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The accidental environmentalists: factors affecting farmers' adoption of pro-environmental activities in England and Ontario

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Abstract

Based on semi-structured interviews with 54 distinct actors in the UK and Canada, we identify a range of internal psychological orientations that are common (albeit to varying degrees) in both case study regions that, when taken together, provide a lens through which on-farm decisions relating to pro-environmental behaviours are internally analysed and subsequently operationalised. We label these orientations as *Production, Business, Environmental, Lifestyle*, and *Farm Health*. Through these orientations, we find farmers are often becoming 'accidental environmentalists' by undertaking many pro-environmental activities for non-environmental reasons. Prominent examples include adopting environmentally beneficial on-farm decisions to support field sports (i.e. shooting), pursuing production improvements with environmental spin-offs (e.g. cover crops, beneficial pollinators), or seeking improvements to personal or family health and well-being (e.g. reduced use of chemicals). This analysis therefore highlights the importance of not oversimplifying farmer motivations along a dualistic profit-seeking v stewardship divide when it comes to understanding environmental behaviour.

Keywords: *Farmers' environmental attitudes; Stakeholder organisations; England; Ontario; Comparative analysis*

1.0 Introduction

Farmers are a large group of private landholders with the potential to make significant changes to the wider environment, impacting issues ranging from water quality and biodiversity conservation to climate change (Foley et al., 2011). In order to influence this private land-use, it is essential to understand both farmers, who are ultimately responsible for the management of agricultural land, as well as organisational stakeholders who affect the policy environment in which farmers operate. Focusing specifically on the uptake of pro-environmental activities[1] we present the findings from two sets of interviews, one undertaken with farmers (owners and managers) operating within the country of England in the United Kingdom (UK) or the province of Ontario in Canada, and another set completed with agricultural and/or environmental stakeholder organisations within these two jurisdictions. The intention of including the views of stakeholder organisations along with farmers is two-fold. First, they provide a broader view of the farm community, working at a higher-scale with a large number of farmers. Secondly, stakeholder organisations operate as 'middle actors', both representing the farm community in policy development and influencing farmers' decision-making through education, outreach and financial incentives (Parag & Janda, 2014). It is therefore essential to investigate the accuracy of their views on farmer decision-making in order to maximise the pro-environmental outcomes of their on-farm intervention, and minimise conflict and policy failure arising from misrepresentation of farmers' motivations.

[1] In this paper we use the term 'pro-environmental activities' to broadly refer to on-farm decisions and behaviour with environmental benefits. We did not use this term during the interviews and instead allowed participants to describe what they deemed to be beneficial activities for the environment, focusing on the reasons for undertaking activities rather than the activities themselves.

Our comparison of England and Ontario allows us to draw insights that may have been overlooked in the analysis of a single case, as well as explore the generalisability of frameworks across jurisdictions. England and Ontario present a useful comparison due to some important social, cultural, and institutional similarities, arising from a former colonial relationship and a large proportion of Ontario's population migrating from England. For instance, as recently as the 2011 National Household Survey, 39.44 per cent of Ontarians identified their ethnic origin as originating from the British Isles and 23.12 per cent of Ontarians specifically identified their ethnic origin as English (Statistics Canada [Statscan], 2014). Along the same line, both jurisdictions also speak English as their primary language, which supports comparative research by avoiding translational errors or misunderstandings. In terms of institutions, Ontario has built its political system and associated institutions from the English model with both jurisdictions evolving within a constitutional monarchy and Westminster parliamentary system.

Through a comparison of farmers and stakeholders in both case study areas we can also better understand the influence of farmer support and agri-environmental schemes, as well as other contextual factors, which is particularly significant given recent events such as the UK's decision to leave the European Union (EU). As the UK transitions out of the EU and develops a domestic agricultural policy to replace the EU's Common Agricultural Policy (CAP), the countries that comprise the UK may look to other jurisdictions with comparable characteristics from which to draw ideas or lessons. Therefore, there is potential that England may look to jurisdictions such as Ontario, where a more market-oriented and productivist approach to agricultural policy prevails, in order to help foresee the implications of agricultural policy decisions.

Considering previous work, there is a rich literature investigating the complexity of farmers' agri-environmental decision-making building from Ruth Gasson's early work which highlighted the importance of different "*value orientations*" (instrumental, social, expressive, and intrinsic) (Gasson, 1973). Later studies have continued to find that farmers' motivations are heterogeneous with some being driven by economic motives, whereas others are driven by social, lifestyle, and family objectives or other more extrinsic sociocultural influences such as identity, and social embeddedness (Darnhofer, Schneeberger, & Freyer, 2005; Ingram et al., 2016; Karali, Brunner, Doherty, Hersperger, & Rounsevell, 2014; Maybery, Crase, & Gullifer, 2005; Willock, Deary, Edwards-Jones, et al., 1999; Willock, Deary, McGregor, et al., 1999). Such studies also emphasise the need to look beyond farm characteristics, such as the technical aspects of agricultural production and farm structure to also consider personal values and attitudes (Darnhofer et al., 2005).

This rich set of social and psychological based research often finds that profit seeking, while no doubt important, is not always the priority for farmers (Howley, 2015). Looking at environmental behaviour, it has been reported, for instance, that farmers frequently undertake unsubsidised environmental activities (Mills, Gaskell, Ingram, & Chaplin, 2018). Similarly, contrary to what one might assume, other studies have found that environmental values are not always a strong predictor for agri-environmental scheme engagement (Sutherland, Toma, Barnes, Matthews, & Hopkins, 2016).

While there is clear consensus that farmers' motivations are diverse and influenced by a combination of attitudes, preferences, values and objectives, there is still no consensus on how these various intrinsic and extrinsic factors interact and ultimately influence decision-making. In

this study, by drawing on a comparison of farmers from two distinct jurisdictions we seek to better understand the ways in which farmers make agri-environmental decisions on their farms. Through a grounded-theory approach involving a set of detailed semi-structured interviews, we identify a range of internal psychological factors (values, beliefs, and attitudes) that are common (albeit to varying degrees) in both case study regions that, when taken together, provide a lens through which on-farm decisions relating to pro-environmental behaviour are operationalised. Importantly, we find that these influences are frequently unrelated to the environment and farmers are often becoming *accidental environmentalists* by undertaking many pro-environmental activities for non-environmental reasons. Prominent examples include adopting environmentally beneficial on-farm decisions to support field sports (i.e. shooting), pursuing production improvements with environmental spin-offs (e.g. cover crops, beneficial pollinators, conservation tillage), or seeking improvements to personal or family health and well-being (e.g. reduced use of chemicals).

This analysis therefore underscores the importance of not oversimplifying farmer motivations when it comes to understanding environmental behaviours. Specifically, we found that farmers make on-farm decisions for a multiplicity of reasons and so it is important that farmer motivations are not narrowly classified exclusively as profit seeking or as environmental stewardship. Instead, we suggest that profit/production, stewardship and a variety of other interests exist within each individual farmer, albeit ordered differently depending on the personal value attached to each interest (Thompson, Reimer, & Prokopy, 2015). Together these interests form a frame, or lens, through which options are internally analysed and decisions derived (Best, 2010; Thompson et al., 2015). Each frame/lens will appear differently within each

farmer, depending on a variety of factors, including their personal interests, values, and attitudes pertaining to different aspects of the farm; what we call 'orientations' and have divided into: Production, Business, Environmental, Lifestyle, and Farm Health. When evaluating whether or not to undertake a pro-environmental activity on the farm, all of these orientations, and not just specific environmental motivations, will affect the ultimate decision.

Our findings contribute a new data-driven framework to assist in explaining farmers' decision-making when it comes to the adoption of pro-environmental activities within their farming operations. The typology we present depicts farmers' perceptions about themselves and what influences their decisions rather than being based upon the decisions themselves. This is useful in that farmers' attitudes have been shown to influence their actual behaviour, in our case suggesting that attachment to various orientations will result in differing uptake of pro-environmental activities (Ajzen & Fishbein, 1977; Lynne, Shonkwiler, & Rola, 1988; Sulemana & James Jr, 2014).

These findings are valuable alongside previous research in farmer behaviour and decision-making. While studies of farmers' pro-environmental behaviour often utilise such theories as the Theory of Planned Behaviour (Goodale, Yoshida, Beazley, & Sherren, 2015; Lokhorst, Staats, van Dijk, van Dijk, & de Snoo, 2011; Mills et al., 2017; Price & Leviston, 2014) or the Theory of Reasoned Action (Beedell & Rehman, 2000; Willock et al., 1999; Wilson, 1996) we have adopted an inductive approach with principles of Grounded Theory including the use of an iterative coding strategy, avoiding preconceptions by not conducting a literature review *a priori,* and allowing the framework to emerge from the data (Charmaz, 1996). While the use of pre-existing theories certainly has merit, we found our approach to be effective for deriving the framework

from the data without narrow attachment to a preconceived theory or framework as well as by allowing participants to freely provide their views and experiences with minimal influence from the researcher. The result is a novel empirically founded framework which we hope is useful within both academic and applied environments. Finally, this research also contributes to developing a comprehensive understanding of the factors that influence farmers' pro-environmental decision-making in parallel with more socio-cultural research that look at factors such as social relationships / pressures, culture, family / community influence, and status / prestige (Burton, 2004; Burton & Paragahawewa, 2011; Saxby, Gkartzios, & Scott, 2017; Siebert, Toogood, & Knierim, 2006).

Within the academic literature, this paper contributes to a rich history in researching farmers' motivations and decision-making, particularly with regard to the adoption of pro-environmental decisions. Our data-driven findings and associated orientations map well onto previous research into the factors that influence farmer decision-making. As an inductive study incorporating principles of Grounded Theory we conducted our literature review *ex post facto* and have thus provided references to the literature in parallel to the findings.

2.0 England and Ontario: Policy Environment

In the country of England, agriculture is the dominant land-use occupying approximately 70 per cent of England's total land area (Department for Environment Food & Rural Affairs [Defra], 2016). With such a large footprint, agricultural production poses both a threat and an opportunity to ensure sustainable land-use in the country as a whole.

A similar circumstance exists in southern Ontario, Canada a highly productive agricultural region which has been heavily altered for development and agricultural purposes and, in the same geography, contains much of Canada's best agricultural land as well as being one of "*Canada's biodiversity hotspots*" (Olive & McCune, 2017; Smith, 2015). In the southwest portion of the province, where agricultural capability is highest, land conversion has been particularly significant such as the conversion of more than 85 per cent of wetlands in part for agricultural production (Nebel, Brick, Lantz, & Trenholm, 2017).

While governments in both England and Ontario have made efforts to influence farmer decision-making towards environmental objectives, their approaches have been very different. In England, direct payments make up a significant portion of farmers' income, representing more than half of farm income in some years (UK Parliament, 2016). Under the current iteration of this direct support, termed the Basic Payment Scheme (BPS), additional environmentally based cross-compliance obligations have been introduced (i.e. 'Greening') which provide a considerable financial incentive for farmers to undertake environmentally beneficial activities. In parallel, payments from agri-environmental schemes also play a major role in farm income for some farmers.

Ontario's model of agricultural support is much more market-oriented where there is no comparable subsidy program of guaranteed payments, and instead voluntary Business Risk Management (BRM) programs play an important role in insuring farmers by stabilising farm income against market volatility and natural disasters. Similarly, agri-environmental programs are generally cost-shared, providing one-time payments to offset capital costs with environmental benefits, thereby quite unlike the English schemes, participating farmers would

not see an immediate financial gain from participation in the programs. A useful question to explore then is how have these very different approaches to supporting farmers, and encouraging stewardship decisions, influenced farmers' pro-environmental decision-making in either case?

Multiple recent decisions have made this question particularly relevant. First, in June 2016 the UK voted to leave the EU in what has popularly been termed 'Brexit'. This puts the future of England's agricultural support schemes into question as they have been previously tied to the EU's Common Agricultural Policy (CAP). While the UK government has committed to uphold the current design until 2022, England will need to develop a new set of agricultural support policies following the transition out of the EU. What will these new policies look like? In the recent past, government spokespeople have indicated a preference for a more market-oriented policy with lower financial support (Franks, 2016; Watts, Howarth, Baker, & Swales, 2016), suggesting that ideas and lessons may be drawn from Ontario.

As well, in the nearer term, it is important to better understand the major drivers of on-farm decision-making when it comes to environmental practices, particularly with the end of the Entry Level Stewardship (ELS) scheme and introduction of the Countryside Stewardship (CS) scheme. The former ELS scheme was designed as a 'broad and shallow scheme' open to all farmers and relatively easy to access (Darragh & Emery, 2017). In contrast, the new CS scheme takes a more targeted and competitive approach, being referred to as 'deep and narrow', with the result being an estimated reduction in land enrolled in agri-environmental schemes from 70 per cent to around 35–40 per cent of England's total agricultural area (Mills et al., 2017). It will also mean that 36,100 farmers, previously enrolled in ELS, will need to decide whether to

maintain stewardship practices for which they no longer receive compensation (Darragh & Emery, 2017). The use of a targeted and competitive approach to agri-environmental schemes such as these has similarities with the design of Ontario's programs, which are highly competitive with actions cost-shared by farmers.

This paper provides insights into the factors that influence English farmers' adoption of environmentally beneficial activities, which may help to elucidate whether they will maintain stewardship practices in the absence of financial compensation. This has relevance in the short-term by helping to understand farmers' likeliness to maintain stewardship practices previously supported by ELS. Moreover, through comparison with Ontario this research provides insights into the influence of financial support on English farmers' uptake of environmental activities, and how this might change were a shift to a more market-oriented approach to farmer support to occur.

From an Ontario perspective, this paper provides valuable insights into the factors that influence farmers' decision-making, along with enablers and barriers for pro-environmental decisions. When compared to Europe or the United States much less has been written on farmers' motivations for adopting environmental activities in Canada (OECD, 2012). Indeed, there are few examples of comprehensive explorations of farmers' environmental behaviour and decision-making from Ontario or Canada more broadly. Instead, much research in Canada on farmers' environmental motivations and decision-making has been based on enrolment in existing programs, notably the Environmental Farm Plan, rather than on underlying motivations whether or not to adopt pro-environmental activities (Atari, Yiridoe, Smale, & Duinker, 2009; Goodale et al., 2015; G. M. Robinson, 2006; Smithers & Furman, 2003).

Previous research from Canada also tends to focus on the uptake of specific practices, such as conservation tillage (Knowler & Bradshaw, 2007) or water conservation (A. D. Robinson, Gordon, VanderZaag, Rennie, & Osborne, 2016) or landowner views on specific environmental impacts, such as endangered species (Henderson, Reed, & Davis, 2014; Olive & McCune, 2017) or adaptation to climate change (Tarnoczi & Berkes, 2009). Instead, this research looks at the multitude of factors that influence farmers' voluntary uptake of pro-environmental activities more generally, both inside and outside enrolment in programs, an approach that has often been ignored in research (van Dijk, Lokhorst, Berendse, & de Snoo, 2016).

3.0 Methods

We conducted two sets of interviews, with different groups of stakeholders, within two areas of analysis. First, we conducted 24 semi-structured interviews with representatives of agricultural and/or environmental organisations operating in England or Ontario. Interviews tended to last 1 to 1.5 hours each and were conducted between the autumn of 2015 and spring of 2016. An interview protocol was used to guide the conversation with participants on the topic of farmers' role in environmental stewardship and what enables, or prevents, environmentally beneficial decisions.

For the purposes of this study "*stakeholder organisations*" were taken to mean formally organised groups with agricultural and/or environmental interests, operating within either jurisdiction. We intentionally kept a broad scope of stakeholder organisations and included

both large and small organisations, and included organisations whose activities were predominantly policy advocacy, public education and engagement, and/or program delivery.

In total, 42 organisations were invited in Ontario and England with 24 organisations ultimately participating, 12 from each case (see Table 1 for the list of participants). Recruitment was concluded as a result of saturation, as well as having attained a diverse sample including prominent stakeholders in each region.

Table 1: List of Participating Stakeholder Organisations

England		**Ontario**	
Participant	**Participant Code**	**Participant**	**Participant Code**
Linking Environment and Farming (LEAF)	ORG-EN-P01	Anonymous Farm Organisation *	ORG-ON-P01
Natural England	ORG-EN-P02	Anonymous Environmental NGO *	ORG-ON-P02
National Farmers Union (NFU)	ORG-EN-P03	Friends of the Greenbelt Foundation	ORG-ON-P03
Royal Society for the Protection of Birds (RSPB)	ORG-EN-P04	Nature Conservancy of Canada (NCC)	ORG-ON-P04
Wilderness Foundation	ORG-EN-P05a **	Food & Water First	ORG-ON-P05
Anonymous Large Farm Business *	ORG-EN-P05b **	Ontario Soil and Crop Improvement Association (OSCIA)	ORG-ON-P06
Farming and Wildlife Advisory Group (FWAG)	ORG-EN-P06	Carolinian Canada Coalition	ORG-ON-P07
WWF – UK	ORG-EN-P07	Farm & Food Care	ORG-ON-P08
Woodland Trust	ORG-EN-P08	Ontario Federation of Agriculture (OFA)	ORG- ON-P09
Agriculture and Horticulture Development Board (AHDB)	ORG-EN-P09	Alternative Land-use Systems (ALUS)	ORG-ON-P10

Plantlife	ORG-EN-P10	Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA)	ORG-ON-P11
Allerton Project / Game and Wildlife Conservation Trust (GWCT)	ORG-EN-P11	Anonymous Government Ministry – involved with environmental conservation *	ORG-ON-P12
* Four participants requested that their organisation name not be used in the research outputs. ** Two organisations participated in the fifth interview, however their responses have been separated for the analysis.			

The second set of interviews was undertaken with farmers, including both farm owners and farm managers, operating within either case area. Interviews were completed over the period of autumn 2016 and winter 2017 with a total of 30 farmers participating in the interviews, including 12 from England and 18 from Ontario (see Table 2 for a listing of participants and the Supplemental Material for a detailed description). We intentionally sought a diversity of farming operations in our sample, seeking farmers representing different regions, farming models, scales, farm ownership, and products. This decision was partly based on a finding from the stakeholder organisation interviews where participants commonly emphasised the diversity of the agricultural sector, and correspondingly farming operations, that allowed or prevented some pro-environmental decisions. The pursuit of a diverse sample explains the larger number of participants from Ontario where more recruitment was necessary in order to reach an adequate diversity.[2]

[2] As might be expected responses were initially skewed towards those farmers who were undertaking pro-environmental activities and wanted to promote their efforts. Over the course of the research the sample became more balanced to include participants who were taking few, if any, environmentally beneficial activities on their farm.

Table 2: List of Participating Farm Owners / Operators

England		Ontario	
Participant	**Participant Code**	**Participant**	**Participant Code**
Organic Vegetable Farmer	Farmer-EN-P01	Goat Farmer	Farmer-ON-P01
Mixed Farmer (livestock/arable)	Farmer-EN-P02	Small Vegetable Producer	Farmer-ON-P02
Arable Farmer	Farmer-EN-P03	Alternative Farmer	Farmer-ON-P03
Arable Farmer	Farmer-EN-P04	Mixed Farmer (livestock/arable)	Farmer-ON-P04
Mixed Farmer (livestock/arable)	Farmer-EN-P05	Livestock (Sheep and Pig) Farmer	Farmer-ON-P05
Dairy Farmer	Farmer-EN-P06	Community Supported Agriculture (CSA)	Farmer-ON-P06
Organic Fruit and Vegetable Farmer	Farmer-EN-P07	Community Supported Agriculture (CSA)	Farmer-ON-P07
Mixed Farmer (livestock/arable)	Farmer-EN-P08	Small Organic Farm	Farmer-ON-P08
Mixed Farmer (livestock/arable)	Farmer-EN-P09	Organic Vegetable Farm	Farmer-ON-P09
Community Supported Agriculture (CSA)	Farmer-EN-P10	Mixed Organic Farmer (livestock/arable)	Farmer-ON-P10
Organic Beef Producer	Farmer-EN-P11	Hop Farmer	Farmer-ON-P11
Large Arable Farmer	Farmer-EN-P12	Beef Farmer	Farmer-ON-P12
		Hop Farmer	Farmer-ON-P13
		Mixed Organic (Dairy and Arable)	Farmer-ON-P14
		Arable Farmer	Farmer-ON-P15
		Arable Farmer	Farmer-ON-P16
		Livestock (sheep and cattle) Farmer	Farmer-ON-P17
		Arable Farmer	Farmer-ON-P18

Note: Full details on participating farmers are available in the Supplemental Material of this paper

Note: In this case 'arable farms' are referring to operations which are based primarily or exclusively on crop production and particularly production of grains and oilseeds.

Invitations were distributed widely using multiple recruitment methods. An important objective for our recruitment was to avoid the use of gatekeepers, or pre-existing lists of farmer contacts used in previous research, in order to reach farmers who may not usually be invited to participate in research projects and avoid perpetuating participant fatigue.[3] Invitations were distributed through email using publicly accessible email addresses from various directories (e.g. Open Farm Sunday, commodity groups, and local food listings). In England, an invitation was also included in the NFU newsletter and posted on the NFU website. We also made extensive use of social media, notably Twitter, to reach online farmer communities.

Interviews were semi-structured following a flexible interview protocol to allow for participants to stray from the initial questions and introduce issues or opportunities that may have otherwise been missed. The advantage of this semi-structured approach was that it allowed the research participants to express their views and preferences with minimal influence from the researcher. This allowed new insights to emerge from the data that were not initially considered in the research design.

While this is a common methodological approach to conducting participant-based research with farmers, it is important to acknowledge some limitations with the approach. For instance, it is difficult to reconcile the temporality of farmers' decision-making and isolate cause-and-effect relationships (e.g. did an incentive precede the decision or did the decision precede the incentive). This will pose a challenge for any method relying on participants'

[3] We found participant fatigue to be a major problem in the English case where participants felt there was an excess of interview invitations and research studies seeking farmer participation. This was not the case in Ontario where farmers were much more willing to be involved, and were even grateful in some cases to be included in the research project. This serves as both a warning for research being undertaken in England and an opportunity for research in Ontario.

memories. Where time and resources allow, more longitudinal studies with a group of participants may provide an opportunity to overcome some of these temporal limitations.

These limitations aside, ultimately we found that our research approach allowed for an effective representation of the views and preferences of actors as they chose to express them. In parallel the *ex post facto* approach to identifying explanatory concepts from the academic literature provided the flexibility necessary to identify the concepts best suited to explaining the research findings.

During the interviews, farmers were asked questions about 1) the details of their farming operation; 2) the actions they have taken on their farm specifically to protect or enhance the natural environment and why; 3) the physical make-up of the farm and whether land was being intentionally left out of production, or new land brought into production, and why; 4) and finally farmers were asked about their involvement and experience with agri-environmental schemes/programs as well as government regulations/legislation. Interviews were recorded, with each participants' explicit permission and transcribed verbatim.

In total, therefore, the study included 54 participants from both the stakeholder organisation and farmer interviews, however the sets of interviews were analysed separately to ensure distinctions between groups of actors and jurisdictions could be identified. Analysis was conducted using an iterative, inductive approach whereby themes were developed by aggregating lower order codes, using a thematic analysis process (Braun & Clarke, 2006; Bryman, 2016; Burnard, 1991). Using NVivo 10, transcripts were systematically and rigorously coded, line-by-line, in their entirety through an open-coding exercise. By collapsing codes and

removing repetition and redundancy, this large number of open-codes was aggregated into axial codes and then into themes. We have organised the findings under the term 'orientations' and depicted them in Figure 1. Counts are provided in some cases to demonstrate the weighting of responses, however counts are used sparingly due to the heterogeneous nature of the sample.

4.0 Results & Discussion

4.1 Pro-environmental activities identified by farmers

Before moving on to an examination of the major factors influencing farmers adoption, or otherwise, of pro-environmental behaviours we first thought it instructive to examine what farmers themselves identified as pro-environmental activities. The analysis here was informed by an open-ended question whereby we asked farmers to outline actions they had taken 'specifically to protect or enhance the natural environment' on their farm (see table A in the Supplemental Material for details).

Farmers across both cases highlighted a wide range of actions they perceived as enhancing the natural environment. Looking specifically at England, the most prominent examples given were laying hedgerows and establishing margins, buffers, and headlands. Most participants noted that these actions were undertaken as part of cross-compliance obligations or as part of an agri-environmental scheme, such as the Entry-Level Stewardship Scheme (ELS), whereby farmers were compensated for undertaking these activities. In Ontario, participants identified a wide range of pro-environmental actions, with the most commonly repeated action

being the adoption of organic principles and practices.[4] Other prominent pro-environmental actions in Ontario tended to serve a dual benefit for both agriculture and the environment (e.g. conservation tillage, wind breaks, cover crops), which may be reflective of the limited incentive-based support system for environmental actions and the types of activities that are promoted as part of the cost-shared programs.

What was interesting to observe here was that farmers in both the England and Ontario samples regularly formulated their own ideas of what constituted a pro-environmental action, which often would not coincide with what others would consider as environmentally beneficial. Examples included removing 'weeds' and killing 'pests', which some farmers constructed as environmentally beneficial, whereas conservationists may construct these actions as environmentally harmful (Darragh & Emery, 2017; McHenry, 1998). We also found that some practices which may appear at first to lack an environmental basis may be rationalised by farmers, rightly or wrongly, for environmental purposes:

> "*I think it's important from an environmental perspective that we try to clean up the areas on the farm where there's, I call them 'weed nurseries' … so if you're, you know, cleaning up those areas where weeds are, you know, just allowed to run wild it reduces the amount of spraying you have to do on the farm, which is, you know, environmental and economical for the farm.*" (Farmer-ON-P18)

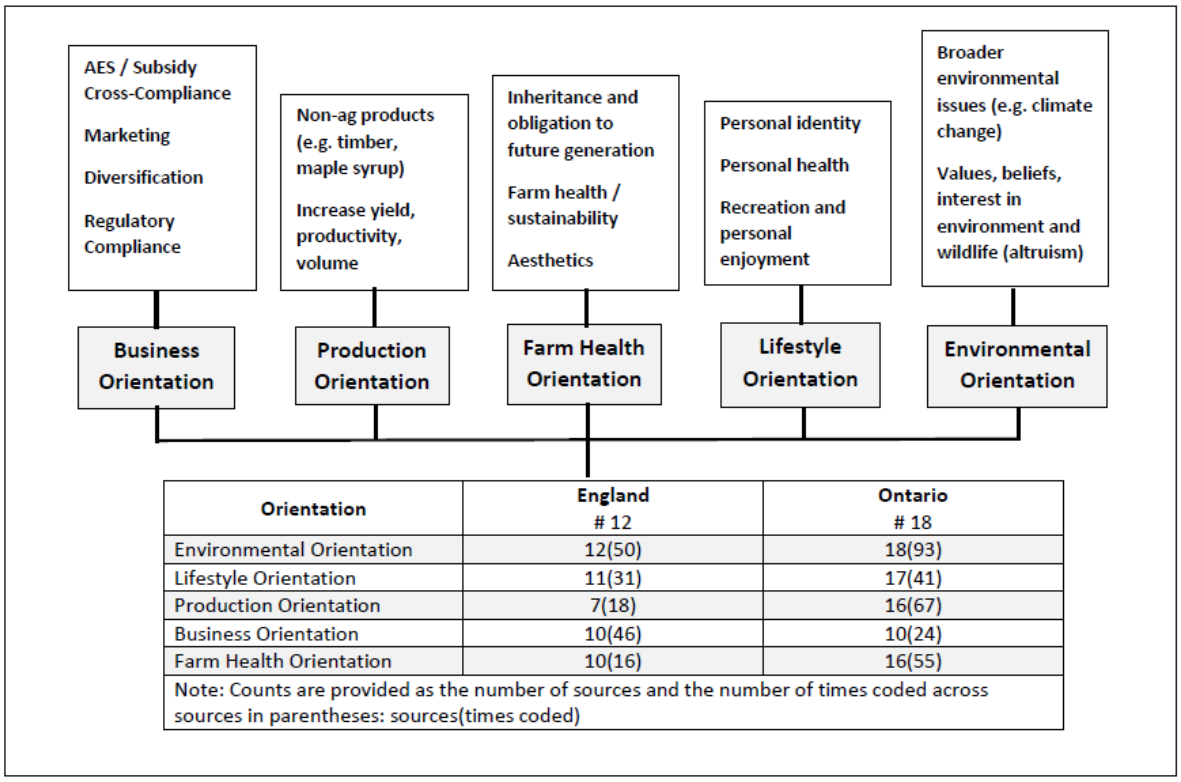
[4] This is likely a result of the popularity of the term 'organic' in Ontario as most farmers who stated that they utilised organic practices were not certified organic, and instead had their own interpretation of 'organic principles' typically associated with reducing the use of chemical pesticides.

In this case a seemingly non-environmental action is being conceptualised as pro-environmental through a multi-step comparison of alternative on-farm decisions, which may in sum have less environmental impact.

4.2 Factors affecting farmers' adoption of pro-environmental activities

Next we look at the factors that encourage, or discourage, the adoption of pro-environmental activities amongst farmers in our sample. Through an open-coding exercise, interviews with farmers identified a multitude of factors which we categorised according to five inductively derived internal orientations representing the values, beliefs, and attitudes of participating farmers. These internal orientations are: Environmental, Lifestyle, Production, Business, and Farm Health (see Figure 1). Of note here is that all of these internal orientations, not just Environmental, were important (albeit to varying degrees) in both the English and Ontario cases when it came to understanding pro-environmental actions. We propose that these orientations can serve as a lens through which environmentally beneficial on-farm activities are assessed, and decisions made, depending on their assigned value / weighting within each individual farmer.

Figure 1: Factors influencing farmers' adoption of pro-environmental activities



Orientation	England # 12	Ontario # 18
Environmental Orientation	12(50)	18(93)
Lifestyle Orientation	11(31)	17(41)
Production Orientation	7(18)	16(67)
Business Orientation	10(46)	10(24)
Farm Health Orientation	10(16)	16(55)
Note: Counts are provided as the number of sources and the number of times coded across sources in parentheses: sources(times coded)		

In this section we also incorporate the results of the stakeholder organisation interviews. During the interviews, stakeholder organisations were asked what they thought were the main reasons that farmers may, or may not, undertake environmentally beneficial actions on their farm (see tables B & C in the Supplemental Material for details). Overall, we found that when compared to the Ontario case, the English participants had a much more uniform, and generally positive, view of farmer motivations when it came to environmental behaviours.

While it is important to understand the views of stakeholder organisations, it is also important to note that stakeholder organisations are not impartial. Indeed, we often observed that organisational objectives were framing participant's views on farmer motivations (e.g. encouraging or discouraging more regulation or on-farm intervention). It was also somewhat

evident that stakeholder organisations in England were more politically savvy and more strategic, prepared, and comfortable in conversations of farmers and their motivations. It was clear that this was not the case in Ontario where participants were less practiced, and sometimes less comfortable speaking on farmer motivations, and seemingly less politically minded in their responses.

4.2.1 Environmental Orientation

Perhaps unsurprisingly the most prominent orientation amongst both sets of participants, when it came to understanding pro-environmental behaviours, was an *Environmental Orientation* where farmers adopted pro-environmental activities for seemingly altruistic reasons. Specifically, many farmers reported that they undertook actions simply because it 'felt good' or was 'the right thing to do'. For example, one participant states "*I just liked that idea, you know, it felt comfortable with me to be organic*" (Farmer-EN-P11) and similarly another states "*Well I'm just doing my part because I was brought up that way*" (Farmer-ON-P01).

Farmers reported undertaking pro-environmental activities for their own interests, because they care about the environment and enjoy "*nature and the splendour of diversity*" (Olive & McCune, 2017):

"*We've seen more and more birds and insects coming in since we started being totally organic and the colour of birds that come through is incredible… we just are excited about what we have and the little paradise that we're sitting on here.*" (Farmer-ON-P06)

Importantly, farmers often reported knowingly sacrificing production and/or profits in exchange for environmental benefits. This reflects an internal ranking of Environmental Orientation above other orientations, at least for some specific on-farm decisions:

"*Nobody has ever come onto my property and said you cannot cut your hay, no. But I am aware and if I see bobolinks [grassland bird] I try to avoid cutting that hay until after the young have fledged. But that means I end up with poorer quality hay and I've taken the hit in my pocket.*" (Farmer-ON-P10)

This theme of engaging in pro-environmental actions without any financial reward held particular importance for farmers in Ontario where financial compensation for pro-environmental activities was very limited: "*I try not to sound negative but it's been a tough haul for us trying to make any money doing this [but] I'm committed to what we're doing*" (Farmer-ON-P07).

The idea that farmers engage in many environmental enhancing behaviours due to altruistic reasons was also emphasised amongst the stakeholder organisations in both England and Ontario. Indeed, amongst stakeholder organisations in both cases, altruism was felt to be

the most common motivation for farmers to undertake pro-environmental activities as opposed to purely seeking profit maximisation. As succinctly put by one representative from the Ontario Soil and Crop Improvement Association (OSCIA):

> "*There's a lot of extremely proud people out there, proud of the fact they not only run a successful family farm that's profitable and poised to adopt new practices, that's going to offer stability for their family business into the future, they also take equal pride in having wildlife around.*" (ORG-ON-P06-OSCIA)

This view of farmers as highly environmentally oriented was emphasised not only by agricultural organisations but also environmental organisations:

> "*I know some farmers are motivated just 'cause the fact it's what they want to do, they think it's their role. I've been on farms where that's it they're so passionate about it, it's what they want to do they get no other gain out of it, they want to see as many birds or they want to see, you know, they want to see animals they want to have wildflowers, it's what they care about.*" (ORG-EN-P07-WWF-UK)

Organisational participants also described what they felt was the financial 'irrationality' of farmers' decision-making when undertaking some common pro-environmental activities: "i*t's*

not purely about money, clearly, because many farmers are undertaking activities that are possibly detrimental to their business operations. They're not making as much money but they do it anyway for whatever motivation" (ORG-ON-P03-Greenbelt Foundation).

Moreover, organisational participants, in both cases, expressed a view that enrolment in agri-environmental schemes/programs was driven equally, if not more, by environmental values than financial reward: "*there's never enough money to straight pay for them, so all of the farmers that are partaking in those programs have a strong environmental ethic*" (ORG-ON-P08-Farm & Food Care). A similar sentiment was offered by an English participant: "*the money side is important, of course it is, but you know, if it was down to money [farmers] wouldn't be doing this. … It's doing the right thing*" (ORG-EN-P05b-Anon).

Previous research frequently emphasises the importance of farmers' environmental attitudes, associated with their environmental orientation, in influencing pro-environmental decision-making (Best, 2010; Sulemana & James Jr, 2014; Wilson, 1996). However, it should be acknowledged that the level of altruism inherent in environmental or conservationist orientations is debated, with some authors arguing that a purely selfless steward does not exist and environmental actions are still undertaken to gain utility and advance farmers' self-interest (Chouinard, Paterson, Wandschneider, & Ohler, 2008; McHenry, 1998). Similar to our own findings, previous research has found that environmental attitudes alone do not directly result in the adoption of pro-environmental activities, instead acting as one factor influencing farmer decision-making (Thompson et al., 2015).

4.2.2 Lifestyle Orientation

Another prevalent orientation across both cases is what we refer to as a *Lifestyle Orientation,* which was important for almost all participating farmers. By *Lifestyle Orientation* we are referring to farmers' pursuit of personal lifestyle benefits from on-farm decisions such as recreation, health, and personal enjoyment from farm work.

Focusing first on the English case, an example of this Lifestyle Orientation in operation was the use of natural features, and areas set-aside from production, for the purpose of field sports. This was a very prominent finding amongst both farmer and stakeholder organisation participants:

> "*We do little things for our own shoot and that, which is for our benefit, for our pleasure if you like, if I can use that word, because I'd rather eat a pheasant that's lived in a wood than eat the chicken that's lived in a shed all its life.*" (Farmer-EN-P02)

Engaging in shooting as a recreational activity can encourage pro-environmental activities amongst English farmers for a completely non-environmental reason (Macdonald & Johnson, 2000; Oldfield, Smith, Harrop, & Leader-Williams, 2003). For example, in order to ensure habitat for game birds, farmers will often voluntarily protect or expand natural areas on their farm without an expectation of compensation.

In Ontario, participants described the influence of age and physical ability on their farming decisions which had unintended environmental repercussions: "*there are certain areas where I would ramp up production if I were younger*" (Farmer-ON-P08). Some farmers reported decreasing the intensity of their operation, leaving viable land out of production, or allowing land to regenerate not necessarily for environmental reasons but due to limited time, interest, or ability. Some farmers in Ontario were also influenced by nostalgia and an attachment to past memories of environmental features: "*And I think it's also because growing up here we used to play in the woods*" (Farmer-ON-P08).

Another important lifestyle related factor, across both samples, with an influence on pro-environment behaviours was in relation to concerns surrounding the farmers' personal or family health, which often had the effect of encouraging farmers to adopt seemingly highly environmentally oriented practices for non-environmental reasons. In our study the most notable example was the adoption of organic practices, more specifically eliminating the use of chemical inputs, which was explicitly raised by multiple participants in Ontario:

> "*Before I became organic when I was applying pesticides and I used to get very sick, I'd get terrible headaches and nausea and even though I would wear all the appropriate garb and I would have a mask and everything on and between myself and my wife we just said 'what the hell are you doing this for?' So I just quit and as soon as I was able I became certified organic.*" (Farmer-ON-P10)

Coinciding with our findings, previous research has found that lifestyle benefits, or pursuit of quality of life, is an important influence on farmers decision-making (Howley, 2015) including in their decisions to adopt pro-environmental activities (Duesberg, Upton, O'Connor, & Dhubháin, 2014; Greiner & Gregg, 2011; Willock et al., 1999). While research has made the connection in the UK between field sports and farmers' maintenance of environmental features (Macdonald & Johnson, 2000; Oldfield et al., 2003) our findings contribute to expanding the connection between other lifestyle benefits and the adoption of pro-environmental activities.

4.2.3 Production Orientation

By *Production Orientation* we are referring to farmers' efforts to increase yield, productivity, and efficiency on the farm as well as extracting other tangible products like firewood or maple syrup. Farmers' inherent attachment to pursuing production increases, including using production indicators as their primary measure of success, has been previously found to be an important influence on their decision-making. For instance, prominent authors such as Burton emphasise the role of farmers' personal identity in influencing decision-making, particularly around decisions in-keeping with a 'good farmer' identity founded in productivism (Burton, 2004; McGuire, Morton, & Cast, 2013). This attachment to production continues to prevail amongst farmers, even in post-productivist contexts such as in Western Europe (Burton & Wilson, 2006). Similar to our work, previous research has also found that productivist attitudes are an important influence on farmer decision-making and are distinct from financial

motivations as farmers may pursue production maximisation even when financially irrational to do so (Howley, Buckley, O Donoghue, & Ryan, 2015; Howley, 2015).

Focusing on pro-environmental activities we found that the Production Orientation deterred the adoption of environmentally beneficial decisions for some participants, across both cases, as they resulted in production losses. For instance, the following participant discussed the drawbacks to production from enrolling land in an agri-environmental scheme:

> "*Certainly getting rid of them [grass margins] is a nightmare because once they've been there for ten years of course the tree roots and the hedge roots have all moved out into the field. You've also got all of the weed problems that have arisen from them. And it has sort of taken us probably two cropping years to get them back into the sort of field condition that they were in before.*" (Farmer-EN-P03)

This was reinforced by stakeholder organisation representatives and particularly from those in the Ontario case: "*If we want to grow big corn and big grain, we don't need those insects to pollinate those crops and frankly biodiversity's another name for a critter or pest that's going to eat our crop*" (ORG-ON-P08-Farm & Food Care).

Similarly, an attachment to a certain view of the 'farmer identity' was also associated with certain farming practices, notably production oriented practices, with negative environmental repercussions:

> "*When you tell a farmer that he can't be out there in the field driving his tractor, that's part of the thing that he loves the most about his job, OK? It's part of his identity today, just like an old ploughman liked to walk behind his nice team of horses that he took great pride in…it's no different than today than drivin' a great big shiny piece of kit down the field.*" (Farmer-ON-P16)

For these farmers, attachment to productivist practices were essential for maintaining their own conceptualisation of what it means to be a 'good farmer' (Burton, 2004). Amongst these farmers, their conceptualisation of what is, and is not, part of the 'farmer identity' posed an obstacle to adoption of pro-environmental activities as to do so was not in-keeping with their productivist mind-set. However, this was much less prevalent amongst new farmers, or farmers who did not identify as multi-generational farmers, potentially providing an inlet for change within this group.

While, as one would expect, a conflict between production and pro-environmental behaviours was common, it was not always the case. What was interesting to observe was that within both cases, many farmers also made a positive connection between pro-environmental activities and increases in yield or volume of production, such as by reducing erosion or encouraging beneficial pollinators. Indeed some participants noted that environmental benefits were an unintended by-product of actions to increase production, for instance:

> "*It's unintended because I didn't set out to provide this habitat, OK? My intention was for soil building, I wanna release nutrients into the soil, I want to, you know, make - produce copious amounts of nitrogen fertiliser vis a vis legumes, right? And so by doing this, that was what my goal was … so I didn't set out to, you know, provide habitat for birds. I didn't set out to provide a habitat for pollinators.*" (Farmer-ON-P16)

Stakeholder organisations also commonly identified seeking production benefits as a driver of pro-environmental activities:

> "*I mean from a practical point of view, for example, if you're farming large fields you have to … look after erosion right? Otherwise it will be a problem for you. So, putting in field windbreaks and grass waterways and sediment control … that would be a logical thing to do from an economic development point of view.*" (ORG-ON-P11-OMAFRA)

This view was common in both cases but particularly emphasised by Ontario participants which perhaps reflects a distinction in the agricultural paradigm between these two cases, as Ontario is more closely aligned to productivism whereas England leans more towards a post-productivist (multifunctional) mind-set (Marr, Howley, & Burns, 2016). Moreover, this notion that environmental enhancing activities can have spin-off benefits when it comes to agricultural production is reflected in the design of agri-environmental programs in Ontario, which are not intended to shift farmers' emphasis on production (Atari et al., 2009). Under these programs, farmers put forward a considerable portion of the cost of the activity, typically more than 50 per cent, the idea being that farmers will absorb the lost revenue or make up the shortfall

through production improvements (Ontario Soil and Crop Improvement Association [OSCIA], 2016).

4.2.4 Business Orientation

A similar, but distinct orientation to the *Production Orientation* identified in this research is what we refer to as a *Business Orientation*. Authors such as Sulemana and James Jr (2014) and Thompson et al. (2015) also emphasise the influence of a 'business orientation' in farmers' adoption of environmentally beneficial practices, where some farmers identify themselves primarily as businesspeople and focus on economic and financial concerns. This has included the adoption of environmentally beneficial activities (e.g. soil erosion prevention) "*believing them to be 'profitable business decisions'*" (Farmar-Bowers & Lane, 2009, p. 1139).

Within our framework, the *Business Orientation* manifests as farmers choosing whether to adopt pro-environmental activities based on seeking financial benefits to the farm business, either by ensuring regulatory compliance or maximising profitability of the operation. We make a distinction between the Production Orientation described above and this Business Orientation as we noted that many farmers maintained a productivist mind-set irrespective of financial returns; as in farmers undertook certain practices aimed at increasing production even if it was financially optimal to engage in other activities. However, in contrast we found that other farmers were adopting environmentally beneficial decisions that may reduce production, but increase on-farm profitability, such as enrolment in agri-environmental schemes or pursuing value-added agriculture (e.g. organic certification).

Distinguishing factors of the Business Orientation include pursuing compliance obligations for agri-environmental schemes, subsidy cross-compliance, regulatory compliance, as well as seeking to diversify the farm business or leverage marketing opportunities. We found, for example, that most farmers in the English case were undertaking pro-environmental activities in exchange for financial benefits through subsidy cross-compliance and/or agri-environmental schemes:

> "*It's almost a business decision really … if I grow an arable crop I can make X pounds at this acre and if I go into some scheme I can make Y pounds and you know which is the better? Is almost the approach that we take.*" (Farmer-EN-P12)

Farmers in England also commonly stated that their rationale for pro-environmental activities was due to regulatory demands. Similarly, stakeholder organisations in England frequently noted the importance of agri-environmental schemes, regulations, and cross-compliance obligations when it comes to understanding influences on farmers' pro-environmental behaviours. However, stakeholder organisation representatives seemed to have downplayed the importance of schemes and regulation / cross-compliance in explaining pro-environmental decision-making, when compared with farmers who placed much more emphasis on this factor. This difference in interpretations between farmers and stakeholder representatives in England perhaps suggests an underlying, or intentionally constructed, view of farmers as highly altruistic.

In contrast, in Ontario there was much less mention from farmers or stakeholder organisations of financial benefits arising from agri-environmental programs, or necessity from cross-compliance obligations, and much less discussion of regulatory compliance thereby reflecting the different policy environment that they operate within. Instead, farmers in Ontario were much more likely to discuss undertaking pro-environmental activities, such as crop diversification and water management, in order to spread or reduce risk and diversify the farm business. Farmers and stakeholder organisations also discussed tax benefits arising from some pro-environmental decisions, such as maintaining woodland, and marketing opportunities arising from such decisions as obtaining organic certification or capitalising on the "*whole gluten free craze*" (Farmer-ON-P15).

Within both cases, farmers mentioned cost-savings from some environmentally beneficial activities, such as reducing or using precision application of inputs:

> "*As a farmer my objective is not to waste any inputs…if you're pouring chemicals onto the ground and half of it is getting off into the environment and killing things that you don't want, that don't need to be killed, then that is just wasteful.*" (Farmer-EN-P09)

On the other hand, we found that for some decisions the Business Orientation posed a deterrent to pro-environmental activities. For instance, one conventional farmer from Ontario emphasised that investments in equipment and machinery lock farmers into certain practices, making adoption of alternative practices costly and difficult:

"*We're invested in a certain direction right? We've really specified what it is that we do, so now I'm going to have to go in a totally different direction, so that lends myself to, well, what to do I do with these already existing assets that I have*?" (Farmer-ON-P16)

4.2.5 Farm Health Orientation

By the Farm Health Orientation we refer to factors that benefit the farm itself, rather than necessarily the farmer, at least in the short-term. Here the farm is an entity into itself and decisions are influenced by interest in maintaining the farm aesthetic, the overall farm health, as well as an interest and/or obligation to maintain the sustainability of the farm for future generations.

Specifically, we found intergenerational interest and obligation to be an important factor in farmers' decision-making across both samples, and particularly amongst farmers who inherited their farm:

"*And as a fifth generation farmer I'm hopin' that there's gonna be a sixth generation farmer one day, we're trying to work hard so that, that opportunity is not eroded by my practices. OK? We want this asset that we hand off to our next generation, and that's our whole focus, our whole farm focus is that we want our farms that we manage here to be in better condition for future generations, regardless if they're our kids or they're somebody else's kids.*" (Farmer-ON-P16)

Within the stakeholder organisation interviews, these farm legacy and intergenerational concerns were also frequently reported, particularly amongst the English stakeholders, such as one participant who states: "*it may well be a family farm, you know been in the family for generations, so they want to look after it and leave it in good stead for the kids and so on*" (ORG-EN-P06-FWAG).

Farmers across both samples, but especially in Ontario, were concerned about soil health and soil degradation and the long-term sustainability of the farm. In Ontario, most farmers emphasised that they were taking specific pro-environmental activities that also reduced erosion and/or improved soil health, such as establishing windbreaks, riparian buffers, incorporating cover crops and adopting conservation tillage.

Finally, perceptions regarding farm aesthetics also influenced farmers' adoption of pro-environmental activities in both cases: "*A lot of the stuff that got gapped up was actually main roadside hedgerows and that just, you know, maintains our appearance really…I'm very fond of my hedgerows*" (Farmer-EN-P05).

Similar to farm legacy and intergenerational concerns, farm aesthetics was also expected to be a driver of farmers' pro-environmental activities by stakeholder organisations, and particularly within the English case. For instance one participant states: "*farmers are interested in their farm looking pleasing to the eye*" (ORG-EN-P11-Allerton Project / GWCT) and another who states "*They're doing it because they love it and they wander around their farm and they want to see nice things*" (ORG-EN-P10-PlantLife).

It is interesting to observe that while this interest in improving or maintaining farm aesthetics typically encouraged farmers to undertake pro-environmental activities, it also served as a deterrent for some farmers pursuing a 'tidy' landscape (Burton, 2012):

> *"I didn't push onto the schemes because - well you know to get onto it we're going to have to cut the hedges, is it two years in five years or something like that, and I didn't want great big thorns around stuck all over the place and I like to see what stock I've got in the field, not be peering over an overgrown hedge, and keep things a bit tidy."*
> (Farmer-EN-P06)

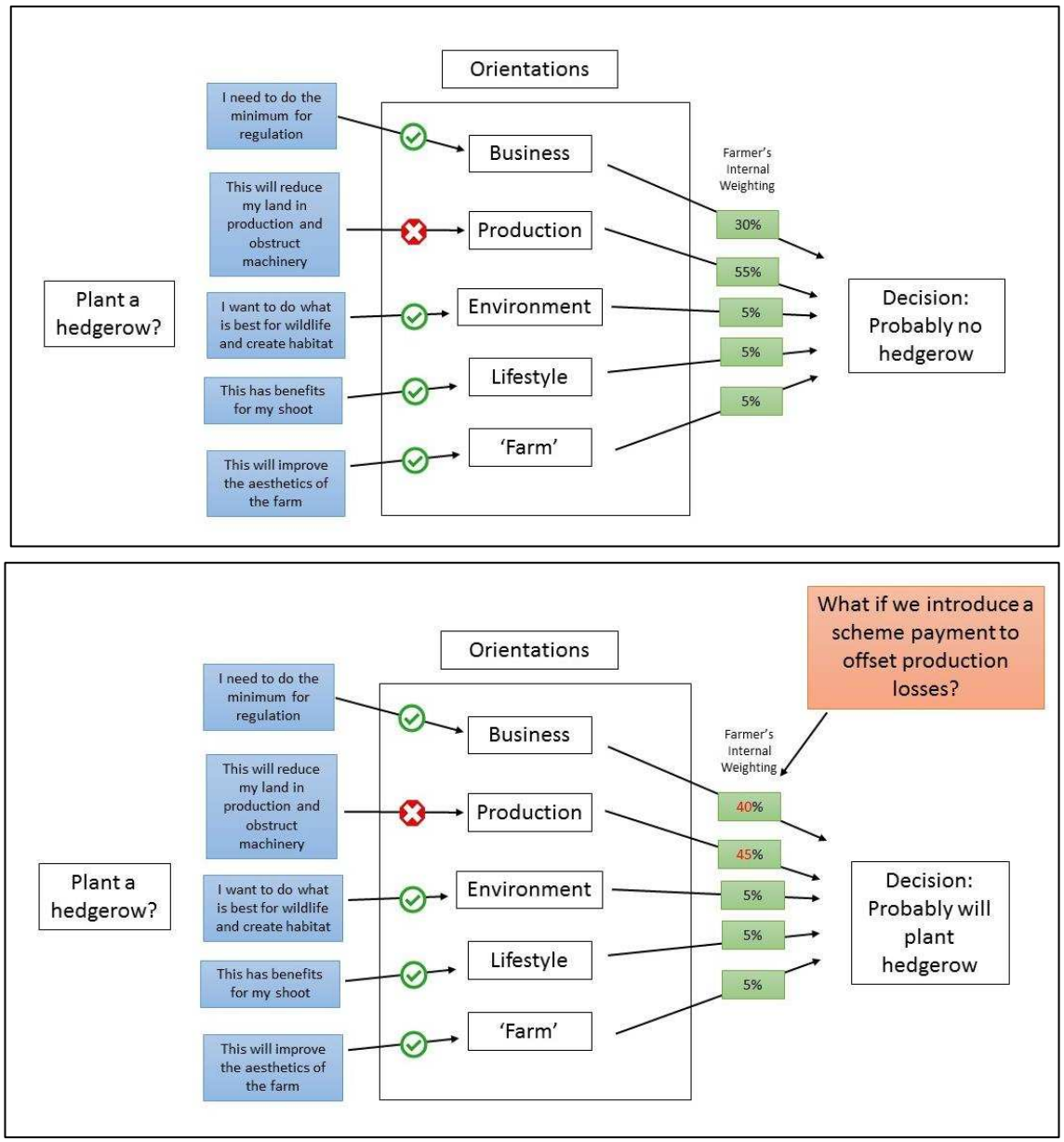
Our findings relating to the importance placed by farmers on protecting the farm for its own sake, rather than exclusively for the sake of the farmer's short-term utility of the farm, has also been identified as a factor influencing farmer decision-making in the literature. The orientation included in our framework has similarities to what Burton refers to as the 'farm identity' where the farm is anthropomorphised and takes on an identity of its own beyond a single generation (Burton, 2004). Building-on from this, the importance of maintaining the sustainability of the farming operation for future generations has also been identified as an influence on farmers' decision-making, including encouraging pro-environmental decisions (Farmar-Bowers & Lane, 2009; Saxby et al., 2017; Stock, 2007). Moreover, farmers' aesthetic preferences and the maintenance of an attractive farming landscape has also been found to

influence farmers' decisions to adopt environmentally beneficial practices (Erickson, Ryan, & De Young, 2002), however not always positively (Burton, 2012).

4.2.6 Summary

To summarise, we find that farmers are concurrently influenced by numerous internal interests and motivations when evaluating whether or not to undertake pro-environmental activities. We suggest that farmers each hold a combination of orientations, weighted differently, which forms a frame through which options are assessed and decisions derived. As an illustration of this, in Figure 2 we provide a simplified, hypothetical scenario of how each farmer's decision-making is influenced by these orientations, and their internally assigned value, to illustrate how this might operate in practice. In this simple example we provide two scenarios, the first in which a hypothetical farmer is evaluating whether to plant a hedgerow on their farm based on their internal weighting of different orientations. Next, in the second scenario, we depict how an external incentive scheme might influence this farmer's internal evaluation.

Figure 2: Farmer pro-environmental decision-making in a hypothetical scenario



5.0 Conclusion

This study contributes to better understanding the disconnect that has been observed between environmental attitudes and pro-environmental behaviour by considering the influence of farmers' non-environmental interests (Nebel et al., 2017; Thompson et al., 2015). A novel feature of our work is that instead of identifying linear connections between internal environmental interests and pro-environmental outcomes, we identify five internal orientations that were important in shaping pro-environmental behaviours across two case study sites, namely England and Ontario. These internal orientations, many of which have no clear environmental basis, still serve to encourage, or deter, pro-environmental activities. Indeed, we found that participating farmers held a range of nested orientations that influenced their adoption of pro-environmental decisions on a case-by-case basis, depending on their own internal weighting of alternatives.

In practice, this means that farmers who self-identify as caring about the environment may not be undertaking some pro-environmental activities due to the presence of more highly weighted orientations (e.g. lifestyle, production) steering decision-making towards alternative objectives. In contrast, farmers who care less about the environment may become *accidental environmentalists* by undertaking pro-environmental activities for non-environmental reasons, such as shooting, personal well-being, aesthetics or abandoning unproductive land. All of this makes policy intervention quite complicated as numerous, ever-fluctuating, internal and external factors sever the direct link between attitudes and outcomes, resulting in unpredictability in on-farm decisions. Nevertheless, policy interventions targeting various orientations can help to shift their weighting within farmers' internal valuations.

While every participant in our study clearly valued the environment to some extent, it was also clear that priorities differed amongst participants. In Ontario it was very difficult, though not impossible as some participants demonstrated, for a farmer to place environmental stewardship above agricultural production and still be a viable farm, a mind-set that has been succinctly termed "*it is hard to be green when you are in the red*" (Richards, Lawrence, & Kelly, 2005). In contrast, in England latitude in decision-making is provided by direct payments and the stewardship schemes, and so sacrifices for the environment can be made without necessarily jeopardising the financial sustainability of the farm. In Ontario, losses from environmental decisions appear to be balanced by alternative income sources, often with off-farm income.

With this in mind, it is difficult to see how England can maintain the same level of environmental goods and services with a more market-oriented approach to farmer support mechanisms. While some farmers will maintain pro-environmental activities for non-pecuniary reasons, it seems likely that many will abandon practices without financial incentives or due to external pressure from markets, the agri-food sector, or even peers. This represents a difficult trade-off that will need to be considered as England develops a new set of agri-environmental policies following its transition out of the EU.

For Ontario, while many farmers will continue to pursue environmentally beneficial activities regardless of external factors, it seems likely that other farmers will continue to struggle to prioritise pro-environmental activities without increased financial compensation and/or convincing evidence of short-term production gains from co-beneficial on-farm activities. A clear opportunity seems to be the adoption of some form of cross-compliance as

part of a, presumably expanded, farmer support framework. The current review of the Growing Forward 2 agricultural policy framework may provide an opportunity to revise farmer support mechanisms in order to attain greater environmental outcomes.

One further novel feature of this work is the identification of what farmers themselves interpret to be pro-environmental actions. Our results highlight how farmers, conservationists, and academics may not always hold a common understanding of what constitutes pro-environmental activity. We found that farmers may rationalise (rightly or wrongly) activities that may initially appear as non-, or even anti-environmental, for environmental reasons.

It was also interesting to observe what stakeholder organisations felt were the main driving forces behind the farmers themselves when it comes to environmental behaviours. We found in both cases, stakeholder organisation representatives seemed to accurately reflect the influential factors raised by farmers, however interpreted the weighting or importance of those factors differently. In some cases this seemed to reflect a genuine difference in the interpretation of farmers' primary motivations, whereas in other cases we suggest stakeholder organisation representatives may have been presenting views of farmer motivations favourable to their own ends.

Reflecting on methodology, we found that it was sometimes difficult to isolate primary orientations among multiple layers of orientations and that it is often challenging to distinguish reasons for decisions *ex post facto*. For instance, a farmer may appreciate seeing wildlife on their farm, but was that a motivation or a secondary result of pro-environmental decisions? This was particularly true in the English case where financial benefits were often interwoven

with pro-environmental activities, and may have even 'crowded out' altruistic motivations (Darragh & Emery, 2017; Rode, Gómez-Baggethun, & Krause, 2015). Therefore, we found that the lack of inherent financial reward in exchange for pro-environmental activities made Ontario a 'purer' case and a good comparator for the English context.

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