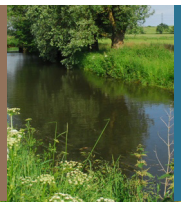
SUSTAINABLE INTENSIFICATION RESEARCH PLATFORM

SIPSCENE

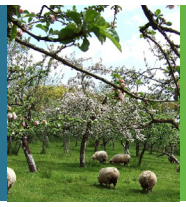
The newsletter of the Sustainable Intensification Research Platform

ISSUE 4 - AUTUMN 2016

SIP says page 2



SIP in focus page 4



View-point page 10

SIPPETS page 12

Editorial: The Changing Landscape and SI

Welcome to another issue of the SIP newsletter. It is hard to believe that we are now entering the final year of the programme. It is also hard to believe how much the political landscape has been transformed since we embarked upon SIP. The June referendum result has certainly served to focus attention on agriculture, given its high profile within EU policy and EU expenditure. Scarcely a week goes by, it seems, without another pressure group or commentator putting forward new policy proposals for agriculture and the environment post-Brexit. And, alongside all this lobbying, the Government continues work on its 25 year plans for food and farming and for the environment.

In such a context, the importance of impartial and empirically-based evidence to inform policy is vital and SIP's role in supplying this is well recognised in Defra. Stuart Knight and I were pleased to have the opportunity in September briefly to discuss SIP with the new Defra Secretary of State at a Defra science day. And we are following this up with a policy workshop later in the autumn with Defra officials.

The range and breadth of SIP's potential to feed evidence into the current debate is well represented in the current edition of this newsletter as we look at challenging issues such as flood management, grassland production, landscape scale collaboration, ecosystem services, and the importance of farm advice. These are all issues, without exception, where new policies will have to be formulated and implemented in the coming years. It therefore remains as important now as when we embarked upon SIP to produce robust data, informed comment, and on-going engagement with farmers, landowners and other stakeholders, as we seek to find ways of farming productively and sustainably.

Professor Michael Winter, University of Exeter, is leader of Project 2 of the SIP

Follow us on Twitter @SIPResearch

SIP Says

Views from in and around the Platform

SI in the context of natural flood management

Recent years have seen a number of weather related events that have posed clear challenges for, and delivered detrimental impacts on, UK agriculture. The summer floods of 2007, for example, were devastating for crops in flooded riparian zones in the River Severn valley and caused difficulties for ensuing autumn sowing once the flood waters had receded. More recently, the heavy rains experienced in North West England in December 2015 (191% of the 1981-2010 December monthly average) in association with Storms Desmond, Eva and Frank, resulted in a sequence of flood events throughout December which again, were locally devastating. These events served as a timely reminder that the resilience of UK agriculture is facing challenges from our weather patterns. Wet weather extremes, in particular, have placed UK agriculture right in the centre of the ongoing debate over the need for Natural Flood Management (NFM) in both upland and lowland landscapes, especially in the context of the prohibitive costs of hard engineering solutions.

The flood risk problem is linked to excess runoff, woody debris and sediment loss/siltation in key locations in our agricultural landscapes, with the former and latter clearly affecting agricultural sustainability and thereby sustainable intensification (SI). Indeed, given the drive towards environmental sustainability, many farms are currently doing things relevant to NFM, but under alternative banners such as water quality management and biodiversity. What is the scope for farmers doing more? A range of on-farm measures can be used to help deliver NFM, including targeted planting of hill slopes and riparian zones with trees. Here, however, recent news items from the BBC have highlighted that the UK has fallen behind its tree planting objectives, missing its target in England by 86%. Additional on-farm measures include, amongst others, reducing stocking densities to help avoid compaction and runoff issues; blocking tile drains; drainage ditch blocking; ponds and temporary water retention or storage features; and cover cropping to reduce excess soil loss to watercourses and associated siltation. Specifically, in the case of riparian landowners, additional measures include flow restrictors and temporary storage zones.

At farm scale, understanding barriers to increased uptake of such interventions, will be critical: Farmers are likely to be concerned about impacts on productivity as a result of loss of productive land; ease with which land can be returned to production; payments for changes in practices; the nature of such payments; and loss of capital value due to reduction in workable area. At landscape scale, there are big questions around whether increased uptake of such measures will depend on coordinated action from officers/trusted intermediaries or self-organised cooperation among farmers. Farming must, however, play an increasing role in helping to deliver NFM across the UK.

The renewed and ongoing debate over the role of farming in NFM, especially following the flood events, serves as a very timely reminder that SI of farming must be placed in the much wider fabric of the integrated

management of our landscapes and catchments, to ensure that the multiple goods and services people need from them are sustained and resilient. As the SIP programme continues to develop and engage with established farmer networks, there is clearly potential for the case study areas to feed into programmes of future work designed to demonstrate and test on-farm interventions relevant to runoff and siltation control, and the role of farming in delivering NFM for the good of the nation.

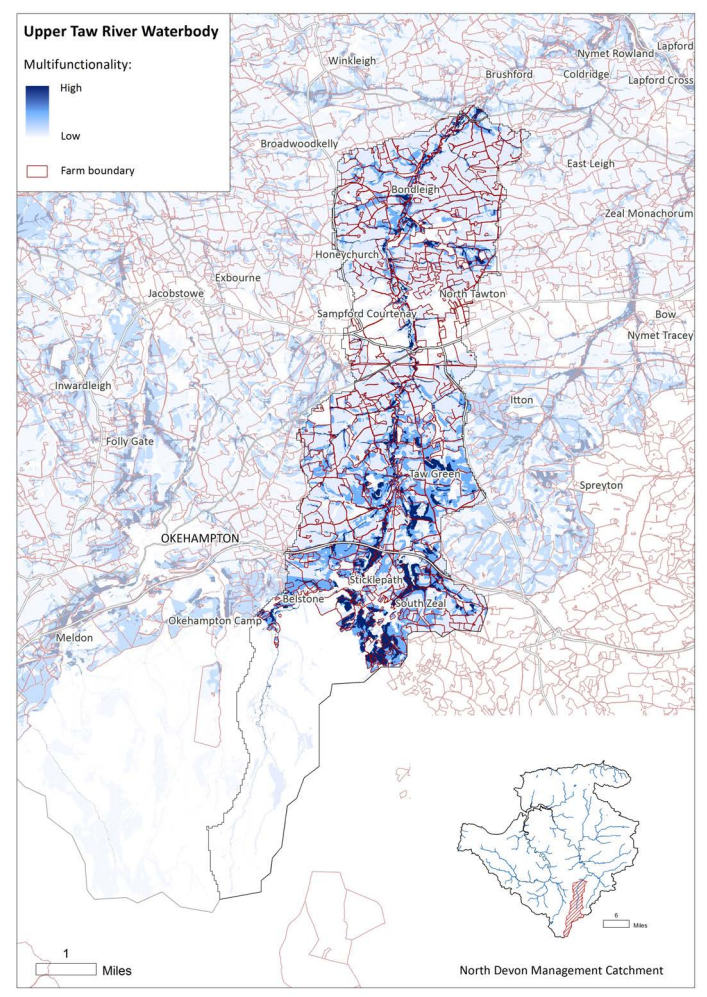
Professor Adrian Collins, works in the Sustainable Soils and Grassland Systems Department at Rothamsted Research, North Wyke.

SIP in Focus

The what, how and who of SIP Research

Landscape in Focus – Taw

The Taw rises on Dartmoor and flows south through 'Tarka the Otter' country before exiting at Barnstaple. Farming in the Upper Taw is split into moorland hill farming south of the A30, and mixed farming to the north including arable cropping, dairy, beef and sheep. North Wyke research farm is situated within the heart of the Upper Taw water body. Alongside farming, the catchment is home to several communities, sewage treatment works, and a creamery - all of which bring their own pressures to the river. Recently, the farming sector has been under significant financial pressure, and as a result, the ability to invest in improved infrastructure has suffered.



Despite this, the Trust is working with farmers across the catchment, to understand what Sustainable Intensification might mean to them. One of the key bits of work done by the Platform, reveals differences in understanding on just the term SI. But several of the local conversations highlight it as "doing the right thing, in the right place, at the right time". The SI platform is helping to answer these three elements in different ways, and the Trust is complementing the 'right place' national conversation developed under the Farm Typology. The Trust is working with farmers across the catchment using both nationally and locally derived maps that highlight multi-functional areas to understand how and why farmers might change management practices in these zones. This ranges from adapting current agricultural practices, to abandoning land using long term covenants.

Dr. Lawrence Couldrick is CEO of the West Country Rivers Trust, a charity committed to restoring and protecting the water environment for the benefit of people, wildlike and the local economy.

Farm in Focus – North Wyke Farm Platform, Rothamsted Research

The North Wyke Farm Platform, is located in the catchment of the River Taw near Okehampton in Devon, South West England. It occupies 64 ha of the 360 ha of lowland grassland at Rothamsted Research's North Wyke site on a ridge at 120–180 m above sea level. The Farm Platform represents a major investment by BBSRC to study and improve grassland livestock systems in a national and global research asset linked to real-world farming. Established in 2010, one of the key reasons it has been situated at North Wyke is not only because it is in the heart of a grassland farming region, but because its soils comprise a permeable, stony clay loam topsoil underlain by an impermeable clay layer. This means most water moves by surface and sub-surface lateral flow across the clay layer. The installation of 9.2 km of French Drains across the site allows water to be intercepted and channelled to measurement flumes where flow and a range of physical/chemical properties are measured.

The Farm Platform comprises three farming systems in farmlets, each consisting of five component catchments covering approximately 21 ha in total per farmlet. Each farmlet is managed using a different approach to livestock production from grassland. The performance of livestock production and nutrient use efficiency are measured, and includes measurements of water, air and soil. Many of these measurements have a high (15 minute) temporal resolution, such as water discharge and water chemistry data measured at flumes in each of the 15 catchments, and which can comprise either single or multiple fields. This means full nutrient and energy budgets can be derived for each of the farming systems. As a National Capability, the data collected are made publicly available. The main 'treatments' on the platform are:

1. Permanent pasture: improvement through use of inorganic fertilisers.

2. Increased use of legumes: replacing nitrogen fertilisers with biological fixation using sown legume and grass mixtures.

3. Planned reseeding: regular renewal, providing opportunities for introducing innovative varieties with desirable traits. Currently, high sugar grasses and deep rooting grasses are studied.

Each farmlet is grazed by 30 dedicated, weaned, yearling suckler cattle and 75 lowland, crossbred ewes and their lambs. Following a two-year period (2011 and 2012), when the baseline productivity was measured on the existing permanent grassland, two of the farmlets were progressively resown with grass and white clover or grass alone over three years. High sugar grass (HSG) and deep rooting grass are currently being studied. The latter treatment is intended to have planned reseeding every four or five years. In the SIP programme, herbage and silage samples are being analysed for fibre and nitrogen contents, and the meat from five cattle on each of the contrasting diets, is being analysed for a range of attributes including colour (shelf life), vitamin E, fatty acids, and texture and sensory attributes using taste panels. In parallel studies at Duchy College, Stoke Climsland, permanent grassland and resown HSG pastures are also being analysed, and the effects on milk quality determined. The impact and value of pasture based livestock systems are being evaluated in Life Cycle Analyses.

Farm Scale SI - Integrated metrics of SI – Augmenting efficiency and productivity measures with environmental factors

Frederic Ang outlines the context of work led by the University of Reading on integrated metrics

The challenge of developing integrated SI metrics is to measure the performance of farms for not only economic, but also environmental factors and combine them in a way that provides a sound SI measure. SI implicitly recognises that, although we must raise conventional productivity, we cannot do this at a cost to the delivery of non-food provisioning ecosystem services.

In the analysis of conventional productivity, increases occur when farmers move closer to the frontier of what is technically possible (increases in technical efficiency), or the frontier itself moves outward (technological progress), or a combination of the two situations (If the frontier itself moves outward, it is possible that the farm's productivity declines if the efficiency of the farm decreases).

The University of Reading has been leading part of the SIP research on the implementation of non-conventional components in an efficiency and productivity framework. We used economic theory to implement environmental 'goods' (having a positive impact on society; e.g. crop diversity) and 'bads' (having a negative impact on society; e.g. nitrogen and phosphorus surplus). Efficiency and productivity measures are useful SI indicators, as they take into account the 'sustainability' (inclusion of environmental goods and bads) as well as the 'intensification' aspect (productivity growth). We applied our measures to rough data collected by the Farm Business Survey and more detailed data collected specifically for the SIP project.

Various general lessons can be drawn from our research.

First, augmenting efficiency measures with environmental goods and bads shows a more holistic picture of farm performance. Conventional efficiency scores may be lower than augmented sustainable efficiency scores leading to a misleading picture of farm sustainability.

Second, augmented productivity measures are conceptually in line with SI in the sense that it assesses how sustainable performance changes over time. A particularly convenient feature is that this builds theoretically and empirically on the sustainable efficiency framework. It shows how sustainable efficiency as well as the sustainable frontier changes over time.

Third, our approach shows the importance of taking into account the intertemporal character of environmental factors. This has long been recognised by ecological economists, who suggested that one should consider the natural capital stock yielding ecosystem services. Our approach takes into account that ecosystem services are yielded simultaneously with conventional production, and part of the natural capital stock can be carried over as inputs for future production.

Fourth, our research illustrates that one should be wary of 'hidden' assumptions about how environmental goods and bads are implemented in the efficiency and productivity framework. We have shown that modelling environmental goods as conventional outputs leads to the assumption that increases of the environmental good are always costly for the farmer. Our empirical application to crop diversity suggests that long-term profit maximization is in fact positively associated with crop diversity. A more flexible approach to deployment of incentives and rewards might thus be needed.

Fifth, our research shows that our efficiency and productivity framework is flexible in that it can be easily enriched with more and better data on the environmental goods and bads.

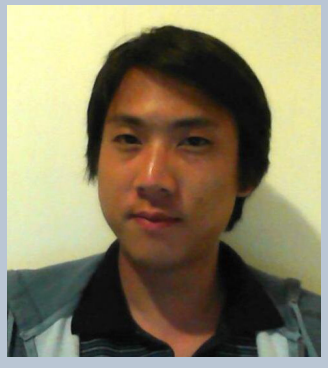
The results of this work are currently being prepared for submission at academic journals.

Researcher in Focus – Dr. Frederic Ang

General scientific curiosity has led me to pursue a BSc and MSc in agricultural sciences at the KU Leuven (Belgium). This broad scientific basis provided me to understand the production processes in the agricultural sector. Throughout my studies, I have become more and more interested in the insights from the social sciences to understand farmers' behaviour. Therefore, I have subsequently done a research master in economics and a PhD in agricultural and environmental economics, both also undertaken at the KU Leuven. In my PhD, I have discovered the rich world of efficiency and productivity analysis and also focused on the implementation of environmental factors in such a framework.

I am now an economist focussing on the efficiency and productivity of the agricultural sector. Topics of interest include dynamic optimisation, modelling of subprocesses on the farm and sustainable intensification. My aspiration is to model the economic processes on the farm in a realistic, verifiable way.

The SIP was a natural extension of my PhD work. My previous work has indicated that one should be careful in modelling environmental bads, as it is very easy to do this in an unrealistic way. The SIP project has taught me that similar, if not greater, challenges are faced when modelling environmental goods. Implementing environmental goods and bads into one overarching framework allows us to measure the SI of English and Welsh farms in an integrated manner.



Dr. Frederic Ang was a Postdoctoral Researcher in the School of Agriculture, Policy and Development at the University of Reading during the SIP project and is currently based at the Department of Economics at the Swedish University of Agricultural Sciences in Uppsala (Sweden).

Thinking at a landscape scale – Collaboration for sustainable intensification: what's the incentive?

The stereotypical image of an uncooperative British farmer uninterested in collaborating couldn't be further from the truth, according to findings emerging from the SIP Project 2. While farmers undoubtedly retain a strong sense of independence and individualism, a baseline survey of 244 farm businesses carried out by SIP researchers, found almost all land managers across the 7 SIP case study areas were working cooperatively in at least one activity. Collaboration was most likely to be via membership of buying or producer groups, and sharing of labour and machinery. Sharing labour allows farmers to manage the capacity of their workforce, ensuring availability and providing flexibility to respond to demands. Sharing machinery enables them to take advantage of economies of scale, increasing utilisation, reducing duplication and providing access to a wider range of machinery and specialist equipment than could be afforded individually. The survey also reveals that farmers in Wensum and Yare, cereal farmers and those with very large or ultra large farms (over 200ha) are most likely to be working collaboratively.

Economic factors were key incentives underpinning joint working. Farmers cooperate to control input costs, capital costs and fixed costs and to increase income, output prices and profits. Another key driver for cooperating was the ability to gain access to resources, machinery, land or animals and to improve bargaining power when securing prices; but not all collaboration is driven by economic goals. Key benefits cited by farmers were mutual support and information sharing. As one livestock farmer in Conwy commented "To swap information and try different things out; that's how everything improves isn't it? You learn something new yourself, things change don't they?"

There are however clear limitations to the willingness and/or ability of businesses to collaborate in different contexts. Some of the difficulties of cooperation included lack of timely access to labour and machinery and damage to machinery. Incompatibility and conflict may also arise between cooperating partners. While some economic and organisational difficulties could be resolved with suitable interventions, the social barriers may be more challenging to address. This is particularly pertinent given that the baseline survey highlighted that farmers prefer informal ways of working cooperatively and that key enablers are trust, like-mindedness and good communication, which often develop organically over time.

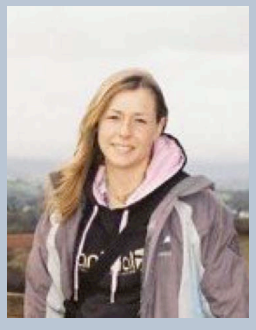
So why is cooperation important for sustainable intensification? Project 2 of the SIP is concerned with landscape scale activity – if we are to scale-up existing sustainable intensification activity, might we need greater cooperation between farmers over larger geographical areas to achieve this? Moreover, while cooperation between farmers is clearly not a new concept, realising sustainable intensification at a landscape scale may demand new and different forms of cooperation and in some cases, coordination. But who might facilitate such activity? A forthcoming SIP-landbridge workshop will consider the potential role of advisory professionals as intermediaries. Many advisors have a wealth of experience in helping to coordinate joint farmer working in complex Commons and Stewardship agreements. This could perhaps be used to inform the facilitation of landscape-scale sustainable intensification in the future where there is a demand from farmers: "It depends on what the cooperation is. I think you need some sort of external facilitation just to bring a group together…I think if you want good farmer cooperation they've got to be pushing it along themselves and on their own agenda." (Livestock farmer, Taw)

Dr Amy Proctor is a Research Associate at the Centre for Rural Economy at Newcastle University. She helps facilitate SIP knowledge exchange activity with advisory professionals via her role in coordinating landbridge.

Researcher in Focus - Dr Becca Wheeler

One of my main roles as a researcher on SIP Project 2 has been to conduct face-to-face interviews with land managers across the Avon, Taw and Wensum and Yare catchments to collect data for the baseline survey. Persuading farmers to give up their valuable time to take part in research can be a challenging task, and this project was no exception. However, perseverance pays and, ultimately, I was delighted by the warmth and generosity with which participants welcomed me onto their farms.

Having the opportunity to talk to land managers across these diverse regions has been a fascinating and enjoyable experience and, on a personal level, I have learnt a lot from visiting such a range of farms. More importantly, though, the baseline survey has provided us with a wealth of information about farmers' activities and opinions on a range of topics, including sustainable intensification, business health, agri-environmental management, quality of life, and cooperative working with other farmers. We have recently completed our initial analysis of the survey data and now have a greater understanding of some of the current challenges and opportunities that farm businesses face in moving towards sustainable intensification. I look forward to building on, and considering the implications of, these findings as work on SIP 2 progresses over the coming months.



Dr. Becca Wheeler is a Postdoctoral Research Fellow in the Land, Environment, Economics and Policy Institute (LEEP) at the University of Exeter. She is a social scientist whose research has included work on agri-environment schemes, diffuse water pollution, rural change and attitudes to renewable energy.

Viewpoint

Why nature is one of farming's best assets

Around 7,000 species of plants have been eaten by humans at one time or another. In many cases, the wild relatives of these foods still occur in the natural environment, including oats, beet, carrot, parsnip, radish and asparagus. These wild relatives of crops are invaluable to our food security, as they provide the 'gene bank', which is required to develop new crop varieties capable of responding to the challenges of climate change, water scarcity, and land availability. It's estimated that 20-40% of the increase in crop yields since 1945 has been due to genetic improvement, with 30% of this increase due to crossing cultivated plants with their wild relatives.

Similarly, a genetic diversity of domesticated and wild animals is vital for future food security. Worldwide, over 6,500 breeds of domesticated mammals and birds are under immediate threat of extinction, reducing the genetic diversity of options in a changing environment. In order to maintain this genetic resource, and allow its evolution in response to changes in climate, the protection and enhancement of our natural environment is vital.

As well as containing the genetic codes for crop varieties and livestock breeds, our natural environment also provides many of the 'ecosystem services' upon which food production relies - whether it's the regulation of nitrogen cycles, purifying water and air, or helping to recycle organic wastes. By maintaining these services, the terrestrial and marine environments will be both protected and able to underpin food security .

Research by the Rural Economy and Land Use (RELU) programme concluded that it is possible to balance farming and wildlife objectives in ways that appeal to farmers. For example, a variety of management techniques (such as habitat management for natural enemies), exists to reduce the need for pesticide use, thereby improving sustainability without sacrificing yield. Nonetheless, reconciling increased agricultural productivity with an enhanced natural environment is a key challenge of the 21st Century.

Of course, some organisms can have a detrimental impact on agricultural yields in the form of pests and diseases; but other organisms can regulate these pest species, when encouraged through the provision of appropriate habitat and resources. In an analysis of sixty-two Integrated Pest Management (IPM) projects in developing countries, yields increased by an average of 42% in 47 of the projects.

Similarly, without some organisms, our food choices would be quite limited: it is estimated that a third of all our food relies on the pollination services provided by bees and other insects.In the UK, the value of crops grown outdoors commercially, which depend upon insect pollination, is estimated to be between £186 million and £567 million a year.

Our soil and water resources are also essential to produce our food. Water use in agriculture is highly dependent on ecosystems and biodiversity, in particular the role vegetation and soils play in water flow regulation. Good soil management can increase yields and soil fertility whilst helping to reduce the impacts on the environment. Evidence suggests that improvements in the management of soil organic matter, can provide financial returns for farmers between £31 and £66 per hectare.

Soils also have an important role in storing and releasing carbon, with consequences for climate change. Over 10 billion tonnes of carbon is stored in UK soils, but an estimated 13 million tons of this is lost annually. There are many opportunities for improving soil and water management in food production, in order to maintain or increase yields whilst lowering environmental impacts.

In 2012, the Natural England commissioned report, 'Ecosystem services from Environmental Stewardship that benefit agricultural production,' found that agri-environment schemes in England are delivering a range of ecosystem goods and services, which provide benefits to agricultural productivity. The report shows how agri-environment schemes are helping to protect soil and water, regulate pest

species and improve pollination, and, in turn, supporting crop production. More recently, in 2015, a Land Use Policy Group report by the Organic Research Centre and Game and Wildlife Conservation Trust, found that agroecological practices and systems, such as cover crops, minimum tillage, organic farming and agroforestry, have an essential role to play in sustainable intensification.

We do not yet have all the answers as to how agricultural productivity can be improved alongside the enhancement of the natural environment. Research is required into quantifying and valuing the ecosystem services provided by the natural environment, and the agri-environment schemes that benefit agricultural productivity. In addition, further research into genetic resources, agricultural practices and technologies, and integrated farming systems, is essential to address the challenges of ensuring food security, ecosystem health and the reversal of biodiversity decline.

This is why the work of the Sustainable Intensification Research Platform is so important: to find viable ways of improving productivity, whilst enhancing the natural environment and the ecosystem services it provides. Natural England is heartened to see a broad range of researchers across numerous disciplines, working on the Platform, and sharing their knowledge with farmers, conservationists, and other stakeholders. We have contributed our evidence to the Platform and will continue to work with others to meet one of the biggest challenges of the 21st Century.

James Petts, Senior Specialist – Farming and the Environment, Natural England, July 2016

Sippets

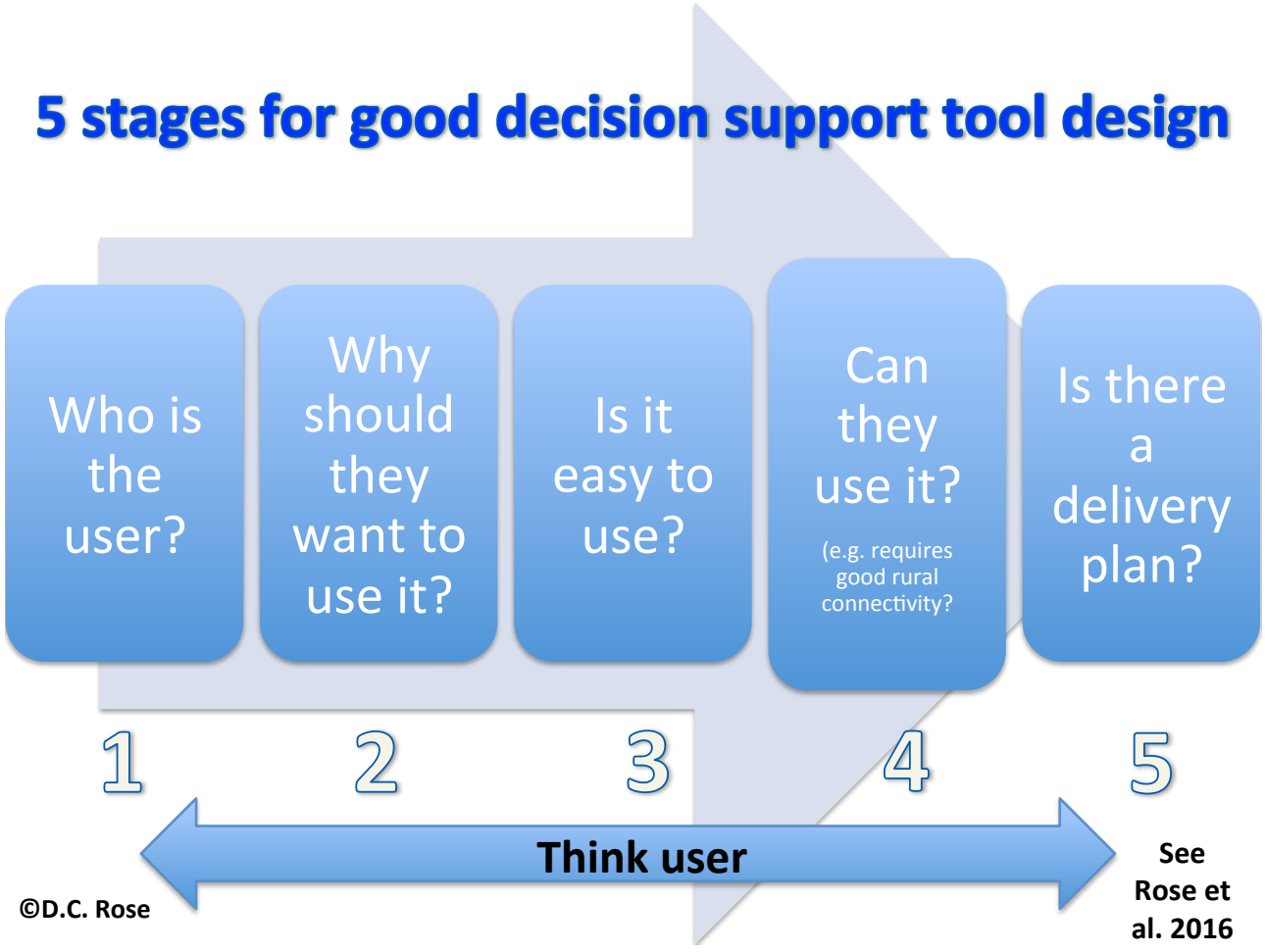
Latest news from the platform

Building good decision support tools: advice for designers

Researchers from the University of Cambridge, alongside other partners, led a piece of work as part of the SIP, to find the reasons why farmers and advisers use, or do not use, decision support tools (DST). DST are usually considered to be software-, app-, or web-based products. They offer practitioners with informed, productive, and efficient decision-making, based on evidence. However, previous research in agriculture has found that uptake of DST in practice is low, and some tools are developed that are seldom used.

We surveyed farmers and advisers about whether, and why, they used tools to inform their decisions. An open access paper published in the Agricultural Systems Journal (http://www.sciencedirect.com/science/article/pii/S030852IX16305418) presents the results from this study. We found that fifteen factors are influential in uptake and use of tools, and we present a checklist to assist future tool design. By using the checklist, which includes performance, ease of use, and peer recommendation, it is hoped that tools will be designed that make a real difference to practice. In order to create the working environment in which these factors are considered in the design and delivery process, it is suggested that designers consider adopting the five-stage process below. Designers of decision support tools in other areas could also benefit from a similar process.

For further information about this work, please contact the lead researcher Dr David Rose at dcr31@cam.ac.uk



Morley Farm Walk

As part of NIAB's work for the SIP, we have been running regular events at Morley. These interactive sessions, featuring short talks and visits to the cultivation and cover crop field studies being done on the Morley Farm, have attracted enthusiastic groups of farmers and advisors, with plenty of opportunities for discussion, which is an integral part of the research. Last season's events focused on cover crop research, and included a field walk, and discussions around how cover crops can fit into existing farm practices and systems, their benefits, and the major barriers to establishment.

The next Morley event will take place on the 4th November 2016, and the field visit will include:

• Soil structure: what is the 'hole' story? A demonstration of simple and practical soil structure and drainage assessments that can be used on-farm.

• Soil biology: do you know your worms? A look at the number and species diversity we can find on farm and demonstrations on assessment and identification.

• Farming systems research: a tour of the New Farming Systems research being undertaken at Morley (supported by TMAF and The JC Mann Trust).

The event will conclude with a short workshop session to discuss practicality and value of the soil assessments, and how best to measure changes in soil quality and health on farm. The event will start at 10.15 (with tea / coffee available from 10.00), finishing with lunch at 1pm, and is free and open to anyone, but booking via the NIAB shop is essential (http://tinyurl.com/hd2q4ys).

SIP-landbridge workshop - Integrated farm management for sustainable intensification: what role for advisers?

As farmers are required to produce more and more from their land, the skills and knowledge of the farm adviser are becoming more important than ever. Sustainable intensification is an important approach for farmers and all land professionals but how practical or useful are the techniques and tools being developed, and how willing will clients be to adopt new systems? In association with the SIP, landbridge, a knowledge exchange network for rural professionals coordinated by Amy Proctor and Jeremy Phillipson at Newcastle University, hosted a workshop at Nafferton Farm in Northumberland on 8th September 2016, providing opportunities for advisers to explore these issues and learn more about the Sustainable Intensification Research Platform. With a keynote from Michael Winter and excellent presentations from SIP Study farm leads Gillian Butler, Chris Stoate and Dave Chadwick, the day also featured a farm walk to examine the interventions being tested at Nafferton. The workshop included lively breakout sessions where advisers, their professional associations, representatives of agricultural and ancillary industries, researchers and knowledge exchange specialists considered how advisory professionals might use the findings emerging from the SIP and further refine these based on their own knowledge and expertise in providing advice to clients. Findings from the event will be used to generate recommendations for a forthcoming SIP policy note on the role of advisers in sustainable intensification.

SIP Partners

SIP 1

NIAB (lead) with Aberystwyth University, ADAS, AFBI, Bangor University, BioSS, University of Bristol, University of Cambridge, Centre for Ecology and Hydrology, Carbon Trust, Duchy College, East Malling Research, University of Exeter, Fera, Game & Wildlife Conservation Trust, Harper Adams University, University of Hertfordshire, Linking Environment And Farming (LEAF), University of Leeds, Newcastle University, University of Nottingham, Organic Research Centre, University of Reading, Rothamsted Research, RSPB, SRUC, Soil Association, Velcourt

SIP 2

University of Exeter (lead) with ADAS, Bangor University, BioSS, University of Bristol, University of Cambridge, Centre for Ecology and Hydrology, Eden Rivers Trust, Fera, Game & Wildlife Conservation Trust, Glasgow Caledonian University, The James Hutton Institute, Lancaster University, Linking Environment And Farming (LEAF), University of Leeds, Newcastle University, NIAB, The University of Nottingham, Rothamsted Research, Westcountry Rivers Trust

SUSTAINABLE INTENSIFICATION
RESEARCH PLATFORM

Tell us what you think!

Come to our events: www.siplatform.org.uk/events

Follow SIP on Twitter: @SIPResearch

E-mail:
Jennifer Preston, SIP 1 Project Manager
(Jennifer.Preston@niab.com) or
Gavin Huggett, SIP 2 Project Manager
(SIP2@exeter.ac.uk)

Or Join the debate at the BBSRC SI Discussion Forum
www.sustainableintensification.org.uk

SIP

SUSTAINABLE INTENSIFICATION
RESEARCH PLATFORM

SIPSCENE