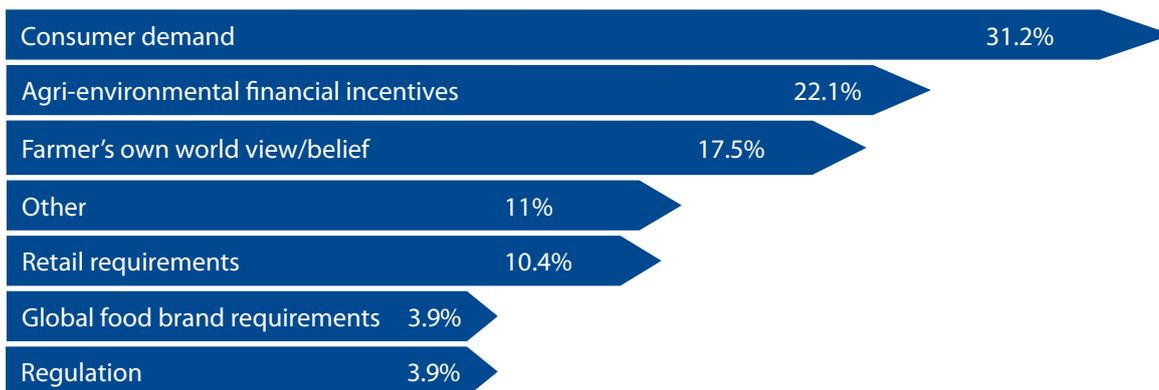
Compared to five years ago (2008):

- **64.1% of respondents felt that their business was more financially sustainable**, 12.4% said it was less financially sustainable and 23.5% said it was about the same.
- **80.9% of respondents felt that their business was more environmentally sustainable**, 4.6% said it was less environmentally sustainable and 12.5% said it was about the same.
- **60.5% of respondents felt that their business was more socially sustainable**, 4% said it was less sustainable and 35.5% said it was about the same.

Communication is a key part of a sustainability management and reporting process so we asked them, "How are you communicating the sustainability of your business practices to your customers?". These are the results:

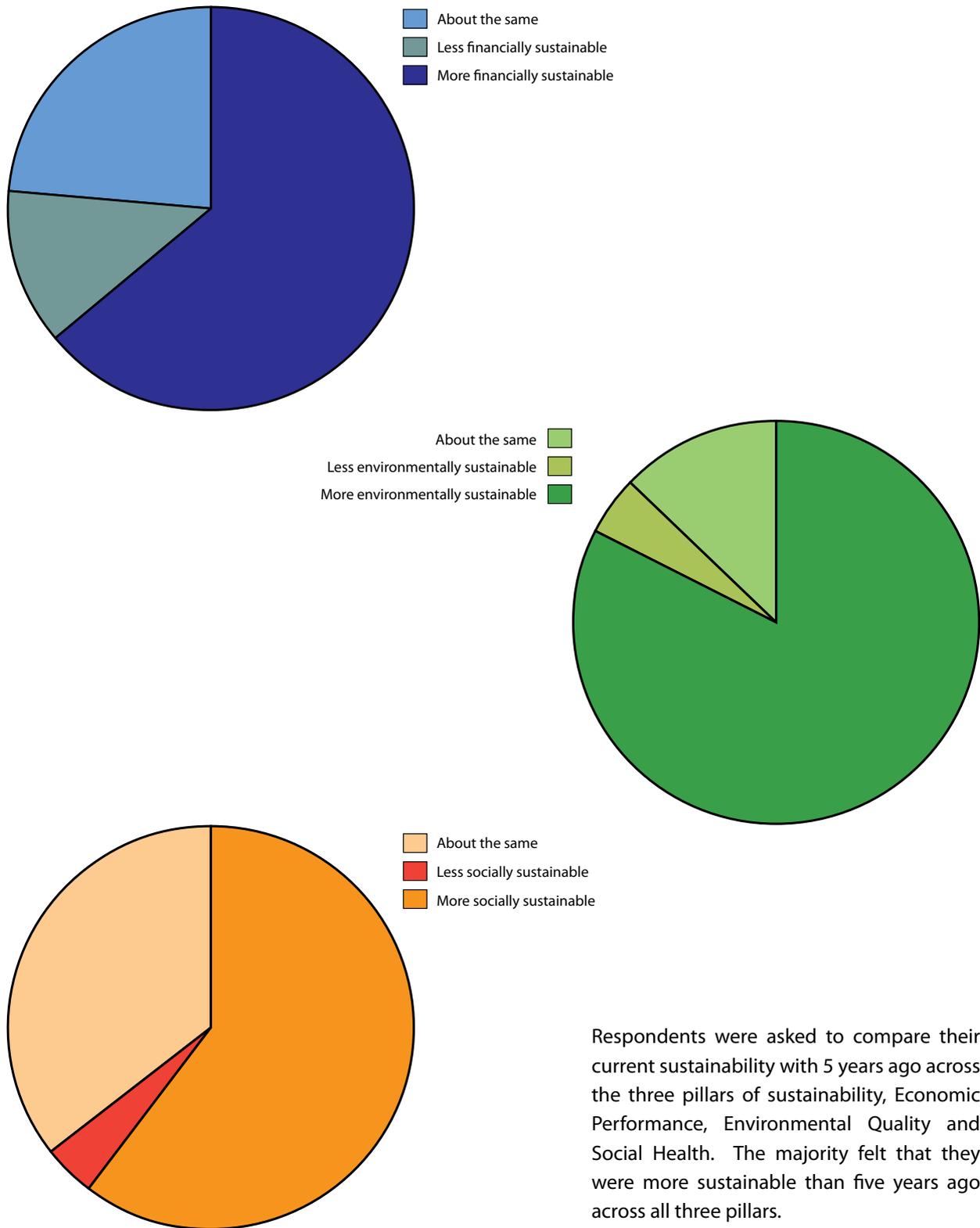


Added to this we asked "Which one driver do you think will be most influential in shaping the future sustainability of the farming industry over the next five years?" Interestingly, respondents saw consumer demand as a key driver, demonstrating the importance of proactive communication to build trust and understanding amongst consumers. These are the results:



We also asked farmers to describe the actions they had taken to make their businesses more sustainable. More astute risk management, improved water management, and the introduction of PV solar panels for on-farm energy production were the most common actions stated. There were some other interesting business decisions taken, including downsizing the business to improve attention to detail, achieving the LEAF Marque standard and attempts to engage the general public more effectively.

Figure 1 - Charts illustrating the results obtained from a survey of 159 LEAF members.



Respondents were asked to compare their current sustainability with 5 years ago across the three pillars of sustainability, Economic Performance, Environmental Quality and Social Health. The majority felt that they were more sustainable than five years ago across all three pillars.

HOW SUSTAINABLE IS YOUR BUSINESS?

What the food industry said...

At the same time as the farmer survey, we questioned contacts in the farming, food and hospitality industries, as supplied by Fresh Montgomery who organise the International Food and Drink Event (IFE). IFE is the UK's largest and most respected food and drink trade event. Held every two years, it is where the international food and drink community gathers to source new products, trade and keep pace with industry trends.

The response from the LEAF survey was superb with 964 people taking part, demonstrating their commitment to sustainability in both business performance and in sourcing policies.

Table 3 - Results: Business performance questions in survey of 964 farming, food and hospitality industry contacts			
	Strongly or partly agreed	Neither agreed or disagreed	Disagreed or strongly disagreed
Sustainability is very important to my company	82.0%	10.3%	7.7%
My company actively sources sustainably farmed products	69.9%	17.4%	12.7%
If I was in charge of sourcing food or ingredients for my company, I would pay a premium for sustainably produced food or ingredients	67.2%	19.2%	13.6%
My company is aware of global food security issues	81.0%	8.7%	10.3%
My company should only be investing in sustainability measures if they save money	50.7%	23.1%	36.2%
My company is completely sustainable, financially, socially and environmentally	51.6%	29.8%	28.6%
My company's customers are demanding sustainably produced products	48.1%	26.6%	25.3%
My company monitors the sustainability of food products we source	59.6%	21.2%	19.2%
I think that my company should take sustainability more seriously	47.6%	30.5%	21.9%

Sourcing policy

When asked the extent to which they agreed with the statement "My company actively sources sustainably farmed products", 36.5% said they strongly agreed, 33.4% said they partly agreed, while 17.4% neither agreed nor disagreed with the statement. Of those who strongly agreed that their company actively sourced sustainably farmed products, 70.2% also strongly agreed with the statement "My company's customers are demanding sustainably produced products".

The results of the question "My company should only be investing in sustainability measures if they save money" were the most varied, spread across five answers. The most popular answer was partly agreed (28.1%) followed by neither agreed nor disagreed (23.2%), and partly disagreed (21.7%). A further 14.2% strongly disagreed whilst only 12.7% strongly agreed.

Nearly half (48%) agreed or strongly agreed that "My company's customers are demanding sustainable produced products". While 25.5% either disagreed or strongly disagreed, the remaining 26.5% neither agreed nor disagreed. Amongst those who strongly or partly agreed with the statement, only 44.6% also strongly agreed with the statement, "My company monitors the sustainability of food products we source" (see figure 2).

Two thirds of respondents said they were looking to improve the integrity of their supply chains through better traceability and provenance. In early 2013, horsemeat contamination of beef led to justified concerns among consumers with regard to the traceability of their food. This survey was carried out at the onset of the outbreak and thus reflects the importance of clear labelling and the integrity of independently farm assurance schemes such as LEAF Marque, Soil Association certification and the Red Tractor.

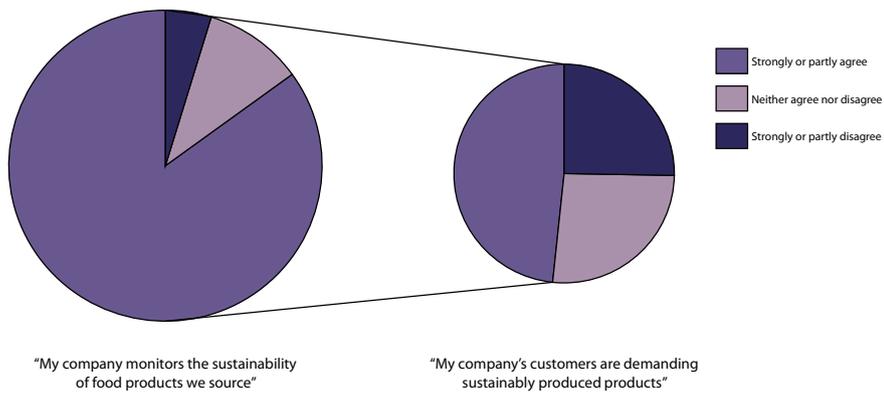
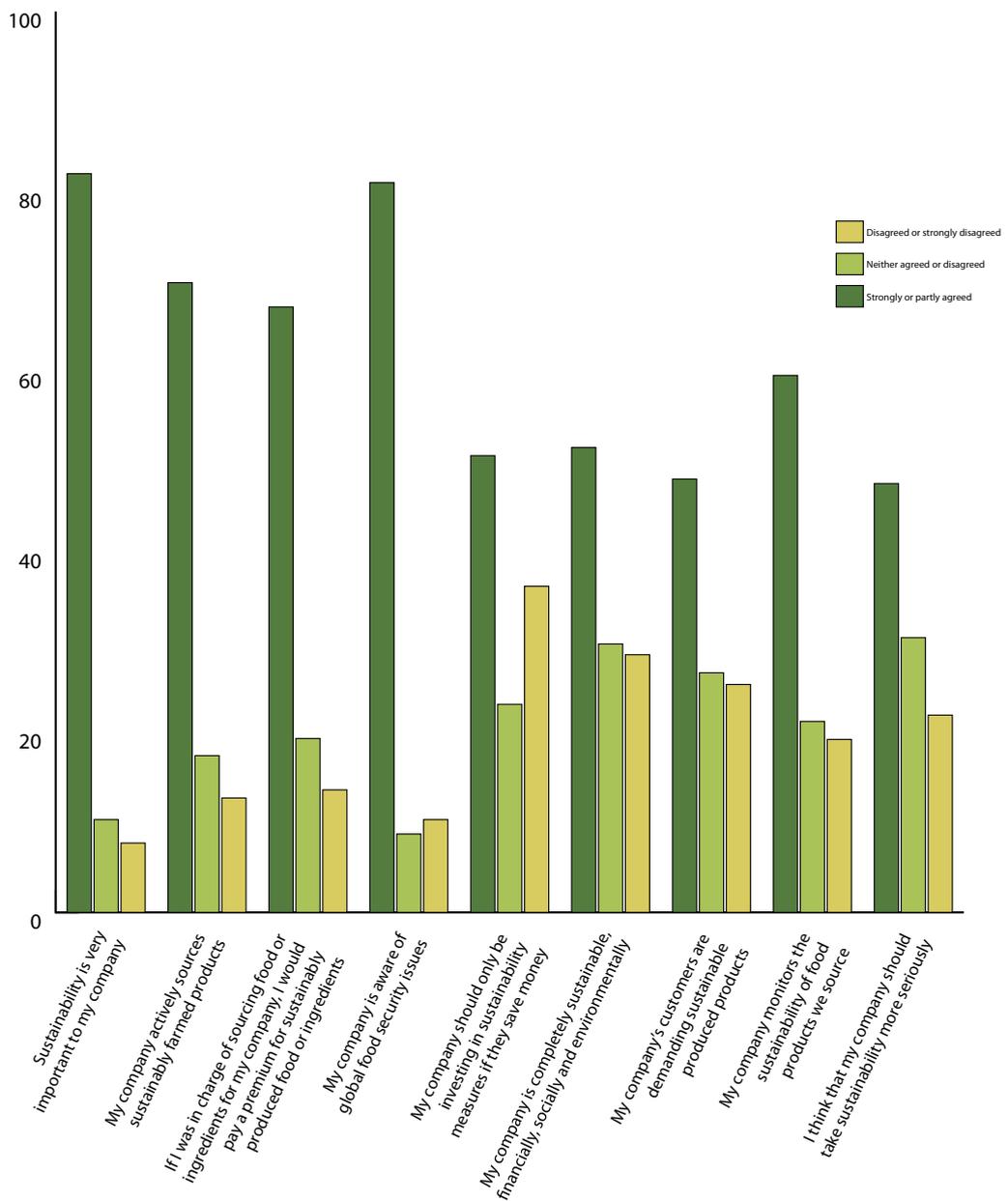


Figure 2 - Amongst those who strongly or partly agreed with the statement, only 44.6% also strongly agreed with the statement, "My company monitors the sustainability of food products we source"

Figure 3 - Results: Business performance questions in survey of 964 contacts in the farming, food and hospitality industries to IFE 2013



GOALS FOR 2013

As the world population increases, as diets become more sophisticated and the impact of climate change grows, our natural resources will be put under increasing pressure. Building robust and sustainable food chains are a priority for LEAF and it is essential that we work with our members and others to continually improve monitoring and evaluation in an effective, traceable and coordinated way.



Specific goals for 2013 include:

- The continued development of a robust set of indicators for delivering and measuring more sustainable farming businesses. We will strengthen the 24 objectives set out in table 1 in order to focus on key indicators which will demonstrate impact and trends.
- Areas for improvement will be identified with action plans set out. Through the analysis of the LEAF Audit and the responses to the surveys, we will identify to help our members deliver sustainable food and farming systems.
- Working with others to ensure the delivery of more sustainable farming practices on the ground.

The challenges for the future are huge and while there is no one single solution, working in partnership with other stakeholders provides an opportunity to deliver change effectively and efficiently.

- Improve rigour with external verification of sustainability indicators. Over the next 12 months we will hold open and frank discussions in order to improve our approach to measuring sustainability, and we will seek external verification of indicators of change.

"The LEAF Marque was the next step. It means we get recognised for going that extra mile with our environmental commitment which helps us to secure important contracts with the major retailers. It gives us a competitive edge and puts us a step ahead."

LEAF Marque certified Farmer



"LEAF membership has definitely given us access to some very influential people."

Jon Hammond - T Hammond & Sons, Nottinghamshire



KEY CHALLENGES AND OPPORTUNITIES FOR AGRICULTURE

- Average prices for agricultural commodities are set to rise. By 2050, global demand for food is expected to have increased by 70–100%. Global cereal demand is increasing at 1.3% per year; average yields are growing at 0.9%.
- Volatility in agricultural commodities markets will persist. Global cereal stock-to-use ratios are at crisis levels below 20%, and will struggle to recover as demand continues to outstrip productivity growth.
- Climate change and extreme weather will become a growing problem for global food security, triggering regional food crises and global price spikes whenever they hit key production centres. Agriculture accounts for 70% of freshwater withdrawals worldwide, and up to 90% in developing countries.
- Agricultural trade remains dependent on a small number of key export centres, increasing the risks of extreme weather. North and South America are the only two major export centres, while palm oil production is almost entirely concentrated in Indonesia and neighbouring Malaysia. Growing export capacity in the Black Sea region is highly variable and vulnerable to extreme weather.
- New trade flows are creating new interdependencies and new risks.

Cereal imports for the MENA region from Russia and Ukraine have overtaken those from either the EU or the US, growing from 750,000 tons to more than 24 million tons – the risks of which became clear in 2011. Booming Chinese meat consumption has seen global soybean trade reorganise itself between China and South America.

- Concentration of production increases the risks of unilateral actions. During the 2008 crisis, over 30 governments imposed export controls, bringing agricultural markets to the edge. In 2011, Russia's export ban on wheat drove up international prices and led to the initial protests in North Africa that became the Arab Spring. Emerging regional production centres for key commodities such as wheat, rice and soybeans also raise the prospect of cartels.
- The sheer scale of China's strategic food reserves and its levels of production and consumption mean that tight agricultural markets are highly sensitive to changes in China's net trade position. A critical uncertainty is how long China's policy of self-sufficiency in grains can be maintained, given the rising demand and environmental constraints it faces, and how any such retreat from this policy would be implemented.

Resources Futures Bernice Lee, Felix Preston, Jaakko Kooroshy, Rob Bailey and Glada Lahn A Chatham House Report

"We were already supplying our cheese to Waitrose but we hope that having the LEAF Marque will help us secure our contract in the future. We also sell at local markets and shows, people really like hearing the story behind our cheese and having the LEAF Marque gives us a unique selling point. In fact, we were the first cheese producers in the country to become LEAF Marque certified!"

LEAF Marque certified farmer

Acknowledgements

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SETTING THE PARAMETERS

Since 1991 LEAF has worked with a range of partners to develop effective tools to help measure our performance and progress towards delivering more sustainable agriculture. Key to this is the LEAF Audit and the set of 24 objectives to monitor the performance of LEAF Audit users in the delivery of sustainable

farming. The objectives correlate to the nine main themes of Integrated Farm Management (IFM).

IFM is a framework and set of decision-making principles to help farmers identify ways to run their business in a fully integrated way.

“Being a member of LEAF and doing the LEAF Audit helps keep you abreast of new developments. Attending LEAF training and demonstration events with my staff helps them understand what direction I am taking the farm. For example, we listened to a talk on bumble bee plots. I know when I go back to the farm and put one in myself, they will understand why I want to do it!”

LEAF Member

INTEGRATED FARM MANAGEMENT



‘Integrated Farm Management (IFM) is a whole farm business approach that delivers sustainable farming.’

IFM uses the best of modern technology and traditional methods to deliver prosperous farming that enriches the environment and engages local communities.

A farm business managed to IFM principles will demonstrate site-specific and continuous improvement across the whole farm addressing:

- Organisation and Planning
- Soil Management and Fertility
- Crop Health and Protection
- Pollution Control and By-Product Management
- Animal Husbandry
- Energy Efficiency
- Water Management
- Landscape and Nature Conservation
- Community Engagement



DRILLING DOWN

The following sections focus on the nine main themes of IFM, demonstrating the strengths of what our farmers are achieving but also highlighting some of the areas that we need to address, demonstrating our commitment to openness and transparency.

ORGANISATION AND PLANNING

FACTS AND FIGURES

- There are more than a billion farmers in the world¹
- Farmers in low and middle income countries invest US\$170 billion in their own farms – four times as much as all other investment¹
- UK farming borrows £7.5 billion more than it deposits²
- The number of farms in the EU fell by 20% between 2003 and 2010³
- Average EU farm sizes rose by 22% between 2003 and 2010³
- The number employed in EU agriculture fell by a quarter between 2003 and 2010³
- Only 6% of EU and 2.5% of UK farmers are under 35 years old³
- EU farmers under 35 are 50% more productive than those over 55³
- Average agricultural output per US worker has risen by 320% in the last 30 years⁴
- Average agricultural output per UK worker has risen by just 83% in the last 30 years⁴
- The average mixed farm income was £50,000 in 2012/13 down a quarter on the year before⁵

1. UN FAO
2. Bank of England
3. Eurostat
4. World Bank
5. Defra

Successful farm businesses need to be adequately resourced and possess the ability to deploy resources strategically.

Good organisation and planning are the keys to a successful IFM approach. Setting objectives and monitoring results enables the benefits of IFM to be quantified and demonstrated.

As a starting point it is important for farmers to identify short and long term

objectives of their farm business by reflecting on a simple question: 'Why do I farm and where do I want my business to go?'

Organisation and planning includes finance and profitability, family considerations, staff motivation, crop performance, livestock performance and welfare, market outlets, environmental commitment and communication with the local community.

These are the scores for the organisation and planning objectives – all contributing to Economic Performance for sustainability

To improve management performance	2.29
To improve the business financial status	2.37
To enhance productivity and efficiency (yields and biodiversity)	2.38
To implement appropriate financial systems	2.52
To implement appropriate planning and review processes	2.54
To actively develop market opportunities for sustainable food	2.55
To improve efficiency from grassland	2.69
To increase staff performance	2.70

The LEAF Audit results 2012 are as follows:

To improve management performance

2.4% of LEAF Audit statements specifically refer to this statement. The objective had an average score of 2.29. Statements from all sections of the Audit are used to report against this objective, including promoting strong leadership built on adherence to sustainable farming practices, a respect for the natural environment, attention to detail and good relationships with neighbours and members of the public.

To improve the business financial status

1.3% of LEAF Audit statements specifically refer to this objective, which had an average score of 2.37. The category includes SWOT analysis and identification of business risk as well as financial benchmarking.

To enhance productivity and efficiency (yields and biodiversity)

14.1% of LEAF Audit statements specifically refer to this objective, which had an average score of 2.38. The objective's score draws on all sections of the audit (with the exception of Community Engagement) and includes practices that enhance and create habitat, practices that preserve and conserve flora and fauna, and the extent to which production decisions take account of a Whole Farm Conservation Plan.

To implement appropriate financial systems

2.1% of LEAF Audit statements specifically refer to this objective. The objective had an

average score of 2.52 and the category included monitoring of budgets and cash flows, avoiding false economies and consideration of alternative income streams to maintain the financial sustainability of the business.

To implement appropriate planning and review processes

16.8% of LEAF Audit statements specifically refer to this objective. The objective had an average score of 2.54 and draws on all sections of the audit, including the importance of policies and plans across farming operations, effective monitoring, prevention rather than curative risk measures, and effective farm operations.

To actively develop market opportunities for sustainable food

3.2% of LEAF Audit statements specifically refer to this objective. The objective had an average score of 2.55. Statements from five audit sections are used to report against this objective. Statements include producing products that reflect a market need, creating good relationships with end customers and consumers, and ensuring that the production system does not negatively impact on the ecosystem services within the production area.

To improve efficiency from grassland

1.6% of LEAF Audit statements specifically refer to this objective. The objective had an average score of 2.69. Statements from six audit sections are relevant to the objective, including livestock health and welfare, livestock nutrition from home-grown protein, and nutrient management.

To increase staff performance

3.5% of LEAF Audit statements specifically refer to this objective. The objective had an average score of 2.70. Statements from five sections of the audit make up the objective and include involving staff and contractors in decision making, empowering staff to create ownership for implementing IFM, and ensuring that staff work in a safe and secure environment.

LEAF impact on organisation and planning

The CCRI report⁹ states that in many cases financial benefits had resulted from the implementation of IFM principles and the use of the LEAF Audit.

- **Maintaining contracts:** For some members becoming LEAF Marque certified had ensured the continuation of valuable supply contracts.
- **Retention of business:** 50% of LEAF Marque certified members interviewed reported that even where certification was not a requirement for their customers, they felt it had helped them to retain business contracts.
- **A reduced regulatory cost:** 54% of the members surveyed considered LEAF farmer membership to contribute to easier compliance with regulatory requirements.
- **Many feel that it offers 'peace of mind':** If you are meeting LEAF standards you can be confident you are doing what the regulations require, and more.
- **Fewer inspections:** Several members believed that they may have been subjected to fewer inspections by regulators as a result of LEAF farmer membership.



"IFM requires good record-keeping. Any business where records are not kept flounders because good management choices or good management plans work well. When you have records you can look back and also plan ahead. You need to record every activity on the land, from land preparation to harvesting and even haulage of your produce from the farm to wherever destination it's going. For LEAF, record-keeping is very, very important"

Ernest Abloh, Agronomist with Blueskies Ghana Limited, and advisor on IFM to pineapple farmers

"LEAF Marque has helped us with many other audits we have to complete. For our food manufacturing customers, as soon as you say you are LEAF Marqued, half of their audits are covered."

John Hammond - T Hammond & Sons, Nottinghamshire UK

"LEAF farmer membership had resulted in significant financial benefits to farmers in relation to on farm cost savings, additional income, market benefits and adherence with regulatory requirements"

CCRI 2010

⁹ http://www.leafuk.org/resources/000/563/370/The_Benefits_of_LEAF_Membership.pdf

SOIL MANAGEMENT AND FERTILITY

FACTS AND FIGURES

- Arable land is just 10% of total world land
- Farmland availability is set to increase by just 12% by 2030
- 1.9 million hectares of soil is degraded globally¹
- 300 million hectares are so degraded they no longer produce
- Soil erosion affects 1.3 million km² in Europe²
- The annual cost of US soil erosion is estimated to be £27 billion or £155/ha
- World fertiliser use is predicted to increase by 8.5% between 2011 and 2015 to 190 million tonnes³
- There was a 300% increase in fertiliser price between 2002 and 2011³
- Non-African and Middle Eastern phosphate will run out within 100 years⁴
- UK fertiliser use fell by a quarter to 100kg/ha between 1983 and 2010⁵

1. The International Assessment of Agricultural Knowledge, Science and Technology for Development (2008) Synthesis report
2. European Commission (2012) Implementation of the Soil Thematic Strategy, European Commission
3. UN FAO Current world fertilizer trends and outlook to 2015
4. US Geological Survey and Scottish Agricultural Colleges, 2011
5. Defra British survey of fertiliser practice 2011

Soil is an essential medium for the growing of crops and keeping of livestock. It helps control water flow, provides wildlife and micro-organism habitats, and holds carbon. Soil provides an archaeological record of our origins and is still used as a building material.

Knowledge of the soil nutrient status is essential to ensure that optimum amounts of particular fertilisers are applied. The decision making process takes account of specific crop demands, the existing soil status, and nutrients derived from farm manure and crop residues. Providing the right type and amount of nutrients, with appropriate timing, for specific crops is an important tool to assure healthy,

high quality crops while protecting the environment.

In 2011 LEAF developed the Simply Sustainable Soils resource in association with Asda. Setting out six simple steps to achieve more sustainable soil management, this document has been widely used. In alliance with the Environment Agency, we have worked with farmers to identify cost-effective options to reduce run-off, sedimentation and pollution. Such partnerships with other organisations help the development of worthwhile approaches to ensure an improvement in soil health.

These are the core objectives set for demonstrating soil management and fertility – all contributing to Environmental Quality for sustainability

To improve soil health	2.72
To enhance nutrient management efficiency	2.73

The LEAF Audit results 2012 are as follows:

To improve soil health

14.4% of LEAF Audit statements specifically refer to this objective. The objective had a very high average score of 2.72. Statements from all sections of the audit apart from Community Engagement are relevant to the objective including better management of the soil, enhanced soil organic matter, nutrient management, avoidance of 'poaching' by livestock, limiting unnecessary cultivations, judicious use of inputs and avoiding soil contamination.

To enhance nutrient management efficiency

7.5% of LEAF Audit statements specifically refer to this objective, which had a high average score of 2.73. Statements from the majority of audit sections make up the objective including precision management of all nutrients, the quality of nutrients used, crop expectations, competence of staff and operators of application equipment and calibration of equipment.

LINKING ENVIRONMENT AND FARMING

egrated Farm



14% OF WORLD ARABLE LAND IS DEGRADED



"LEAF's IFM helps me to care for my soil, reduce my costs and produce a quality fruit as well as look after my environment."

Billy Gamati, LEAF Marque pineapple farmer, Ghana

Soil erosion is estimated to be 100 times that of soil formation in some arable systems.

United Nations Environment Programme (UNEP) Year Book 2012, UN

Two million tonnes of soil are eroded from UK soils every year.

Soil Survey and Land Research (2000) Soil Protection in the UK, SSLRC, Cranfield University

"Visible benefits to soil structure, water quality and quantity were identified as direct benefits from LEAF farmer membership".

CCRI 2010

CROP HEALTH AND PROTECTION

FACTS AND FIGURES

- 20% to 40% of potential world crop production is lost¹
- World cereal demand will increase by 50% to 3 billion tonnes a year by 2050¹
- World pesticide use will be worth US\$52 billion by 2014, up 40% in a decade²
- Pesticide use is up 5.4% a year in South America, 3% in Asia and just 0.8% in Europe²
- Ug99 wheat stem rust took just 10 years to spread through Africa and into the Middle East³
- 160 million hectares of GM crops are grown each year by 17 million farmers⁴
- UK pesticide use fell by 5,500 tonnes or nearly 25% between 1998 and 2010⁵
- Blackgrass resistance to herbicides was identified in 1982. Now it has been found in almost all English counties⁶

1. How to feed the world 2050. 2009 UN FAO High-level Expert Forum
 2. World Pesticides, Freedonia Group report, 2010
 3. USDA Agricultural Research Service
 4. International Service for the Acquisition of Agri-biotech Applications report
 5. Food & Environmental Research Agency Pesticide Usage Survey
 6. Gowan Crop Protection

Protecting crops from pests, weeds and diseases is an essential part of everyday farming activity, even more so in the context of rising food prices, population growth, and concerns over global food security. Pest management is essential for preserving the abundance and diversity of native species and for ensuring the quality and sustainability of agricultural yields. Different insect control interventions need to be explored based on the characteristics of the production site. Crop protection measures must be warranted; effective crop protection using the Integrated Pest Management (IPM) approach is part of an

- Prevention
- Observation
- Informed decision making
- Intervention

Selection of more resistant varieties, combined with balanced crop rotations, helps to minimise the need for crop

protection measures. Chemical crop protection should be used as much as is needed but as little as possible.

The need to practice IPM is further emphasised by the European Commission's thematic strategy on the sustainable use of pesticides which seeks to reduce the impacts of pesticides on human health and the environment. A key part of this is for a transparent system for reporting and monitoring progress, including the development of suitable indicators.

In 2001 the UK Government accepted industry proposals for a Voluntary Initiative (VI) to reduce the impact of pesticides. By 2006 the programme had met or exceeded the vast majority of its targets and continues to encourage responsible pesticide use. LEAF supports the VI and the LEAF Audit contributes to the VI's Crop Protection Management Plans.

These are the core objectives set for demonstrating crop health and protection – all contributing to Environmental Quality for sustainability

To improve pesticide stewardship	2.83
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AND FARMING

The LEAF Audit results 2012 are as follows:

To improve pesticide stewardship

12.8% of LEAF Audit statements specifically refer to this objective. The objective had a very high average score of 2.83. Statements from all sections of the audit are relevant to the objective including using IPM techniques, judicious and precise use of crop protection products, regular maintenance of crop protection equipment, operator training, staff awareness of pests and diseases, robust emergency procedures and risk mitigation to protect the environment.

2010



UK WHEAT YIELDS QUADRUPLED TO 8T/HA BETWEEN 1950 AND 2010

1950



"By implementing IFM, reductions in fertiliser and chemical inputs had saved costs in the range of £2,500 - £10,000 per year, per farm".

CCRI 2010



"Man can and must prevent the tragedy of famine in the future instead of merely trying with pious regret to salvage the human wreckage of the famine, as he has so often done in the past".

Crop Scientist and Nobel Peace Laureate Norman Borlaug

UK wheat yields are up four-fold in the last 60 years to 8 tonnes/ hectare.

British Society of Plant Breeders

Pesticides cause US\$9.6 billion of damage a year in the USA, but help secure crop production worth US\$215 billion.

Pimentel, David. "Environmental and Economic Costs of the Application of Pesticides Primarily in the United States." Environment, Development and Sustainability 7 (2005): 229-252., [1]. Retrieved on February 25, 2011 and Congressional Research Service U.S. Farm Income, December 2012

FACTS AND FIGURES

- Agriculture contributes 9% of total UK greenhouse gas emissions, 76% of nitrous oxide emissions, 38% of methane emissions and only 1% of carbon dioxide emissions¹
- The energy value of manure is half that of coal²
- US farms produce 335 million tonnes of dry waste a year³
- Two thirds of England is in a Nitrate Vulnerable Zone⁴
- Up to 50% or 1.2 billion to 2 billion tonnes of food is wasted every year⁵
- US and European consumers throw away nearly a third of the food they buy⁵

1. Greenhouse Gas Action Plan
2. Farm Animal Manure is an Important Sustainable Renewable Energy Resource, University of Tennessee
3. USDA quoted by www.gracelinks.org
4. Defra
5. Global Food Waste Not Want Not. Institution of Mechanical Engineers, January 2013

POLLUTION CONTROL AND BY-PRODUCT MANAGEMENT

The main by-product uses on farm and application practices should be reviewed. Wastes that have no value for reuse or recycling are potential pollutants. These should be disposed of in the most environmentally safe and efficient manner. If possible, it is good practice to reduce the use and production of such materials, as this is generally economically and environmentally worthwhile.

These are the core objectives set for demonstrating pollution control and by-product management – all contributing to Environmental Quality for sustainability

To improve water quality	2.62
To implement responsible waste management	2.65
To improve air quality	2.68

The LEAF Audit results 2012 are as follows:

To improve water quality

7.20% of LEAF Audit statements specifically refer to this objective, which had an average score of 2.62. Statements from five audit sections are relevant to this objective including responsible disposal of potential water contaminants, monitoring water quality, safe use of chemicals, risk management and emergency procedures, training staff in safe operations and good neighbourliness within the catchment area.

To improve air quality

7.73% of LEAF Audit statements specifically refer to this objective, which had an average score of 2.68. Statements from five sections are relevant to the objective including an action plan to reduce the impact of potential pollutants on the environment, responsible disposal of potential pollutants, compliance to best practice and considerate actions when carrying out operations.

To implement responsible waste management

11.73% of LEAF Audit statements specifically refer to this objective. The objective had an average score of 2.65. Statements are mainly from the Crop Health and Protection section of the audit and include minimising the impact of activities on air, water and soil, adopting a 'reduce, reuse, recycle' policy across all farming operations, integrating a Manure Management and Nutrient Management Plan and ensuring compliance to all legal requirements for waste.



WORLD NITROGEN POLLUTION IS ESTIMATED TO CAUSE MORE THAN US\$90 BILLION OF DAMAGE A YEAR*

* Mark Sutton, Centre for Ecology and Hydrology

Livestock account for 18% of greenhouse gas emissions, but create a livelihood for 18% of people.

Livestock's Long Shadow, UN FAO, 2006



"Willful waste brings woeful want".

Thomas Fuller, 17th Century Clergyman and author



"The farmer takes note of all the potential hazard areas on the farm such as the chemical mixing point, and the 'no-go' areas such as buffer zones and strips and where there could be an environmental risk."

Emmanuel Graham, Agronomist, Blueskies Ghana Ltd

FACTS AND FIGURES

- World poultry output rose by 175% between 1985 and 2010 to 75 million tonnes¹
- World dairy output rose 20% to 610 million tonnes between 2002 and 2011
- Cattle production will grow by 24% by 2030²
- Sheep and goat output will grow by 32% to 2.309 billion head²
- Pig output will increase by 22%²
- Poultry output will grow by 65%²
- Chinese meat and egg consumption is predicted to increase by 38% by 2030³
- The number of dairy farms fell by 94% to just 12,000 between 1950 and 2012⁴
- UP to 40% of EU pig production may not meet new welfare regulations⁵

1. Novus Poultry Roundtable, January 2010
 2. UN FAO Towards 2015/2030. An FAO perspective
 3. China's agricultural prospects and challenges report
 4. RABDF, The Future Strategy for Dairy Farming in the UK and Dairy Co
 5. UK National Pig Association calculations

ANIMAL HUSBANDRY

Animals were first domesticated for use as livestock around 10,000 years ago. Since then animals have been an important source of protein, dairy products, fibre, transport and power.

Under an IFM system, consideration is given to the way decisions are made on the whole farm. Not only does this include animal welfare, grassland, forage and crop management, but also the attention to detail demanded in order to ensure sound animal husbandry techniques, environmental responsibility and an economically viable farming business.

Livestock plays a vital role in meeting both productivity and sustainability objectives, as it is a central element of farming.

Today, animal welfare has become a major source of public concern, and consumer demand for 'animal welfare friendly' products is steadily increasing. It is essential, therefore, that livestock be bred, housed, fed and transported in the proper conditions to support and ensure animal well-being, protection and integrity.

LINKING ENVIRONMENT AND FARMING

These are the core objectives set for demonstrating animal husbandry – all contributing to Economic Performance for sustainability

To demonstrate good animal health and welfare	2.75
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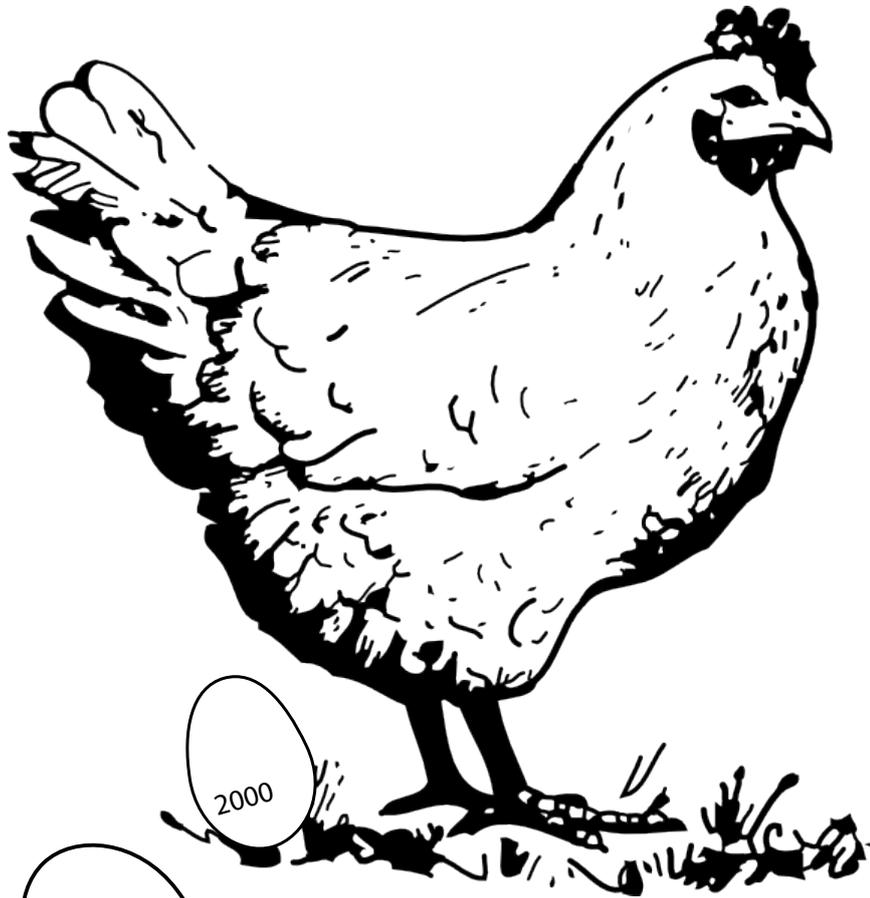
The LEAF Audit results 2012 are as follows:

To demonstrate good animal health and welfare

19.47% of LEAF Audit statements specifically refer to this objective, which had a very high average score of 2.75. Statements from the Animal Husbandry section of the audit largely make up the objective. They include best practice in animal welfare including the 'Five Freedoms', accurate record keeping, efficient and robust bio-security and livestock health controls, and understanding the public's view of animal welfare.



ANIMAL
HUSBANDRY

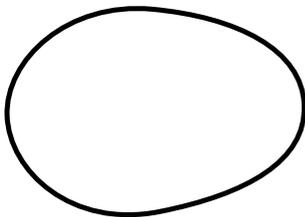
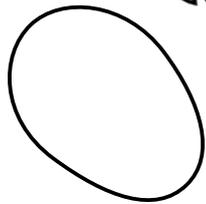


There are 4.3 billion cattle, pigs, goats and sheep in the world, up 23% on 1980

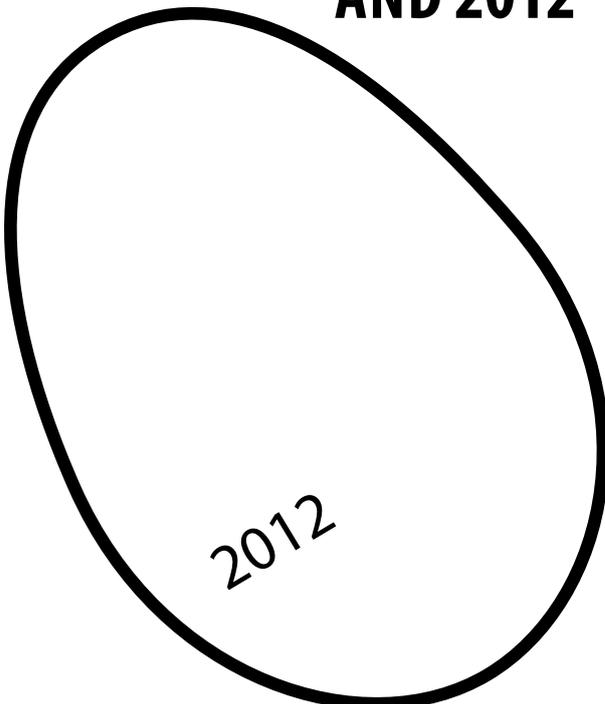
Worldwatch Institute

UK free-range output rose by 155% between 2000 and 2012 and caged production fell by 6%

Defra Food and Farming statistics



**UK FREE-RANGE
EGG PRODUCTION
ROSE BY 155%
BETWEEN 2000
AND 2012**



Average UK milk yields increased by 170% to 7,617 litres/cow between 1950 and 2012.

"LEAF members farming livestock had noticed improvements in animal health in some cases resulting in up to 10% cost savings for disease treatments."

CCRI 2010

ENERGY EFFICIENCY

FACTS AND FIGURES

- Oil prices have risen by 320% in the last 10 years¹
- World gas demand is expected to increase by 50% by 2035 to 5 trillion cubic metres²
- World coal demand is expected to increase by 21% by 2035²
- Renewables should be the second largest source for energy generation by 2015 and equal coal by 2035²
- The UK Government has a target to produce 15% of energy consumption from renewables by 2015³
- There are 3,400 onshore wind farms in the UK generating 3% of UK electricity. A further 4,000 are due to be built by 2020³
- By March 2011 there were only 50 anaerobic digestors on UK farms. The aim is to have 1,000 by 2020⁴
- British agriculture uses 20,389 GWh of energy a year. The top users are arable crops (36%), protected horticultural crops (25%) and dairy (14%)⁵

1. Index Mundi
 2. International Energy Agency, World Energy Outlook 2012
 3. DECC
 4. Royal Agricultural Society of England, A Review of Anaerobic Digestion Plants on UK farms
 5. Warwick HRI, Direct energy use in agriculture: opportunities for reducing fossil fuel inputs

Awareness of sustainability issues and responsible management of natural resources are central to Integrated Farm Management. Careful use of inputs, conservation tillage, reducing fossil fuel needs where possible, and striving for optimum instead of maximum yields all help to increase the input-output ratio and hence energy efficiency. The investment in alternative fuels, and in particular the installation of solar panels was one of the main actions farmers were taking in their plans to adopt more sustainable farming practices.

As part of the energy efficiency commitment in Integrated Farm Management, farmers consider:

- Whole farm management plan for energy use, to be revised annually
- Records of energy inputs in arable

farming and livestock keeping

- Recycling and reuse of products which need high energy input
- Energy production from liquid manure and biomass, two-crop system where possible
- Use of renewable energy, in particular, fuels
- Technical recommendations and advice

These are the core objectives set for demonstrating energy efficiency – all contributing to Environmental Quality for sustainability:

To effectively employ GHG mitigation measures	2.48
To improve energy efficiency	2.52

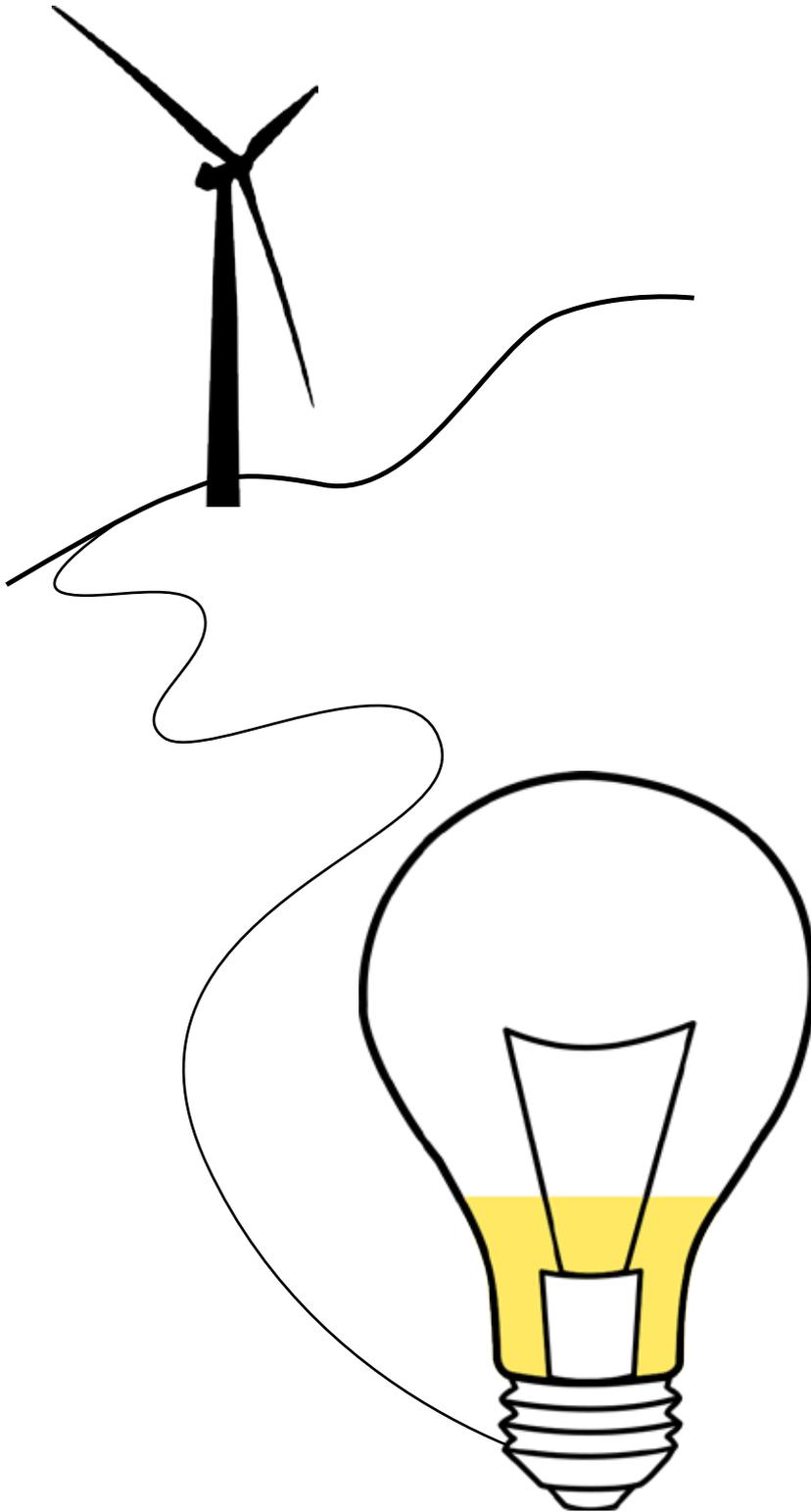
The LEAF Audit results 2012 are as follows

To improve energy efficiency

5.33% of LEAF Audit statements specifically refer to this objective, which had an average score of 2.52. Statements are taken from four audit sections and include carrying out an annual energy efficiency audit, regularly maintaining equipment to ensure efficiency, making staff aware of energy saving techniques, and reducing energy use by avoiding unnecessary cultivations and applications on the land.

To effectively employ GHG mitigation measures

14.93% of LEAF Audit statements specifically refer to this objective, which had an average score of 2.48. Statements are taken from five audit sections and include having a farm environmental policy that staff, contractors and others are aware of, completing a carbon balance sheet for the business, and recording CO₂ emissions from energy consumption records.



RENEWABLES SHOULD GENERATE 15% OF UK ENERGY BY 2020

"Doing the LEAF Audit was a catalyst to us developing our energy policy. We've introduced inverters for the boreholes and cold stores, use light sensors and produce a range of farm grown sustainable fuels to reduce our carbon footprint. We can now run five vehicles and produce power for the packing plant on pure plant oil."

LEAF Member

56% of oil reserves are in Middle East and only 1% in Europe.

OPEC

"Through completing the LEAF Audit, reduced fuel costs for field operations had had a large financial impact on members' farms."

CCRI 2010

WATER MANAGEMENT

FACTS AND FIGURES

- It takes 1,500 litres of water to produce one kilogram of wheat¹
- 70% of world water use is for agriculture¹
- UK agriculture uses 184 million m³ of water a year. Livestock use 41% and irrigation 38%²
- Two thirds of the world's renewable water resources are in just 15 countries³
- Brazil, Russia and the USA are the three most water-rich countries³
- 65% of China's agriculture takes place in the Northern Plain where only 25% of its water is⁴
- World irrigated land rose by just 9.5% between 1961 and 2008 to 1.5 billion hectares⁴
- UK agriculture caused £373.5 million of damage in 2008, down from 10% on the 2000 figure⁵
- Maize has 68% more water productivity potential than wheat or rice at 3.7kg/m³ of water⁴

1. UN FAO
2. Defra Water Survey
3. USDA
4. UN FAO The State of the World's Land and Water Resources for Food and Agriculture
5. Defra

Sustainable water management is critical to increase agricultural production, ensure water can be shared with other users and maintain the environmental and social benefits of water systems. Protecting ground and surface water resources, and using water wisely, are key elements of Integrated Farm Management in order to maintain and enhance the environment, wildlife and biodiversity.

In 2013 LEAF launched a new resource, jointly with Asda and the Molson Coors Brewing Company, called 'Simply

Sustainable Water – six simple steps for managing water quality and use on your land'. This resource helps farmers develop an effective on-farm strategy for efficient water use and improve the farm's contribution to protecting water in the environment. This resource helps farmers meet the requirements of the Water Framework Directive (WFD) to ensure that inland and coastal waters reach 'good' chemical and ecological status by 2015.

These are the core objectives set for demonstrating water management – all contributing to Environmental Quality for sustainability:

To source water sustainably	2.09
To improve water use efficiency	2.41

The LEAF Audit results 2012 are as follows

To improve water use efficiency

5.33% of LEAF Audit statements specifically refer to this objective, which had an average score of 2.41. Statements that make up this objective include completion and on-going review of a water management plan, monitoring water courses, scheduling irrigation (where appropriate), being aware of legal requirements for on-farm water use and protection, and working with neighbours to improve water catchment quality and management.

To source water sustainably

2.67% of LEAF Audit statements specifically refer to this statement. The objective had a relatively low average score of 2.09. Relevant statements include measuring the water efficiency of crops, adopting water recycling and saving techniques, and observing all relevant legislation related to groundwater and diffuse pollution.

ENERGY
EFFICIENCY

LEAF Water Management Tool data

1. Of the 237 members that completed the section 'Water Sources Used' we were able to identify the source of their supply:

- 57.4% mains supply
- 64.1% ground water (bore-holes, wells, springs)
- 55.3% surface water (river, pond, stream, canal)
- 22.8% harvested rainwater
- 36.3% stored surface water (pond, lake, on-farm reservoir)
- 6.3% recycled process water
- 3.0% desalinated water

(note: total is >100% as individuals use more than one water source)

In the future we will be able to track if there is less reliance on mains water and ask farmers what steps they are taking to maintain the water quality in their catchment.

2. Of the same 237 members that completed the section 'Storage Facilities' used we found:

- 41.8% storage tank(s)
- 88.6% on farm reservoir
- 13.9% other

(note: total is >100% as individuals use more than one storage facility)

This showed an encouraging reliance on water harvesting techniques.

3. Finally, the 195 members who completed the Water Distribution Plan/Monitoring section revealed that 90.3% have a water distribution map for the farm and 88.1% have meters, sensors or controls to monitor water consumption on farms. LEAF acknowledges the principle that 'if you don't measure it you can't manage it'. LEAF members were able to demonstrate their knowledge of their water pathways on the farm and also they were able to monitor its use.

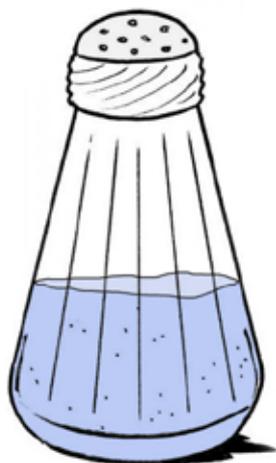


"Water is the driving force of all nature"

Leonardo da Vinci

It takes 15,000 litres of water to produce a kilogram of beef

UN FAO



SALINATION AFFECTS 10 MILLION HECTARES OF LAND A YEAR*

*UN FAO The State of the World's Land and Water Resources for Food and Agriculture

Footnote - Water Management Tool Analysis

Unless otherwise stated: All percentages are of those that answered the question excludes unanswered and N/A fields. People, not sites, are able to complete this questionnaire therefore this is cumulative data for the period: 3rd November 2011 to 3rd January 2013. Data is not related back to farm data. As with the LEAF Audit, this is self-assessment data and as such, certain assumptions must be taken into consideration. All LEAF Marque data is independently, externally verified.

Several farms reported LEAF membership "drove them faster" to look at more efficient water use, leading to significant cost savings, up to £14,000 a year on one farm

CCRI 2010

FACTS AND FIGURES

- 1.8 million wildlife species have been identified across the world. There could be as many as 100 million¹
- Between 0.01% and 0.1% of species become extinct every year¹
- The survival of a fifth of all mammals, birds and fish is threatened²
- Nearly a third of all insects and shellfish are threatened²
- Two thirds of the world's wild plants are threatened²
- Two thirds of the world's land is not used for agriculture
- There are 600 species of bird in the UK³
- 44 million nesting birds have been lost since 1966⁴
- There are 83 million breeding bird pairs in the UK⁴
- Visitors spent more than £2.2 billion visiting the UK's National Parks in 2010⁵
- The estimated environmental value of British agriculture is nearly £1.5 billion⁵

1. WWF

2. United Nations Environment Program

3. British list of birds

4. The State of the UK's birds 2012

5. Defra, 2000 to 2008 figures

LANDSCAPE AND NATURE CONSERVATION

Protecting and enhancing wildlife and biodiversity is of great importance within the Integrated Farm Management whole farm approach. Maintaining and enhancing a wide range of land uses and landscape features helps encourage a diverse range of biodiversity and habitats. Furthermore, it is important to ensure that farm practices and operations do not present a threat to biodiversity and again this is a key focus of the attention to detail delivered through more sustainable farming practices.

Key elements of landscape and nature conservation in Integrated Farming:

- Whole farm conservation plan, to be revised annually

- Leaving a certain area of land (field margins, hedges, etc.) unused for cropping
- Active involvement of staff and contractors
- Consider nesting birds/wildlife during field operations
- Small areas of wildlife seed mixes, beetle banks and comparable strips/structures
- Monitoring and protection of wildlife
- Advice and exchange with local nature conservation representatives

These are the core objectives set for demonstrating landscape and nature conservation – all contributing to Environmental Quality for sustainability

To actively increase biodiversity	2.47
To enhance management at a landscape level	2.63

The LEAF Audit results 2012 are as follows:

To actively increase biodiversity

7.47% of LEAF Audit statements specifically refer to this objective, which had an average score of 2.47. Statements from five audit sections are relevant to the objective and include whole farm conservation auditing, practices that enhance and create habitat, practices that preserve and conserve flora and fauna within and without the farm environment, adjusting field operations to avoid nesting birds, and ensuring field margins are under sympathetic management.

To enhance management at a landscape level

2.40% of LEAF Audit statements specifically refer to this objective which had an average score of 2.63. Statements that make up this objective include being familiar with specified regional landscape characteristics, taking care to avoid damage or destruction of scheduled and areas of archaeological or historical interest, and completing an Environmental Impact Assessment when appropriate.

The CCRI report also found that:

- LEAF farmer membership has improved the environmental credentials of some members which had positively contributed to their income from diversification into on-farm tourism and training provision.
- LEAF farmer membership has developed farmers' knowledge of the environment as well as enhancing biodiversity, soil and water.
- For 86% of those interviewed, LEAF farmer membership has increased their awareness and understanding of the farm environment. For some, the change is noted as 'transformational', affecting their whole attitude to farming.
- Although it is generally a difficult task to link biodiversity outcomes directly to specific farming activities, 49% of those surveyed could link biodiversity benefits directly with their LEAF farmer membership, for example:
 - Increased bird populations on some farms were considered to be due to farm management and field operations following IFM principles, as opposed to any specific conservation activities carried out under agri-environment schemes.
 - *"Our wildlife management has also improved. Now we leave areas of the land fallow to provide habitat for lapwings and have seen a significant increase in bird species. I believe this is directly attributable to following LEAF's Integrated Farm Management."*



"My work is to grow pineapples but I also take care of the environment. The edge of the field is a good place for birds, animals, and other creatures like butterflies and insects. A lot of these creatures help me as a farmer. As a pineapple farmer in Ghana it is very important for me to take good care of the environment."

Mawuli Atitso, Pineapple Farmer, Ghana



**ONLY ONE THIRD OF
THE WORLD IS USED
FOR AGRICULTURE**

"Agri-environment scheme income: For 35% of the members surveyed, LEAF farmer membership was felt to be a contributory factor in gaining entry into a Higher-Level agri-environment scheme, which often brought significant additional income to the farm."

CCRI 2010

COMMUNITY ENGAGEMENT

FACTS AND FIGURES

- More than half the world lives in cities¹
- The UK population was the first to become more urban than rural in 1850²
- The proportion of Chinese people living in the countryside has fallen from 80% to 50% in 30 years³
- World population is predicted to grow by 45% by 2050¹
- African population is expected to double in the next 40 years¹
- European population is set to shrink by 5%¹
- UK population is expected to increase by 10% to 7 million in 15 years⁴
- 1.42 billion visits were made to the UK countryside in 2011/12⁵
- 75% of the public view farmers favourably⁶
- 85% think farming will be more important in the future⁶
- UK food prices rose by a third between 2007 and 2012⁴

1. UN
2. UK census
3. World Bank population data
4. UK National Office of Statistics
5. Defra
6. NFU 2010 Farming Matters survey

As the world becomes increasingly urbanised the link between farmers and the people they feed has weakened. Indeed, in the UK 80% of the population now live in cities and towns.

LEAF farmers adopt a positive approach towards building trust and understanding amongst the public. In particular, this has

been through Open Farm Sunday, The Speak Out training programme and the Let Nature Feed Your Senses project that is run in association with the Sensory Trust.

These are the core objectives set for demonstrating community engagement – all contributing to Social Health for sustainability

To build social capital	1.85
To demonstrate effective business marketing and communication	1.98
To improve well-being of management, staff and contractors	2.56

The LEAF Audit results 2012 are as follows:

To build social capital

7.47% of LEAF Audit statements specifically refer to this objective. The objective had a low average score of 1.85. Statements that make up this objective include looking at different methods of engagement with other farmers, local stakeholders and the general public, using effective ways to communicate about sustainable farming, being a considerate 'neighbour' within your community, and encouraging farm visits.

To demonstrate effective business marketing and communication

6.67% of LEAF Audit statements specifically refer to this statement. The objective had a relatively low average score of 1.98. Statements are taken from four sections of the audit and include identifying and taking advantage of PR opportunities for good news stories about farming, ensuring customers are informed about your commitment to IFM and LEAF, and using the 'Speak Out' tool to help develop communication skills.

To improve well-being of management, staff and contractors

8.80% of LEAF Audit statements specifically refer to this statement. The objective had an average score of 2.56. Statements are taken from five sections of the audit and include empowering staff by giving them ownership in farm decision making, planning ahead to avoid panic and crisis management, creating a safe working environment for all staff and contractors, providing regular relevant training for staff including input on IFM, and actively motivating staff and contractors to take pride in the farmed environment and the quality of their work.

Benefits of community engagement

The CCRI report gives examples of:

- Increased direct sales of farm produce to the public resulting from members hosting both Open Farm Sunday and Demonstration Farm events.
- LEAF farmer membership had significantly enhanced social aspects of farming, including increased skills and better relations with other farmers and the local community, as well as the chance to improve the image and understanding of farming among the wider public.
- **Improved skills and knowledge:** 86% of members surveyed reported that LEAF farmer membership had improved their, or their employees', skills and knowledge base. The greatest personal impact was on members' communication skills, particularly as a result of 'Speak Out' training. LEAF had significantly improved members' confidence in explaining their farm businesses to the general public.
- **Increased social interaction:** LEAF farmer membership was reported to increase farmers' interaction with neighbours (49%) and other farmers more generally (71%). This arose from hosting events on the farm and attending LEAF events. Members noted that increased networking and contacts may bring benefits to the business, in due course.
- **Better community relations:** 77% of those interviewed felt they had more contact with the general public as a result of LEAF farmer membership, primarily from hosting Open Farm Sunday events or school visits. Most reported that hosting public events on their farm, conducting local talks and opening the farm to the public improved relations with the local community.
- **Better understanding:** 91% of members interviewed agreed or strongly agreed with the statement that LEAF farmer membership had "improved understanding among the local community".

Members felt they were seen as more 'approachable', this increased people's appreciation and tolerance of farming practices and improved public understanding (for example the importance of keeping to footpaths).

"Hosting LEAF Demonstration Farm Events and visits or hosting Open Farm Sunday resulted in increased revenue of £2,000-£7,000 per year, per farm".

CCRI 2010

"The idea of responsible conduct is expressed in the call for a change of attitude from 'I, here and now' to 'We, everywhere for today and tomorrow'".

Anonymous, 1997



**1.42 BILLION
VISITS ARE PAID
TO THE BRITISH
COUNTRYSIDE
EVERY YEAR**

"The demonstrations, displays, equipment and explanations were great. A wonderful opportunity to learn more about farming, the environment and the food chain from farm to fork".

Open Farm Sunday visitor

COMMUNITY ENGAGEMENT

Open Farm Sunday Numbers

- 25% increase in Open Farm Sunday visitor numbers between 2011 and 2012, with a fantastic 150,000 visitors attending events across Scotland, England and Wales, plus one event in Spain
- 335 farms opened for Open Farm Sunday 17th June 2012
- 17 sponsors in total who gave both financial and in-kind support with many helping farmers on the day
- Thousands of helpers – employees, sponsors, families and friends – who supported events
- 80% of farmers taking part said it was of benefit to their business performance

Number of visitors:

- Average number of visitors per event 449 (highest to date)
 - 70% of farms had 100+ visitors
 - 28% of farms had 500+ visitors
 - 36 farms had 1000+ visitors

- 5 farms had a 3000+ visitors

Pollinator Survey:

- In 2012, LEAF ran the Open Farm Sunday pollinator survey
- Sponsored by Syngenta and developed in partnership with the NERC Centre for Ecology and Hydrology captured the attention of farmers, visitors and the media
- It was a good example of citizen science:
 - 36 farms hosted the pollinator survey; in 23 counties
 - over 40 volunteer scientists helped at events
 - over 631 participants
 - 16,380 insects were recorded: 6,738 insects on crops; 9,642 on non-crops

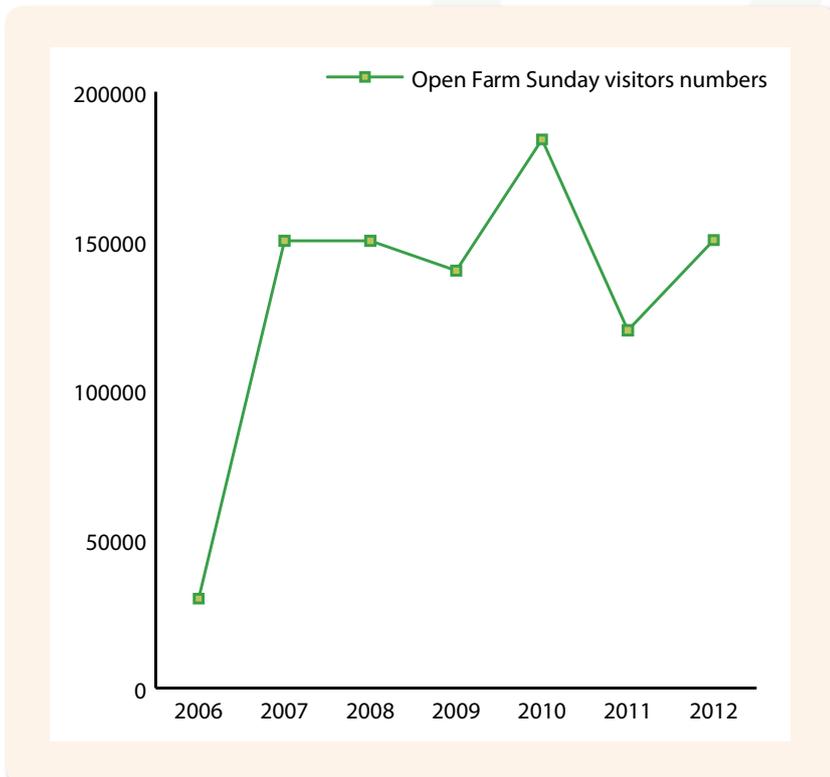


Figure 5 - Open Farm Sunday visitor numbers between 2006 and 2012.

Let Nature Feed Your Senses feedback

'Let Nature Feed Your Senses' is a Big Lottery funded flagship project run in partnership between LEAF and the Sensory Trust. Since May 2009 the project has engaged over 11,800 people with nature, food and farming through bespoke sensory visits to a network of seventy five farms and nature reserves across England. Participants represent those who experience the greatest barriers in engaging with nature, including disabled adults and children, young people living in disadvantaged areas and older people.

The project has provided evidence of delivery against six project outcomes. The first three of which are that visitors report that they;

- Feel better – mentally or physically – as a result of participating in LNFYS events
- Have more confidence in accessing the natural environment
- Better understand links between the natural environment and their everyday lives

LNFYS has demonstrated how hosted sensory-rich visits on farms and nature reserves deliver significant benefits to visiting groups (as highlighted in the latest project film, available here www.letnaturefeedyoursenses.org). Visitors have reported extensive social and therapeutic benefits, increased connections to nature and greater understanding of the links between food production and the natural world.

Research by the Essex Sustainability Institute has shown that the project's visits have had a positive impact on the wellbeing of participants, has facilitated social inclusion, has improved visitor access to and connection with nature, and has increased understanding of farming and food production, all of which are likely to contribute to healthier lifestyles. 67% of visitors who took part in the University of Essex evaluation said that they were more likely to eat healthy food after taking part in a LNFYS visit. There was also a statistically significant increase in self perceived health scores as a result of a LNFYS visit with 42% of visitors recording an increase in health score. Comments received from group leaders and visitors relating to the impact of farm visits on visitors' mental wellbeing included a calming and therapeutic effect of being on a farm, a relaxing and stress-reducing environment, and an increase in self-esteem and sense of independence.

"This was a truly incredible experience for children who come from a very deprived part of inner-city London. The visit gave them a chance to experience things that they had never experienced before such as feeding the cows, running in an open field and so on. It also really helped them develop a much better understanding of the environment and living things. All the teachers who took part said that the visit had quite simply been the best visit we had ever taken children on. The children have all been asking when we can we go back!"

Teacher following a visit to Chalkhouse Green Farm





LINKING ENVIRONMENT AND FARMING
Integrated Farm Management



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