
 <b>Interreg</b> <b>North-West Europe</b> <b>FABulous Farmers</b> <small>European Regional Development Fund</small>		
<h2>Review of Decision Support tools for FAB implementation</h2>		
<b>Program</b>	<b>Practical information</b>	
FABulous Farmers Project Work Package 1; Activity 3.3 Report	DATE: 1 <sup>st</sup> September 2022  CONTACT: Alan Radbourne aradbourne@ceh.ac.uk +44 (0)1248-376544	
<i>Organised by UKCEH</i>  <i>Author: Alan D. Radbourne</i>		



**UK Centre for  
Ecology & Hydrology**

**Title** Review of Decision Support tools for FAB implementation

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**UKCEH contact details** Alan Radbourne  
Environment Centre Wales, Deiniol Rd, Bangor LL57 2UW

t: 01248 374544  
e: aradbourne@ceh.ac.uk

**Author** Alan Radbourne

**Approved by** David Robinson

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## Executive summary

A Decision Support Tool (DST) is a document or increasingly frequently an online or mobile application, designed to guide farmers in business change and management through information and/or data collation.

This review summarises the findings of how DSTs can aid FAB uptake and where their limitations are in the context of the FABulous Farmers programme.

The review highlights the major importance of finance for supporting farmers in making a sustainable management transition, with respected advice and evidence of others having success also being of importance.

Decision Support Tools are not a primary driver for the uptake of FAB measures. Yet, DSTs can be another source of information or help to streamline the decision-making processes for many (not all) farmers.

Technology is and will increasingly become part of many land managers daily management, thus DSTs have a place to facilitate, if not a role of FAB uptake promotion. The rise of private funding platforms and emerging environmental credit markets may signal the major first step towards this active facilitation.

However, ultimately, finance (supported by policy) is required to see increased FAB uptake or other regenerative agri-ecological transitions take place, something even the most sophisticated DST will not be able to provide in and of itself.

In summary, the aim of a good DST should be to support and inform the farmer for how and what their data can tell them in their specific landscape, i.e. to confirm their ideas, not give them ideas. It should streamline the procedure for tracking and monitoring change though baselining, planning and data storage, ultimately with an opportunity to use this to evidence for policy and finance payment schemes.

## Introduction

### About this report

'FABulous Farmers' aims to accelerate the uptake of FAB (Functional Agro-Biodiversity) measures by farmers and land managers in northwest Europe (Belgium, Netherlands, Luxemburg, France, United Kingdom). These nature-based solutions shift from a linear agro-system to a circular agro-ecosystem that is more robust to disturbances, optimizes reuse of natural resources (soil, water and biodiversity) and is less dependent on exhaustible external inputs whilst delivering benefits to farmers, society and the environment.

The FABulous Farmers programme of activity has many integrated elements, including the review of monitoring and tools for the implementation and uptake of FAB measures in the pilot regions across northwest Europe.

This report reviews the use and experiences of Decision Support Tools (DST) for supporting the uptake, implementation and monitoring of FAB measures. It is the third activity in the work package 1 activity 3; following on from the initial DST review (output 1.3.1) and recommended DST tool kit (output 1.3.2).

## Decision Support Tools

Decision support tools support farmers and landowners to make decisions and guide change management for their business. Tools come in many forms and meet different purposes. They can record, track and analyse data input, provide guidance to facilitate improved farm management or simply act as an information source. From dynamic software to excel spreadsheets, and mobile applications to paper forms, DSTs are wide ranging in application, usability and industry specifications.

Information, identification or how to guides can provide the techniques and knowledge for farmers to improve management or monitoring, data baselining DSTs can help benchmark a farm against others or expected metrics and planning and opportunity mapping tools can provide a framework for a farmer to successfully implement change. Thus, with farming being a data driven industry, DSTs can provide and in some cases analyse data to help the farmer or land manager to make decisions that are better informed.

These tools can become businesses in their own right, tools to promote wider business services or products, or methods of scientific and management application.

Previously, studies have found the uptake of DSTs is limited (Alvarez 2006, Gent 2013). However, with the rapidly increasing number of tools entering the market, and the majority of new technologies developing an integrated mobile or online application to manage and track farm performance, it is clear the industry believes DSTs are the way forward for a future tech-savvy workforce.

Therefore, can these DSTs provide the information, resources and confidence to a farming business to make a sustainable transition towards a whole system agricultural approach to land management?

### A narrative of farmer experiences

This report provides an insight into the experiences of farmers and land managers using DSTs as they navigate FAB measure implementation. The report looks at the key uptake and barriers DSTs provide, primarily focusing on the experiences of farmers in the FAB Farmers project who have been actively engaging in activities and practices where DSTs could be of great benefit.

There are a number of systematic DST reviews in the academic and wider literature; therefore, this report does not aim to provide such a review, but a narrative on the experiences of farmers implementing FAB measures.

## The use of Decision Support Tools

As outlined in Report 1.3.1, decision support tools are designed to support users to effectively make decisions and guide change management for their business (Dicks et

al 2014<sup>1</sup>). However, many studies have found the uptake of DST is limited (Alvarez 2006<sup>2</sup>, Gent 2013<sup>3</sup>).

A range of factors can affect uptake of DSTs, including the ease of use and performance, peer recommendation, relevance to on-farm specific challenges, scale of farm business and lack of IT confidence for use within some of the older generation of farmers (Rose et al 2016<sup>4</sup>). Plus, the use of agronomists or consultants is still the accepted route to receive reliable bespoke guidance on farm business direction.

Nevertheless, with our society becoming increasingly reliant on tech-savvy solutions, and mobile app integration to technology with data being harvested in incredibly diverse ways, these tools are becoming increasingly important for successful modern farm business management to find marginal gains to maximise efficiency and profitability. This drive is never so evident as in machinery promotional material or farmer community literature, with a focus on the data insights and efficiency savings, or seamless integration between the machinery fleet and precision automated tracking capabilities.

Therefore, with this technological revolution, and an increasing pressure (or opportunity) for land managers to transition approaches for environmental and climatic benefits, maybe there is an excellent opportunity for developers of DSTs to facilitate and enhance this shift in agricultural practices to regenerative, agri-ecological systems.

It is clear spending time at any agricultural show in 2022 that many people certainly think there will be a new wave of interest in DSTs, especially those dealing with carbon accounting or biodiversity net gains. The agricultural shows Cereals and Groundswell held in the UK each summer, although quite different in farming outlook (Cereals being commercial focus, Groundswell having a regenerative focus) both had a keen eye on emerging private funding markets for sustainable agriculture. To gain entry to these emerging markets, 'easy to use' applications, assessments, maps and models underpin how a landowner chooses and monitors a management change.

Additionally, the ongoing developments for public funded payment schemes are leading towards an evidence-based assessment where tools, such as those to benchmark carbon or provide a biodiversity score will play a key role in access to sustainable farming public payment schemes.

Clearly, the market drivers see the potential in DSTs for brand growth or even new enterprises making the most of new avenues and drivers of agricultural transition. The key question over the next few years will be how these can be developed to support farmers across a diverse geology, climate, finance, knowledge and interest base; providing suitable guidance, reliable insights and high quality data to really make an effective sustainable agricultural transition.

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<sup>1</sup> Dicks, L.V., Walsh, J., Sutherland, W.J., 2014. Organising evidence for environmental management decisions: a '4S' hierarchy. *Trends Ecol. Evol.* 29, 607–613.

<sup>2</sup> Alvarez, J., Nuthall, P., 2006. Adoption of computer based information systems: the case of dairy farmers in Canterbury, NZ, and Florida, Uruguay. *Comput. Electron. Agric.* 50, 48–60.

<sup>3</sup> Gent, D.H., Mahaffee, W.F., McRoberts, N., Pfender, W.F., 2013. The use and role of predictive systems in disease management. *Annu. Rev. Phytopathol.* 51, 267–289

<sup>4</sup> Rose, D.C., Sutherland, W.J., Parker, C., Loble, M., Winter, M., Morris, C., Twining, S., Ffoulkes, C., Amano, T., Dicks, L.V. 2016. Decision support tools for agriculture: Towards effective design and delivery. *Agricultural systems*, 149, 165-174.

## Uptake in FAB Farmers project

Following report 1.3.1, assessing the availability and usability of DSTs, and the recommendations for the 'best of' for use by farmers in the FAB pilot regions (output 1.3.2), the initial aim for his report was to intentionally test a small number of tools for their benefit in implementing FAB measures within the FAB Farmers programme. However, with the many demands of farming and being an active part of the wider FAB programme this was not successfully undertaken, with no responses to the initial assessment request by the pilot regions, citing time to test a different tool as the key reason for no response.

However, the no response is not all loss, as a key insight can be noted here. The tools in the assessment come secondary to expert advice or peer support, which the FAB Farmers project provides in abundance, thus the active use of DSTs for the farmers in the pilot regions felt more like a tick box exercise rather than a valuable use of their time in decision making.

To ensure a valuable review of DSTs uptake and experiences from the FAB Farmers programme, a decision was made to shift this report focus slightly to provide a narrative insight into the experiences and perceived value of DSTs for the farmers in the pilot regions. This was primarily conducted through a DST experience survey in 2022.

## The DST Experience Survey

### Introduction

The DST Experience Survey was created to gather experiences through a short online survey available in English, French and Dutch.

The form asked participants the regularity of DST use, types of DSTs used, and how important DSTs are for driving change in their farm practice.

It was shared to all FAB Farmers pilot regions and contacts. 42 responses were received in total.

A copy of the form is available as an [Appendix](#).

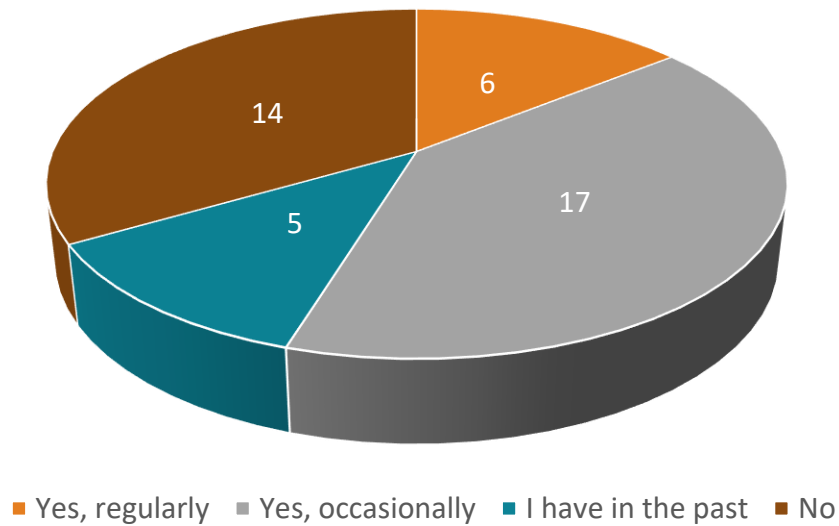
### Survey findings

#### **Use of DST**

Of the 42 respondents, 14 do not use DSTs (33%), citing reasons for not doing so as; other drivers taking higher priority (i.e. advice, policy or finance), a dislike for technology, not being specific enough for their situation or other undefined other reasons.

5 responded as having used DSTs in past but no longer use them, 17 as occasional use and 6 regular use.

Overall, for the majority of respondents, DSTs are not a core part of their farm business, seen as just one of many tools the toolbox for decision making.



**Figure 1.** Q1: Do you use Decision Support Tools?

**Types of DST**

Identification and information tools were the most popular types of DST, with a small number of planning and data tools also used.

Accacia was the most popular tool with French respondents. Plantnet, iNaturalist Cool Farm Tool, ADHB online resources and Farm crap app were all also listed, each of these having been featured in report 1.3.1.

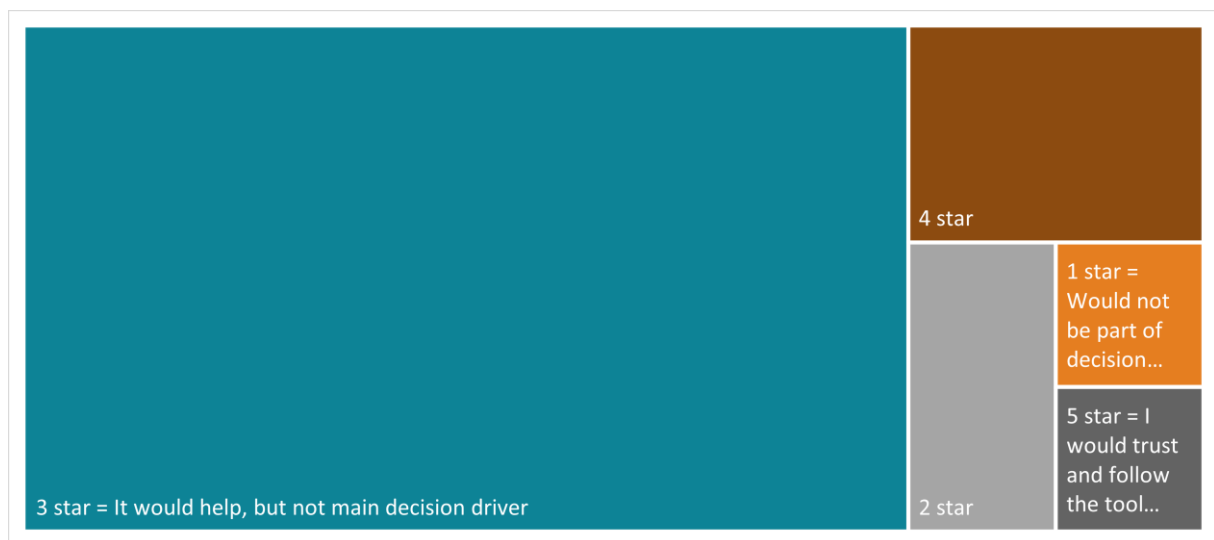


**Figure 2.** Wordcloud of decision support tools used by respondents

### Decision drivers

When asked how much a DST would guide a decision making process, 1 respondent said it would have no impact, 2 said little impact. The majority of respondents (21/28, 75%) opted for 3 out of 5 stars, representing a view that *'It would help, but not be main decision driver'*. One response chose 5 stars to say they would completely trust and follow tool advice.

Again, for the majority of respondents, DSTs are seen as another source of information to guide decisions, but not a core to their farm business decisions.



**Figure 3.** Some tools provide information to guide a management transition. How likely would these tools guide our decision making process? Rank from 1, not part of decision, to 5, would trust and follow tool (assuming the source and testing of the tool is reputable).

### Top ranking driver of change

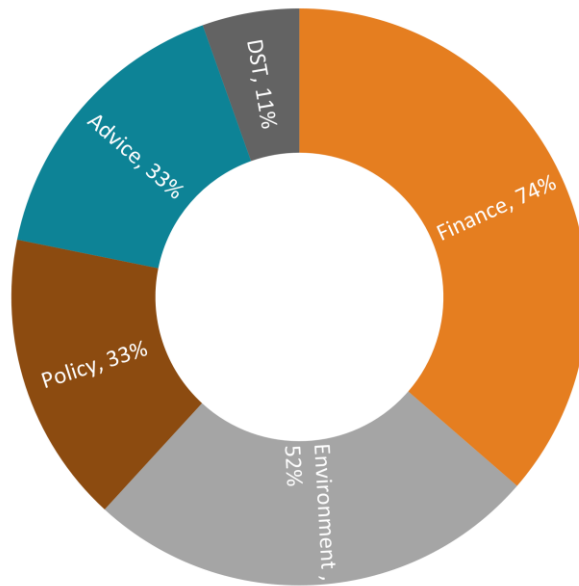
The most ranked top factor for deciding to make a change on farm was *environmental improvement* (10/27, 37%). It is worth noting here the respondents are part of the FABulous Farmers programme and so are more likely to be driven by environmental factors otherwise they would not be part of such a programme.

Finance (7/27, 26%), policy (5/27, 19%) and advice (4/27, 15%) all featured as the top ranked driver of change.

The most popular 2<sup>nd</sup> choice was *finance* (13/27, 48%), thus finance was a top 2 driving factor for 74% of respondents (20/27). All those listing the environment as a secondary factor (4/27) had cited finance as first importance.

This ranking shows fundamentally the farm is a business and needs to be profitable, thus finance drives decisions. The environment is important, although this is to be expected with the source of the respondents. In addition, advice and policy is important to some, yet DST are a lesser important driver for decision-making.

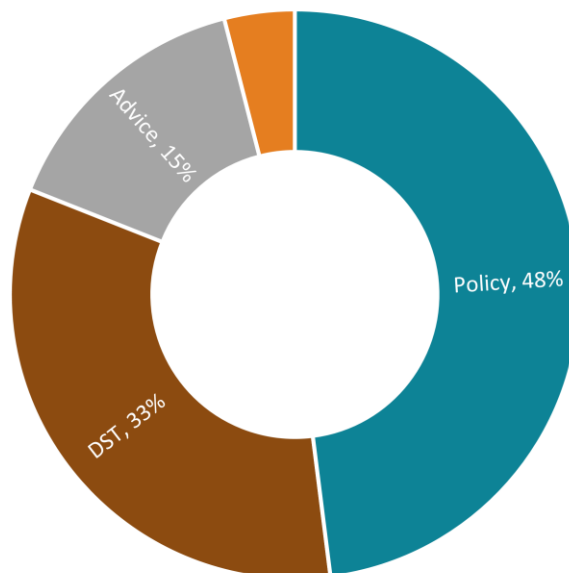




**Figure 4.** Driving factor importance featuring in respondents' top 2 ranking choices.

**Lesser important driver of change**

The driver of change chosen as least important most often was policy (13/27, 48%). With DST (9/27, 33%), advice (4/27, 15%), Env (1/27, 4%), and no respondent choosing finance (0/27, 0%). It should also be noted that 14 respondents of the total 42 said they did not use DST at all, so it could also be assumed they would rank DSTs as lesser important if they had completed this question too.



**Figure 5.** Driving factor importance featuring as respondents' lowest ranked choice.

Policy was most frequently labelled as least important driver and interestingly 12 of the 13 who chose this option were French speaking (unfortunately we didn't acquire country only language of response, although looking at the tools they have used would

suggest majority are from France). There were 26 French speaking respondents, so nearly half deem policy as lesser important, this a much higher proportion than the English speaking respondents (likely UK based).

Finance was not chosen as the least important driver, featuring in the bottom 2 in just 3 responses.

Overall, DSTs are deemed the least trusted method of making decisions, while policy has an interesting regional outlook of importance.

## How to aid FAB uptake and decision-making?

This review highlights the importance of finance for supporting farmers in making a sustainable management transition.

Advice and evidence are important to beginning the interest for farmers to make sustainable management transitions; this is where peer testimonials or WOCAT examples can be utilised as shown in the FABulous Farmers programme.

However, ultimately, finance, supported by policy, is required to see increased FAB uptake or other regenerative agri-ecological transitions take place. The farmer must have a confidence the measures will pay off for their whole business to succeed.

If these three areas (finance, policy and advice) can combine to promote environmental benefits through a sustainable and profitable business model the uptake of regenerative FAB type measures will follow.

The review has shown DSTs are not a primary driver for the uptake of FAB measures. Yet, the role of DSTs is to be another source of information or to streamline decision-making processes.

However, as farmers become more integrated to new technology as part of their daily farm management, there is a possibility for DSTs to facilitate access to the financial support for environmental benefits, i.e. through helping farmers monitor change effectively to better evidence and promote benefits (and dis-benefits). The rise of private funding platforms and emerging environmental credit markets signals the major first step towards this facilitation.

In summary, the aim of a good DST should be to support and inform the farmer for how and what their data can tell them in their specific landscape, i.e. to confirm their ideas, not give them ideas. It should streamline the procedure for tracking and monitoring change though baselining, planning and data storage, ultimately with an opportunity to use this to evidence for policy and finance payment schemes.

## Appendix: The DST survey

# FAB Decision Support Tools 2022 - General Audience

A short survey to gather experiences of Decision Support Tools to review how they may best support future sustainable farming transitions.

Decision support tools are apps or documents that aim to provide information, guidance, data storage, analysis or planning support.

Examples of Decision Support Tools can be found at: <https://www.fabulousfarmers.eu/en/get-fabulous/monitoring-tools>

This survey has been developed as part of the FABulous Farmers EU INTERREG project by UKCEH.

\* Required

1. Do you use Decision Support Tools? \*

- Yes, regularly
- Yes, occasionally
- I have in the past
- No

2. Why do you not use Decision Support Tools? \*

- I use an agronomist / consultant to help me with decisions
- I know more than the apps can tell me
- I don't like using technology
- They are too broad and not specific to my farm
- Decisions are driven by policy and money, not an app.
- Other

## Decision Support Tool Experience

3. What types of Decision Support Tools have you used? \*

- Information / how to guides (i.e. guide to an earthworm count)
- Data baselining & monitoring (i.e. carbon benchmarking)
- Identification (i.e. plants or disease)
- Planing & opportunity identification (i.e. e-planner)
- Other

4. Please can you name some of the Desicion Support tools you have used previously and what you thought about them? (i.e. ASSIST e-planner, Cool Farm Tool, Farm Crap App, Flora Incognita)

## Drivers of Change

5. Some tools provide information to guide a management transition.

How likely would these tools guide our decision making process?  
(Assuming the source and testing of the tool is reputable).

1 star = Would not be part of decision making

3 star = It would help, but not main decision driver

5 star = I would trust and follow the tool advise \*



6. Finally, rank the main drivers you consider when exploring a change of practice? \*

Policy
Finance
Peer / consultant advice
Environmental Improvement
Decision Support Tool



#### BANGOR

UK Centre for Ecology & Hydrology  
Environment Centre Wales  
Deiniol Road  
Bangor  
Gwynedd  
LL57 2UW  
United Kingdom  
T: +44 (0)1248 374500  
F: +44 (0)1248 362133

#### EDINBURGH

UK Centre for Ecology & Hydrology  
Bush Estate  
Penicuik  
Midlothian  
EH26 0QB  
United Kingdom  
T: +44 (0)131 4454343  
F: +44 (0)131 4453943

#### LANCASTER

UK Centre for Ecology & Hydrology  
Lancaster Environment Centre  
Library Avenue  
Bailrigg  
Lancaster  
LA1 4AP  
United Kingdom  
T: +44 (0)1524 595800  
F: +44 (0)1524 61536

#### WALLINGFORD (Headquarters)

UK Centre for Ecology & Hydrology  
Maclean Building  
Benson Lane  
Crowmarsh Gifford  
Wallingford  
Oxfordshire  
OX10 8BB  
United Kingdom  
T: +44 (0)1491 838800  
F: +44 (0)1491 692424

[enquiries@ceh.ac.uk](mailto:enquiries@ceh.ac.uk)

[www.ceh.ac.uk](http://www.ceh.ac.uk)