# KTIF SG Final Report Template

**Contents:**

## 1. PROJECT TITLE/APPLICANT

Strategic Potato (SPot) Farm Scotland

The Agriculture and Horticulture Development Board (AHDB) is a statutory levy board, funded by farmers, growers and others in the supply chain to help the industry succeed in a rapidly changing world.

AHDB knowledge exchange programmes help the Scottish potato sector improve its sustainability, efficiency and profitability and maximise its contribution to Scotland economy through facilitating farmers programmes as well as helping develop more integrated communications within, and between different sectors of the industry.

## 2. EXECUTIVE SUMMARY

A Strategic Potato Farm (SPot Farm) was a new concept in knowledge transfer and knowledge exchange for the Scottish potato supply chain. It is the response by AHDB Potatoes to March 2015's clarion call from Scottish potato growers, merchants and processors for an intensive, hands-on approach to investigate innovative technology, techniques and potato varieties that will improve the viability of this struggling but vitally important sector of Scottish farming. This innovative project has been run initially for three years and specifically targeted at Scotland's four hundred potato growers as well as representatives from the processing and retail supply chain.

The SPot farm project recruits a technically advanced potato grower who is prepared to be innovative in their approach to research findings, new technology and techniques. The SPot Farmer collaborates with AHDB and other industry researchers, a knowledge exchange specialist (facilitator) and others in the potato supply chain to provide a series of dynamic, in-field, hands-on events, targeted principally at Scottish ware and seed potato producers. The aim is to highlight, with the support of the host business (the SPot Farmer), the value to the wider potato industry, economically and environmentally, of embracing change through improved crop management practice and the adoption of innovation at different stages in the production of potatoes.

The structure of the SPot programme allowed growers to find solutions to challenges they had in their own productions systems and provided confidence to farmers to reduce input costs with the benefited potential of an increased yield. The benefits in the programming working throughout the supply chain working with Scottish Potato Packers gave additional security to test the boundaries of what could be possible.

## 3. PROJECT DESCRIPTION

The SPot farm project aims to accelerate the uptake of arable innovation through the testing and demonstrating of novel practices on commercial farms.

Objectives

- To provide a range of knowledge exchange and transfer opportunities where growers can view, interpret and consider innovative technologies and key research findings that have potential for commercial integration.

- To provide an accessible platform to test and show case cutting edge research, together with potential innovations identified on-farm, via a structured combination of short- and long-term field and farm scale trials.

- To provide a dynamic vehicle for improving productivity, profitability and competitiveness in the UK arable sector.

Strategic Potato Farms play a key role in progressing the industry by focusing on improving arable productivity through the formal testing and demonstrating of innovative practices on a field or farm scale. They will be a step ahead, more forward looking and in doing so, be able to cascade the learning out to the wider arable community. Ideally the host farmer will be an excellent communicator with the willingness to present, or communicate their learnings in a wide range of other events and forums. Strategic Potato Farms will not be constrained to a particular technical area and could, for example, include trials that examine new cultivation and application techniques, varieties, products, cultural methods, etc., or a combination of these, in annual or full rotation scenarios. Every trial is subject to a full cost benefit analysis so the impact on financial productivity can be seen as clearly as that on physical productivity. The trials are independently presented in a real farm setting, while taking advantage of all opportunities to work with other parties.

There are three main elements of the design process that help shape the Strategic Farm content and vision:

1. **Farm selection.** Geographical location was a key consideration in selection, as was the ability of the farmer to host independent trials and associated demonstration events over a three year period.

2. **Trial selection.** A steering group, including the host farmer, select a combination of short and long-term trials. This was created from a review of the latest research outputs (AHDB and other), but not restricted to those projects that have been completed, together with ideas for addressing knowledge gaps identified in other KE activity and on the host farm. Trials were reviewed annually.

3. **Trial type**. The trials could be fully replicated plot trials, tramline try-outs or full field scale trials. However, the steering group committed to all of the trials being field scale and conducted by the host farmer with support as required. This meant that the commercial relevance was far be greater.

Success of the project aims to provide all stakeholders in the Scottish potato industry confidence to try research proven techniques to improve efficiencies and reduce the environmental impact of food production. This requires action to be taken by the whole supply chain to achieve.

## 4. FINANCE

4.1 Sum awarded - £116,411

4.2 Detail of spend – Document attached

4.3 Noting any underspend and explain why – £21, 416

- Post project review impacted by covid – planned interviews with small groups of growers around Scotland were scheduled to meet and interviewed to capture impact and change on individuals farms. This was unfortunately not completed due to covid restrictions.
- The host farmer's ability to set up and manage field trials meant that less support was required in for project development. This is not something that would be usual, the Bruce farm business runs their own trials with a fresh pea processing enterprise that they operate.
- Field monitoring – Specialist knowledge in local area reduced travel costs.

## 5. PROJECT AIMS/OBJECTIVES

AHDB Potatoes called a meeting of potato levy payers, processors, scientists and supply chain providers in March 2015. It was attended by nearly one-quarter of all Scottish seed and ware growers. At this meeting the participants highlighted the need for AHDB to continue to provide platforms for innovation within the sector as well as creating a better understanding of the supply chain and ensure long-term confidence for a sustainable, profitable and competitive industry.

The AHDB's priorities are to help levy payers, including Scotland's potato growers to:

- Improve productivity and cost management (resource management, climate change, soils and water, managing market volatility)
- Prevent and manage disease
- Understand and respond to the regulatory and policy environment

This project aimed to address each of these issues, by providing high-quality knowledge, guidance and information to its growers, potato processors and other key stakeholders in the supply chain. The project also served to highlight market opportunities to the sector, assist in market development (export development, promoting and differentiating assured quality products, market information and analysis) and provide opportunities through hands-on demonstrations and take-away messages to upskill the sector's workforce.

This project also intended to provide opportunities for potato growers to meet with researchers and supply chain representatives where, through facilitated knowledge exchange aimed at improving collaboration and creating better communication they gain insights into areas which can improve the efficiency and profitability of potato production.

The SPot Scotland project, set in the Angus area, set a particular focus in the first year on assessing the challenges of minimising soil compaction associated with potato growing. This is an issue that was raised by the AHDB Arable and Potato Monitor Farm in Fife, following

an exceptionally wet 2012 season. Soil compaction, smearing and soil loss during harvesting on ground let from arable farmers has led to realistic concerns that future lets will be restricted, with serious financial implications as land availability, rental prices and distance to farming operations all increase.

EU RURAL DEVELOPMENT PRIORITIES

AHDB Potatoes structured this project to support four EU rural development priorities, summarised below and then described in detail.

1. **Knowledge Transfer**. Fostering knowledge transfer and innovation in agriculture. The SPot Farm provided a knowledge transfer platform for researchers, AHDB Potatoes and private sector businesses to demonstrate innovative techniques, research and ideas to primary producers and to processors.

2. **Competitiveness.** This project had a strong emphasis on demonstrating and discussing techniques and technical products that will improve the competitiveness and long-term viability of the Scottish potato sector. There will be a strong focus on efficiency and precision farming to reduce input costs.

   The SPot Farm promoted information to support greater resilience in the sector by encouraging greater understanding of the supply chain and market. Providing a forum for discussion on collaborative working and co-operative ventures in potato supply and marketing.

3. **Restoring, preserving, and enhancing ecosystems**. The project promoted protection and enhancement of the surrounding ecosystems, including Natura sites and priority water catchments. This was be demonstrated through techniques, applicable research and innovation that identifies best practice in soil management.

   The call to host this new project was welcomed by the Scottish potato sector and multiple businesses were nominated to take on the mantle of host farm. A panel of farmers and industry came together to select the host that would provide the most commitment, a business with focus and open to collaboration with the whole industry.

**SPot Scotland Host (2016 – 2019)**

Bruce Farms were selected as the SPot Scotland host in 2016. A progressive family business based in the Strathmore valley they grow 675 acres of potatoes exclusively for Albert Bartlett. It is an impressive business very much focussed on testing the boundaries of potato production systems. Based in the centre of Scotland's main potato producing area and well connected to local research bases they made a great fit for the programme.

Bruce Farms are committed to producing the highest possible standard of produce by using the most advanced and environmentally responsible practices.

They do this by:

- Limiting the use of insecticides on crops by using bio-chemicals and introducing natural predators.
- Annually housing honeybees on specially planted areas of the farm which naturally aids pollination and improves fruit quality.
- Implementing a recycling policy to ensure waste from our fields and packing hall is disposed of in an environmentally sensitive manner.
- By using the most up to date processing methods we have ensured that our farms are run as efficiently as possible and our impact on the land is minimised.

Two main objectives were set out at the beginning of the project

1. All demonstrations must be field scale. It was decided that for information to be shared and easily accessible to all farmers that the impact of the project would be much greater if visitors to the site could see the visual impact of each try out.
2. Figures should be published as packout yield figures. This is the actual product sold into the supply chain and not harvested crop which is traditionally shared. This gives a true reflection on the efficiency of the new practices being always trialled and kept the project focus on the end user.

## 6. PROJECT OUTCOMES

The aim of the SPot farm programme was to help improve the profitability, productivity and sustainability of potato production across Scotland. Achieving this through practical demonstrations, the sharing of best practice and discussion of current issues facing growers in Scotland. By the end of the project the impact had clearly been significant for the sector.

In Scotland, there will be many implications of climate change for the potato industry, including the possibility that warmer springs will result in earlier plantings with consequent impacts on canopy management, as well as changes in crop husbandry and the potential for higher yields.

The areas suitable for new potato plantings may also increase, due to changing local soil and agroclimate conditions. However, a reduction in the availability and reliability of water supplies may lead to a shift in cropping to parts of the country where there is less reliance on supplemental irrigation. But equally, there may be areas (and cultivars) where irrigation is not currently required, which may require irrigation.

With this in mind, Bruce farms embraced the project fully and pushed the boundaries of what can be achieved when working in across the supply chains. New techniques were trialled and tested in the demonstration field and many were then implemented across the whole business and further afield, all widening the influence farmers across the country. Through regular meetings with industry, experts, retailers and most importantly peer's knowledge and experiences were shared. The feedback gathered from each meeting helped accelerate the

pace of change as ideas from growers were then taken away, studied by researchers, and practically implemented in the field for everyone to see the following year.

The greatest outcome of the Bruce Farms SPot project was in identifying practices that would achieve more for less, this became the take home for the Scottish potato industry. The initial baselining year of the project established the full cost of production of standard practises, allowing them to compare and measure changes over time. Then further a prevention over cure principle was implemented.

1. **Nitrogen use - Improve productivity and cost management**

   Potato production relies heavily on inorganic fertilisers to achieve higher yields and maintain quality. Due to unsettled weather patterns in the area growers tend to take a policy of higher N application to ensure nutrients are always available to the crop when they need. Research had proven that many crops have excess N available which in best case is left in the field for the following crop. However this excess Nitrogen not only is a financial cost to growers but can lead to the risk of leaching and therefore a cost to the environment.

2. **Crop establishment - Prevent and Manage disease**

   Up to 30% of crop costs are spend on plant protection products to control pest and disease, which is under threat due to chemical resistance and loss of chemistry. The steering group made the decision to concentrate on soil management which gives the potato plant improved establishment and natural protection from disease. The methods measured were in soil cultivations reducing costs while improving yield and quality.

3. **Water management and alternative approaches – Environment**

   Irrigation trials were set up in 2018 and 2019 however due to the weather were not able to be implemented. Cover crops were established each year to improve soil structure and provide a over winter crop. Although when measured there were not notable differences in the approaches it was observed at planting that a cover crop helps the soil structure especially if there had been a wet winter. This also prevents soil run off during the winter months.

## 7. LESSONS LEARNED

"Through our work with AHDB SPot Farms we have **saved money, time** and become **more efficient.**"

Kerr Howatson
Farm Manager at Bruce Farms, Perthshire

AHDB

**SPot Scotland shows how to save money and increase yields**

Results – Overview

- Nitrogen applications can be cut without decreasing yield
- Variable rate seed planting benefits seed and salad crops
- Reducing cultivation depths and removing bedtilling saves money and increases yield

**Reducing nitrogen without reducing yields**

Once more SPot Scotland has shown you can vastly reduce nitrogen use without seeing any negative impact on yield or crop quality. In fact, we have seen better yields when less nitrogen has been applied.

Marc Allison of NIAB CUF explains: "We've almost halved nitrogen use at SPot Scotland and seen yield maintained or increased. Also, there is no impact on crop quality, we have seen no increase in black dot and no more bruising.

"You don't need an 'insurance application' of nitrogen, just use what is recommended, otherwise you could be adding cost and losing yield."

Fertiliser use is a major contributor to a farm's greenhouse gas emissions. Demonstrating a reduction in it's use at the Strategic Farm in Scotland was is a step towards reducing impact on climate change for all directly involved in the programme and the wider industry.

**Variable rate seed spacing success**

While the results of the 2019 SPot demo plots did not show that variable rate planting improves yield or pack out, Bruce Farms have found it to be very useful.

Farm Manager Kerr Howatson used soil scanning on some of his more difficult fields, and then varied the rate of salad potato planting depending on the soil type.

More tubers were planted more tightly together in areas with heavier soil, and the result was a crop that was much closer to spec (under 42mm) than would have been the case otherwise.

Kerr says: “We’ve seen huge value in variable rate planting where you need to aim for a smaller size, for example with seed and salads. It really can make a big difference.”

**Cultivation trials prove less is more**

After three years of trials it’s clear that a less is more approach is the way to go with cultivations.

Mark Stalham of NIAB CUF explains: “Year on year the standard farm treatment has yielded more poorly than those treatments where bedtilling has been removed or cultivation depths have been reduced. Not only that, but the reducing cultivations saves time and money.

“I think growers in Scotland have seen that and are now only bedtilling parts of fields where it is really needed.”

**Attached:**

**1.1 Full trial results**

## 8. COMMUNICATION & ENGAGEMENT

### 1. Events.

There were three main open events per year taking place at key stages in the beginning, middle and end of the growing cycle. These allowed visitors to see the full extent of the trials, supported by commentary from the host farmer, relevant researchers as well as a full economic analysis.

| EVENT | Number Attended | Comments |
|---|---|---|
| 4 x Open days | 360 | Summer showcase event to demonstrate all field try outs and gather feedback |
| 4 x Results days | 280 | Winter meeting to share learnings and discuss future approaches. Connection to market information and to influencing future research |
| 12 x Field walks | 250 | Ranging from retailer meetings, specialist grower groups, international visitors and research associations |
| Schools day | 120 | Local school group visits to celebrate local produce and connect to the environment |
| **TOTAL** | **1010** | |

### 2. Communications

- **Networking.**

By 2019 there was an established network of AHDB Strategic Farms and we were able to bring together the host farmers in both cereals and potatoes to share best practice and data of measures performance – this is referenced as the Farm Excellence programme.

There was also a workshop hosted in Scotland of all the AHDB Potato SPot hosts in the UK, where they reviewed all activity and made a set of recommendations for future projects.

- **Communicating the messages**

Meeting reports / activity updates will be circulated to attendees and posted online per farm per year and one annual report will be produced each year summarising activity across all AHDB Strategic Arable Farms. Other methods of communication included:

- **Videos**
  Throughout the programme over 15 videos were published online sharing the learnings from the programme, viewed on average over 100 times. Interviews from site visitors and researchers findings were shared to build the story over time. This has provided a powerful archive of data that is still accessed today.

- **AHDB publications**
  On a monthly basis articles were published in AHDB publications such as Grower Gateway, Arable Focus and Potato Weekly which has the potential to reach over 80 of all UK potato growers.

- **Press Release & Coverage**
  Press receptions were held twice a year generating a large amount of coverage. The project became a regular feature in The Scottish Farmer, Dundee Courier, Scotsman, Press & Journal, Farmers Weekly and Farmers Guardian. Pre planting grower advice generated from the project was well regarded.

- **Twitter**
  AHDB Scotland twitter account with 1300 followers and AHDB potato account a further 7000 followers generated discussion and regular opportunities to share reports and events with the whole of the potato industry.

## 9. KEY FINDINGS & RECOMMENDATIONS

The SPot farm project created an environment where growers could see real commercial benefits to implementing change to standard productions systems. The project built confidence in the sector to share information and experiences between growers, as well as highlighting the importance of whole industry buy in.

The powerful visual impact that the commercial scale try-outs had allowed messages to be communicated efficiently to many audiences including growers, processors, retailers and school children.

Data collection and commercial packout analysis was an important tool to make this project relatable to growers and highlighting the key finding effectively. The initial baselining year to measure starting points was an important step to make sure change could be measured and clear comparisons could be drawn the whole way through the project.

**SPot Farm evaluation survey results**

*The data used below provides the results from the AHDB 2020 Farm Excellence Platform (FEP) Impact & Outcomes Survey for growers and stakeholders who attended a SPot Farm event.*

*It follows on from the baseline survey conducted in 2019. The survey is designed to evaluate the FEP in terms of its actual impact on the ground at an attendee and industry level, and to inform forward planning and track performance over time.*

**Main aims for participating (levy payers)**

Increasing general knowledge – 43 %
Learning specific information and skills – 28 %
Networking and discussion with peers – 22 %

**Satisfaction & net promoter score**

Overall satisfaction with the 2019 farm excellence platform was high at 7.5 out of 10

**Impact of events**

99.7 % of levy payers reported one or more positive business outcomes as a direct results of attending the events

- Improved technical knowledge 94%
- Increased knowledge through farmer to farmer learning 89%
- Made improvements to increase efficiency 85%

88% of levy payers stated at least one of these changes brought acritical benefit to their business

- 83% for those attending 1 -2 events
- 97% for 3 + events

**Financial impact**

- 93% of levy payers stated that the benefits experienced would have positive impact on costs, productivity, or profitability

- 58% of levy payers said there has or will be a financial benefit to their business as a direct result of attending events

**Wider industry benefits**

- 97% of the stakeholders anticipated wider benefits to the industry because of these events.

## 10. CONCLUSION

Over the course of the SPot farm projected Bruce farms welcomed over a thousand visitors and shared their learnings with the potato industry from field to fork. They concentrated on practical messages that could be easily adopted and strengthened the project by listening to feedback and learning from the audience.

**At Bruce farms:**

There has been a clear direction of change in cultivation and N management during the 4 years of SPot Farm Scotland at Bruce Farms and this has been reinforced by having 3 or 4 years of data to support the reasons for making the changes. Building this network of individuals to drive the project not only gave the host farmer the confidence to change standard practices but also growers across Scotland.

**Whole industry:**

Packout figures and costs connected to a whole supply chain approach to problem solving helped bring in a wider audience. Information flow through commercial supply chains and independent advisors has a significant impact on the rate of change in the potato industry. Smaller grower group visits where information could be translated for their specific needs were often the most effective.

The visual impact of the project, as visitors could see large scale try outs with clear crop differences made it easy to share knowledge. Keeping strong themes throughout the crops allowed us to develop these messages and brought better understanding and uptake from whole industry.

The huge success of this project was realised as it came to a close. The potato growers of Scotland requested the continuation of the project and supported it independently through AHDB levy funds. The Bruce farm project allowed the concept of SPot farms to be developed, brought the whole industry together and have now taken it forward to look at a specific seed potato system in Aberdeenshire.

## 11. ANNEXES

# KTIF Final Report Guidance

**Guidance:**

- Introductory section explaining the basis for the project utilising rural development regulation you appropriate EU Grant Measure (ie. 16.1), making mention of the operational group (if appropriate), the roles and responsibilities of members and what the group set out to achieve;
- Report back on project aims and objectives and if they've been achieved – much of this can be pulled from the KTIF application;
- Detailed information on actual spend and how much was underspent (if any and a reason). How much funding was provided, from where (ie. 75% or 100% co-funded by SG/EU) and details of the project duration and milestones;
- Section on 'Lessons Learned'. Things which were highlighted as issues, resolved or to do better if done again. We understand some project won't work out as well as hope but be honest about this. By identifying limitations we can target the problem;
- Pull information in from the other reports your project has produced (ie. Progress Reports and Evaluation Reports) or as appropriate annex these;
- Remember your audience. Avoid too technical language and don't assume the reader has in-depth knowledge.
- A table detailing communications which have gone out (where, when and the size of the audience) and commentary would be beneficial;
- Detailed information on actual spend and how much was underspent (if any and a reason). How much funding was provided, from where (ie. 75% or 100% co-funded by SG/EU).

**KTIF Secretariat**

**Agricultural Policy**

**July 2019**