



LEAF Global Impacts Report 2019

Appendix and Methods

About the Appendix

This document details the methods and data sources for the Global Impacts Report 2019.

Where external data sources are cited, data can be independently verified by accessing those sources.

All LEAF Marque inspections are carried out by LEAF Marque approved, independent Certification Bodies. These Certification Bodies are ISO 17065 accredited. They are responsible for accurately recording a business' conformance with the control points set out in the LEAF Marque Standard as well as their certification decision in the LEAF Marque data system (therefore providing the LEAF Marque certificate status for a business).

The LEAF Marque Standard is available in several languages which are available on the [LEAF website](http://www.leafuk.org/leaf/farmers/LEAFmarquecertification/standard.eb) (<http://www.leafuk.org/leaf/farmers/LEAFmarquecertification/standard.eb>). The English version of the Standard is the definitive version and therefore any issues of interpretation from other translations need to be referred to the English version.

Where data has been provided by self-assessment, this has been sense-checked and excluded if appropriate, where possible. It should be noted that it is a requirement of the LEAF Marque Standard v14.1 for a LEAF Marque certified business to complete the LEAF Sustainable Farming Review and to provide correct and up to date 'farm details and production information'.

When citing elements of this report or using any of the data please acknowledge LEAF as the source and provide a download date and website link; or cite as: **LEAF Global Impact Report 2019**.

For general enquires please contact: enquires@leafuk.org

For technical issues related to the data please contact: Jennifer.Clark@leafuk.org

Sources of Data

The key data used in the LEAF's Global Impacts Report 2019 includes information from the LEAF Audit, the LEAF Sustainable Farming Review, LEAF's Annual Survey (formally LEAF's Sustainability Survey), LEAF Marque Post Inspection Questionnaire, LEAF Open Farm Sunday, LEAF Education and Independent Evaluations.

LEAF Sustainable Farming Review

The LEAF Sustainable Farming Review is an online self-assessment resource for LEAF members to support their implementation of Integrated Farm Management. The LEAF Sustainable Farming Review



has an annual scope. The LEAF Sustainable Farming Review replaced the LEAF Audit in December 2014. The completion of the LEAF Sustainable Farming Review is a requirement of the LEAF Marque Standard (v12.0 onwards) and this completion is independently verified. However, the specific responses within the LEAF Sustainable Farming Review are self-assessed and not verified through third party inspection.

The LEAF Sustainable Farming Review is composed of around 90 principles based around the nine sections of Integrated Farm Management along with further guidance information and links to support the user. Each question must be answered in one of the following five ways: Fully Achieved; Considerable Progress; Some Progress; Not Started; or Not Applicable. Additionally, the user indicates which of the supporting practices, which are associated with the principle, they carry out. From the LEAF Sustainable Farming Review 2016 scope onwards, questions that required businesses to provide numerical detail on some areas of Integrated Farm Management were introduced. The answers to all questions are not pre-populated.

LEAF's Annual Survey

Over the last 6 years, LEAF has circulated a repeat questionnaire to its members to ascertain their perception of their farms' sustainability. From 2017, this was titled the LEAF Annual Survey whereas in previous years it was circulated under the name LEAF's Sustainability Survey.

LEAF Marque Post Inspection Questionnaire

The LEAF Marque Post Inspection Questionnaire is an online survey circulated to LEAF Marque certified businesses following their annual LEAF Marque inspection. This optional questionnaire provides LEAF Marque certified businesses the opportunity to give feedback on their most recent LEAF Marque inspection. All responses are treated in confidence, the results will be aggregated and not attributable to any individual.

LEAF Open Farm Sunday

LEAF manages Open Farm Sunday, the single, most effective and supported day in the UK farming calendar. It is a day for farmers to 'open their gates' and welcome people onto farms to discover the story behind their food and the vital role farmers have in caring for the countryside. Every year, LEAF carries out an extensive analysis of farms participating in LEAF Open Farm Sunday events and some surveys of visitors and host farmers. Farms participating are both LEAF members and non-LEAF members.

LEAF Education

LEAF Education has carried out detailed monitoring and analysis of its education activities by the Regional Education Consultants since the merger of FACE (Farming and Countryside Education) with LEAF in July 2017. Data includes total hours and topic of activity delivered, and total number of people and schools educated.



Independent Evaluations

Data from the following independent evaluations were included:

- Context (2018) Farms, Fisheries and Forests: Does certification make a difference? Analysis of 15 sustainable production standards. The Context Group: London UK¹
- The effect and impact of LEAF Marque in the delivery of more sustainable farming: a study to understand the added value to farmers. Reed M., Lewis, N., and Dwyer, J., The CCRI (The Countryside and Community Research Institute), Gloucester, UK²
- The effectiveness of standards in driving adoption of sustainability practices: A State of Knowledge Review. Petrokofsky G., and Jennings S., 3Keel, Oxford, UK³

Full details of evaluators, methodology, key findings, conclusions, limitations and recommendation can be found in each full report.

Methods for the Global Impacts Reports 2019

Method A – Determining a LEAF Marque certified business

A LEAF Marque certified businesses is defined as a business that is holding a LEAF charity membership number, holding a LEAF Marque membership status of 'Current' and holding a LEAF Marque certificate status of 'FULL' as at the 31st December for the year corresponding to the year of the data. Businesses that held a LEAF Marque membership status of 'Grace' were also included as this usually refers to businesses who hold a valid certificate but where payment to the certification body is outstanding. Businesses with a LEAF Marque membership status of 'Closed and 'Transferred Out' and businesses with LEAF Membership Type of 'Non-paying agent' were sorted manually to confirm possible exclusions (e.g. duplications or expired certificates). Test companies and businesses with LEAF Marque membership status of 'Applied' and 'Registered' were excluded.

The number of LEAF Marque certified businesses is quoted on page 8 of the Global Impacts Report 2019.

This definition of a LEAF Marque certified business is also used to determine further statistics and maps for the Global Impacts Report 2019.

Method B – Determining crop area and number of livestock units for LEAF Marque certified businesses

Determining the crop area and number of livestock units for LEAF Marque certified businesses required the number of LEAF Marque certified businesses (see **Method A – Determining a LEAF Marque certified**

¹ <https://contextsustainability.com/farms-fisheries-and-forests-does-certification-make-a-difference/>

² <https://leafuk.org/farming/leaf-marque/leaf-marque-independent-evaluation>

³ <https://www.standardsimpacts.org/resources-reports/iseal-report-effectiveness-standards-driving-adoption-sustainability-practices>



business) in a certain year alongside aspects of Production Information. Production Information, which includes farm details (including country), crop class, crop enterprise and areas of crop, is self-assessed by all LEAF members however it is a requirement of LEAF Marque certification for businesses to provide correct and up to date production information. This is annually confirmed during their completion of the LEAF Sustainable Farming Review and verified during the LEAF Marque inspection process. Alterations were made to data which was obviously questionable including translating information into English as required and checking excessively large figures and altering to include a more realistic figure based on farm size.

This method is used to create hectares of crop on LEAF Marque businesses around the globe and in certain countries (pages 8 & 9), the number of countries with LEAF Marque certified businesses (pages 8, 9, 22 & 23), the area of certain crop classes (pages 8), number and area of crop and livestock enterprises (pages 8, 22 & 23) in the Global Impacts Report 2019.

For more information about determining statistics relating to crop area and number of livestock units for LEAF Marque certified businesses please contact LEAF.

Mapping Methods

In order to show where LEAF Marque certified businesses operate around the world, all LEAF Marque certified businesses were mapped (see pages 22 & 23 in the Global Impacts Report 2019). A vector file map was downloaded from <https://freevectormaps.com/world-maps/WRLD-EPS-01-0006> and Adobe Photoshop was used to colour in the areas that corresponded to countries of LEAF Marque certified businesses.

Method C – Determining UK LEAF Marque crop area and livestock population as a proportion of all UK crop area and livestock population

To present the proportion of UK LEAF Marque production compared to all UK production, crop area and number of livestock units for UK LEAF Marque certified businesses only (see **Method B – Determining crop area and number of livestock units for LEAF Marque certified businesses**) was compared to Defra statistics. At the time analysis was performed the most up-to-date information available from Defra statistics were:

- Defra Horticulture statistics as at May 2018 (containing 2017 data)
- Defra UK Livestock Population statistics as at March 2018 (containing 2017 data)
- Defra Farming Statistics 2017 Report (containing 2017 data)

It should be noted that all Horticulture or fruit & vegetable data here excludes potatoes. Data for LEAF Marque certified businesses also excludes peas as there is not enough certainty in the difference between dried, processed and fresh peas. Additionally, the LEAF Marque leek data has been manipulated to more accurately represent the proportion of UK leeks that are LEAF Marque – this is likely due to Defra releasing provisional figures for 2017 compared to LEAF Marque figures being final and for 2018.



The proportion of UK LEAF Marque production out of all UK production can be seen for fruit and vegetables on pages 8, 9 and 23 of the Global Impacts Report 2019. Proportions of UK cereal, potato and livestock production have not been presented and can instead be accessed on request from LEAF.

Method D – Determining Impact Indicators for LEAF Marque certified businesses

Aligned with the LEAF Marque Intended Impacts, the Impact Indicators presented in Global Impacts Report 2019 demonstrate how LEAF Marque certified businesses are increasing the implementation of more environmentally sustainable farming practices through Integrated Farm Management (IFM).

Data provided in relation to the indicators is, in part, taken from the answers LEAF Marque businesses have provided in the LEAF Sustainable Farming Review or LEAF Audit alongside Production Information (see **Method B – Determining crop area and number of livestock units for LEAF Marque certified businesses**). It is a requirement of LEAF Marque certification, from 2015 (LEAF Marque Standard v12.0 onwards), for businesses to complete the LEAF Sustainable Farming Review. While this is self-assessment tool, answers are sense-checked and reviewed for appropriateness, where possible. The questions and practices used to develop the Impact Indicators are kept consistent where possible, however best practice and the LEAF Marque Standard has evolved over time so some changes may have been made. More information on the individual questions and/or practices used please contact LEAF.

Impact Indicators for 2016 to 2018

Impact Indicators containing 2016, 2017 and 2018 figures were established using a combination of LEAF Marque certified business' production information and the answers provided in the LEAF Sustainable Farming Review to questions, practices and metrics.

Data shows the total crop area (not farm business area) or number of LEAF Marque certified businesses (**Method B - Determining crop area and number of livestock units for LEAF Marque certified businesses**) that answered “Fully Achieved” to corresponding questions 2016 and/or 2017 and/or 2018 for statistics presented in Global Impacts Report 2019 on:

- Number of LEAF Marque certified businesses monitoring energy consumption (page 34)

It should be noted that LEAF members who responded “Considerable Progress” or “Some Progress” may still meet the criteria required within the LEAF Marque Standard; however, this is not represented within this report.

Data shows the total crop area (not farm business area) or number of LEAF Marque certified businesses (**Method B - Determining crop area and number of livestock units for LEAF Marque certified businesses**) that ticked the corresponding practice(s) in 2016 and/or 2017 and /or 2018 for statistics presented in Global Impacts Report 2019 on:

- Number of LEAF Marque certified businesses where nitrogen efficiency per tonne product is measured (page 30)
- Hectares of crop on LEAF Marque certified businesses where steps are taken to minimise damage to beneficial species and non-target organisms (page 32)



- Percentage of LEAF Marque certified businesses with livestock who regularly monitor animal welfare indicators to assess performance (page 36)
- Percentage of LEAF Marque certified businesses with livestock who optimise health and welfare to maximise performance (page 36)
- Percentage of LEAF Marque certified businesses have one or more types of renewable energy generation on-farm (page 38)
- Percentage of LEAF Marque certified businesses with a reservoir who manage their reservoir for water quality, safety and wildlife (page 40)
- Percentage of LEAF Marque certified businesses working with others in the catchment to improve water quality and water management (page 40)

The Integrated Pest Management Best Practice metric (presented on page 32 of Global Impacts Report 2019) was designed in 2017. LEAF defines the 8 aspects of IPM Best Practice as those businesses that, according to the LEAF Sustainable Farming Review 2018:

- Consider themselves to be Fully Achieving **or** making Considerable Progress towards **all** the following statements:
 - “We have a Crop Health and Protection Policy”
 - “We assess crop health regularly”
 - “We use a range of crop protection measures”
- **AND** consider themselves to be meeting the practice: “Carry out a regular programme of crop walking”
- **AND IF** they considered the practice “We do not use PPPs” to be false for their business (i.e. the business uses pesticides) then they must also meet all the following criteria:
 - Fully Achieved or making Considerable Progress towards “We base PPP application based on evidence of need”
 - Consider themselves to “Include PPP strategy such as product choice, dose rate and effect on beneficial species”
 - Consider themselves to be doing at least 4 of the following practices:
 - “Include a resistance management strategy”
 - “Review and update the Policy annually”
 - “Map areas where heavy infestations occur regularly and patch spray”
 - “Use biological control measures”
 - “Use economic thresholds for spraying decisions”
 - “Use selective rather than broad spectrum plant protection products where possible and practical”

The Waste Management Best Practice metric (presented on page 34 of Global Impacts Report 2019) was designed in 2016. LEAF defines Waste Management Best Practice as those businesses that, according to the LEAF Sustainable Farming Review of the corresponding year:

- Consider themselves to be “Fully Achieving” **or** making “Considerable Progress” towards **all** the following statements:



- “We reduce possible wastes”
- “We reuse our by-products effectively”
- “We recycle or carefully dispose of wastes”
- **AND** consider themselves to be doing **at least 4** of the following practices:
 - “Comply with waste disposal legislative requirements”
 - “Plan purchase of goods in detail to reduce wastage”
 - “Consider whether suppliers will accept return of packaging and containers for recycling/disposal”
 - “Consider ease of recycling/disposal of packaging when comparing goods for purchase”
 - “Recycle, or dispose of, all wastes which cannot be used in our business”
 - “Ensure that wastes are disposed of without risk to water quality and the wider environment”
- Those businesses that considered “We reuse our by-products effectively” to be “N/A” to their business but they met all other requirements were also included.

The creation of new questions in the LEAF Sustainable Farming Review that captured quantitative data was only available from 2016 onwards. Data was calculated from LEAF Marque certified businesses who provided data for the Impact Indicators related to the following questions:

- Staff on LEAF Marque certified businesses who have appropriate awareness of IFM (page 28)
- LEAF Marque certified businesses recorded Soil Organic Matter % (page 30)
- LEAF Marque certified businesses used a Carbon Footprint Tool (page 34)
- Average habitat area on LEAF Marque certified businesses (page 42)
- LEAF Marque certified businesses improving on-farm biodiversity (page 42)
- Visitors to LEAF Marque certified businesses (page 44)
- LEAF Marque certified businesses communicated about more sustainable food and farming (page 44)

It should be noted that Habitat Area (page 42) was calculated as a percentage of “Total Farmed Area”, with those businesses that resulted in habitat area <0.0001% or >100% were excluded from the data. Where habitat area was >75% for business, the Total Farm Area was used instead (where provided) as it was felt that the business’ definition of Total Farm Area or Total Farmed Area was perhaps misunderstood and therefore the full information provided by the business was utilised to more accurately estimate habitat area. In 2017, small fruit farms with number of trees >50,000 were removed from the data set as it was assumed these were including trees used for cropping. The guidance has subsequently been improved to prevent this happening in future scopes.

Other Methodologies

LEAF Annual Survey Results

For the past 6 years, LEAF has conducted a survey of our farmer members, including individual farmers (LEAF Marque certified and non-LEAF Marque certified) and producer groups. From 2017, this was titled the LEAF Annual Survey whereas in previous years it was circulated under the name LEAF Sustainability



Survey. The aim of these surveys was to determine how our members felt about aspects of their businesses, including their sustainability.

LEAF's definition of sustainability is:

'Sustainable farming delivers a site-specific farming system supporting the integration of the environment, society and farm economic viability over the long term'

For the 2018 LEAF Annual Survey 67 members responded to the survey. Whilst LEAF Members' participation in all surveys was requested via email, the 2018 LEAF Annual Survey was hosted on Survey Monkey for the fourth year running whilst the 2014 Sustainability Survey was hosted within the Questionnaires platform on glue; the different platforms used and change of name may have affected the data.

The LEAF Annual and Sustainability Surveys asked a range of questions however just the answers to 'Do you believe your farm practice met the environmental sustainability standard expected by suppliers and end users?', 'How economically sustainable do you feel your business is?', 'How environmentally sustainable do you feel your business is?' and 'How socially sustainable do you feel your business is?' were presented in the report (see pages 12 & 14).

Explanatory answers to the remaining questions of the Annual Survey were included as examples within the IFM sections (pages 28 - 44)

LEAF Marque Post Inspection Questionnaire Results

Since 2010 LEAF has circulated an optional online survey to LEAF Marque certified businesses (including individual farmer members, producer groups and corporate members). The aim of the questionnaire is to provide LEAF Marque certified businesses with the opportunity to give feedback on their most recent LEAF Marque inspection directly to LEAF and improve the LEAF Marque assurance system as part of LEAF's ongoing Monitoring and Evaluation Strategy.

For the 2017 Post Inspection Questionnaire, 172 LEAF Marque certified businesses responded to the survey between 1st January 2017 and 31st December 2017.

The LEAF Marque Post Inspection Questionnaire asks a range of questions however just the answers to 'How thorough did you find the LEAF Marque inspection' and 'Do you agree with the following statement "The inspection provided a useful way to demonstrate our good environmental practices"?' were presented in the report (page 13)

LEAF Demonstration Farm Visits

All 35 LEAF Demonstration Farms were contacted via email to provide information around farm visits they had hosted in 2018. See <http://www.leafuk.org/leaf/farmers/demofarm.eb> for more information on the LEAF Demonstration Farms.

As at the 6th February 2019, 31 LEAF Demonstration Farmers had responded via email, phone call or entered data into the Visits and Talks question in the LEAF Sustainable Farming Review. Where data had



been provided around number of visits, number of visitors and type of visitor, it was totalled and presented in the Global Impacts Report 2019 (page 16).

LEAF Sustainable Farming Review Users

All LEAF members (includes all LEAF Membership Types), excluding test sites, who had completed the LEAF Sustainable Farming Review² 2018 were presented as a total number of 'Users of the LEAF Sustainable Farming Review' (page 15 of the Global Impacts Report 2019). Completion was considered to be all companies where the LEAF Sustainable Farming Review workflow state is 'audit approved'. The LEAF Sustainable Farming Review can be completed and edited at any time during the year, with final responses being used in all data analysis.

For more statistics relating to the LEAF Sustainable Farming Review please contact LEAF.

PLAID

Peer to peer Learning: Accessing Innovation through Demonstration (PLAID - <https://www.plaid-h2020.eu/>) is a European project funded by Horizon 2020 which is researching the effectiveness of on-farm demonstration and knowledge transfer and the up-take of new innovations. The project was launched in January 2017 and will end in July 2019. LEAF is a partner in PLAID and as part of project activities undertook a study in 2018 focussing on the LEAF IFM Field Event to evaluate what the main take-aways of demonstration events are, and what influences the uptake of new approaches or innovations on-farm.

As part of the study 25 attendees to the IFM Field Event completed an event evaluation form where one question asked them to score the extent to which they felt the event demonstrated environmentally sustainable approaches to farming (where 1 was not at all and 5 a great deal). The responses to this question are presented on page 17 of Global Impacts Report 2019.

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 727388.

Open Farm Sunday

The key statistics from LEAFs Open Farm Sunday 2018 are presented on page 25 of Global Impacts Report 2019.

The number of host farmers and farmer experience was calculated from Farm Registration data. Visitor's Previous Experience and Visitor's Understanding figures were calculated from responses to the Open Farm Sunday Visitor Surveys (1,354 total responses, including online and paper). The number of visitors come from a combination of responses to the Open Farm Sunday Visitor Surveys, contacting farms and estimates using Range of Visitor Numbers per Farm (which came from Farm Registration data). Where data has come from the Open Farm Sunday Visitor Surveys and Farmer Survey, figures concerning visitor numbers have been extrapolated. Media Coverage figures come from individual social media pages (Facebook and Twitter) and website hits via our Public Relations company, CERES.



For more figures surrounding Open Farm Sunday please consult Annabel Shackleton or Melanie McCarthy.

LEAF Education

LEAF Education has carried out detailed monitoring and analysis of its education activities since July 2017 when the merger with LEAF was completed. Data is recorded by the Regional Education Consultants after every activity into KOLOLA⁴. Data includes total number of people and schools educated, and total learning hours from 1st September 2017 to 31st August 2018.

The key statistics from LEAF Education are presented on page 26 of Global Impacts Report 2019.

Independent Evaluations

Context

Context assessed LEAF Marque as part of its review of sustainability standards to determine if certification against voluntary production standards encourage better social, environmental and production standards. The summary of findings was included on page 12 of Global Impacts Report 2019. For more information about this independent evaluation, including details of evaluators, methodology, all findings, conclusions and recommendations, please see *Context (2018) Farms, Fisheries and Forests: Does certification make a difference? Analysis of 15 sustainable production standards* on the Context website⁵.

3Keel

ISEAL Alliance commissioned 3Keel and the University of Oxford to conduct a review of the evidence on whether standards systems drive the adoption of sustainable practices. A key insight was included on page 12 of Global Impacts Report 2019. For more information about this independent evaluation, including detail of evaluators, approach and evidence base, key findings, conclusions and recommendations, please see *Petrokofsky G., and Jennings S., (2018) The effectiveness of standards in driving adoption of sustainability practices: A State of Knowledge Review* on the ISEAL website⁶

CCRI

LEAF commissioned the Countryside and Community Research Institute (CCRI) to undertake an independent evaluation of the impact of LEAF Marque certification, examining the financial, environmental and social benefits. It builds on previous work the CCRI carried out in 2010 which looked more broadly at the benefits to farmers of LEAF membership. A selection of key findings from the evaluation can be found on pages 12 & 13 of Global Impacts Report 2019. For more information about this independent evaluation, including details of evaluators, methodology, key findings, conclusions and recommendations, please see *M. Reed, N. Lewis and J.Dwyer (2017) The effects and impacts LEAF*

⁴ <https://www.kolola.net/>

⁵ <https://contextsustainability.com/farms-fisheries-and-forests-does-certification-make-a-difference/>

⁶ <https://www.standardsimpacts.org/resources-reports/iseal-report-effectiveness-standards-driving-adoption-sustainability-practices>



*Marque in the delivery of more sustainable farming: a study to understand the added value to farmers on the LEAF website*⁷

Other External Data Sources

‘Water is one of the most critical resources for sustainable agricultural development worldwide, accounting for around 70% of water used across the globe’ quote on page 40 of Global Impacts Report 2019 was sourced from The World Bank⁸

Figures related to LEAF Marque certified businesses Vitacress and Blue Skies (as feature in the Case Studies on page 43 and 45, respectively) were confirmed by the primary contacts for the business (Leah Mathias-Collins and Stephan Morris).

Supplementary Tables and Figures

Please see contact LEAF if you require more supplementary tables and figures.

LEAF (Linking Environment and Farming)
Stoneleigh Park
Warwickshire
CV8 2LG
United Kingdom

© LEAF Marque Ltd

t: +44 (0)24 7641 3911
e: enquires@leafuk.org
e: Jennifer.Clark@leafuk.org
w: www.leafuk.org
@LEAF_Farming

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⁷ <https://leafuk.org/farming/leaf-marque/leaf-marque-independent-evaluation>

⁸ <https://blogs.worldbank.org/opendata/chart-globally-70-freshwater-used-agriculture>