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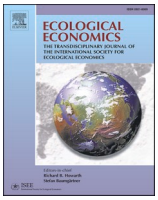

Farmers' perceived values in conventional and organic farming: A comparison between French, Irish and Swedish farmers using the Means-end chain approach

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ABSTRACT

Values act as driving forces for individuals to behave in a certain way or to choose certain actions. They may explain current differences of converted organic land among EU countries. In this paper, we identified and compared the types of values, economic and other, that motivate farmers to choose certified organic or conventional production systems in France, Ireland and Sweden. To identify these values, we analysed and compared attribute-consequence-value representations of the choice of production systems among farmers, using a Means-end chain approach. Seventy-eight in-depth laddering interviews were conducted to explore how farmers characterised their choice, the consequences they perceived from these characteristics and the values they associated with these consequences. The uncovered values were classified along Rokeach's typology to distinguish between instrumental and terminal values. Results indicate that both farmers with a conventional farm and farmers with a certified organic farm are driven by complex sets of financial, business, or productivity values and by non-financial, non-business, or non-productivity values. Findings are useful to policy makers and farm advisors, who can use these results to develop more efficient communication schemes to promote organic farming. The findings can also be communicated to consumers and the public in order to encourage consumption.

1. Introduction

Strengthening the development of certified organic farming in the EU is one of the ambitions of the Farm to Fork Strategy of the European Green Deal, which has the stated aim of having 25% of EU's total agricultural land under certified organic farming by 2030 (European Commission, 2020). The practice of certified organic farming is well established and regulated in the EU. Organic production approaches have proven benefits as sustainable modes of production, including positive effects on biodiversity and soil and water quality. Certified production also holds the possibility of benefitting from enhanced profitability for farmers due to price premiums (Seufert and Ramankutty, 2017). Although some EU member states are close to meeting the European target at a national level, such as Sweden with 20.4% of its agricultural land under certified organic production (Eurostat, 2020), this degree of progress towards achieving the targeted proportions of certified organic farming is not prevalent everywhere across the EU. In countries such as Ireland and France only 2.6% and 7.7% respectively, of the agricultural land was under certified organic production in 2019 (Eurostat, 2020). The required communal effort to reach this common objective suggests incentivizing farmers to transition to certified organic production. Standard economic theory suggests that increased uptake of organic production can be incentivized using monetary policy schemes. However, psychological literature has long since highlighted a wide array of values (beyond the monetary ones), held by individuals and which are prominent standards that guide people's thoughts, choices and evaluations of their behaviours; and as such, those values function as a rationale for certain actions (Rohan, 2000; Bardi and Schwartz, 2003). Therefore, understanding the whole set of values that may motivate farmers to operate conventional production or certified organic production and differences which may exist between farmers in the two production types, would be key in designing efficient incentives

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to further support uptake of certified organic production. Nevertheless, this is not currently well understood in the scientific literature.

Rokeach (1973:7), in his seminal work, defined human values as an enduring type of belief about a personally or socially preferable "mode of conduct or end-state of existence". He distinguished between instrumental values, which are concerned with desirable modes of conduct and terminal values, which are focused on a desirable final state of existence. These two have important motivational functions that guide human actions: if one behaves in a way prescribed by instrumental values, this will be rewarded through the attainment of desired end-states, directed by terminal values (Rokeach, 1973). Terminal values act as motivating drivers in an individual's life as they correspond to ultimate goals to be achieved, which, unlike biological goals, cannot ever completely be satiated and thus always need to be pursued (Rokeach, 1973). While economic motivations are often put forward to explain farmers' production decisions, non-pecuniary drivers, which generally constitute unobservable motivating variables in economic models, have recently been highlighted by economists and other scholars as instrumental in understanding farmers' behaviours. As Howley (2015) pointed out, a wide range of non-pecuniary factors, together with pecuniary types of benefits, can be expected to influence farmers' activities. Furthermore, recent studies have also found that farmers may engage in activities that reduce economic benefits and may appear irrational from a financial standpoint, where non-economic motives are deemed to be important (Mzoughi, 2011; Howley et al., 2014; Hansson et al., 2020; Adamie and Hansson, 2021). The idea of the importance of non-pecuniary drivers in farming has old historical roots. Already nearly hundred years ago, Ashby (1926) emphasized the need to recognize non-economic motives in farming that link to psychology such as instinct, emotion or sentiment. In a study by Gasson (1973), human values were one facet of psychological motivations that were suggested as driving farmers' behaviours and activities. As Fritzsche (1991) described in his model of business decision-making, personal values of instrumental or terminal nature are at the origin of a decision process. Along this decision process, personal values are mediated or altered by other external factors, such as alternative choices relevant to professional life decisions. This model is relevant for any business disciplines to which farming inherently belongs and uncovering the types of values that farmers hold is an important stepping-stone towards predicting and understanding decisions in implementing specific production systems. Detailing the wide array of pecuniary, as well as non-pecuniary values, that may motivate farmers' choice of production system is therefore a promising path towards more efficient design of incentives to support accelerated uptake of certified organic production.

Accordingly, in this study, we identified the underlying values that function to motivate the choice of production type, i.e. conventional or certified organic farming, among farmers in a cross-country comparison. More specifically, we explored the choice of running a conventional farm or a certified organic farm using the Means-End Chain approach (MEC; Gutman, 1982). This approach enables us to investigate the mental representation of the farmers' choice of production approach, including how they characterised their production system using attributes, what consequences they perceived from these characteristics and what values they associated with. Data were collected through in-depth interviews by using the laddering technique (Reynolds and Gutman, 1988) with samples of farmers engaged in conventional production and farmers engaged in certified organic production in France, Ireland and Sweden. This means that we are also able to highlight possible differences in the mental representation and values across those countries.

Substantial literature has focused on the types of values that motivate farmers' occupational choices (Gasson, 1973; Willock et al., 1999; Maybery et al., 2005; Ferguson and Hansson, 2013) or that influence their choice of farming practices (McInerney, 2004; Vänninen et al., 2009; Lagerkvist et al., 2012; Barnes et al., 2011; Hansson and Lagerkvist, 2015). This study contributes to the literature by detailing the values that are linked to farmers' choices of production system and by comparing such findings across two different types of samples (conventional/certified organic) and across three countries. As such, this paper also contributes to furthering the understanding of which values, beyond those of financial, business or productivity types, influence farmers' production choices. Furthermore, while the MEC approach has recently been used by Hansson and Lagerkvist (2015) and Hansson and Kokko (2018) to study farmers' decision-making regarding animal welfare and farm business renewal respectively, this approach has not been adopted to understand farmer's decision-making in deciding whether to run a conventional or a certified organic farm. Moreover, a geographical comparison has rarely been used in the literature focused on farmers' values. Additionally, in existing literature, survey and closed questions have predominantly been used to identify farmers' values (Willock et al., 1999; Barnes et al., 2011; Ferguson and Hansson, 2013; Sweikert and Gigliotti, 2019). We therefore contribute to the relatively less dominant qualitative literature by uncovering values using in-depth interviews. Findings presented here are useful for policy-makers and advisors in order to segment and target communication about the perceived benefits of conventional versus certified organic farming. Improved communication can then help foster the level of organic production and reach the communal European target at a national level.

2. Conceptual framework

2.1. The Means-end chain (MEC) approach

The Means-end chain (MEC) approach (Gutman, 1982) was originally developed in marketing to understand consumers' choices. This research focuses on how the selection of products or services with specific attributes- the "means"- help to achieve personal desired end-states, or personal values (Gutman, 1982; Lind, 2007; Humble et al., 2021). The MEC approach posits that consumers' purchasing decisions are not based on the attributes of the products themselves, but on the values the attributes are expected to satisfy. The key purpose of the MEC approach is to uncover individual values by understanding how consumers characterize their choices in terms of attributes, what consequences they perceive from these attributes and finally what values they associate with these consequences (Reynolds and Gutman, 1988). It further assumes a hierarchical relationship between these MEC elements that depicts consumers' cognitive structures, by starting from the product attributes that link to consequences. The consequences then link to values.

Although developed for the consumer side of the supply-chain, the MEC approach has recently been successfully applied to understand farmers' decision-making (Hansson and Lagerkvist, 2015; Hansson and Kokko, 2018). The MEC approach is useful for the purposes of our study to characterize farmers' decisions to run conventional or certified organic farms. It facilitates the understanding of this choice through identifying which attributes farmers link to their production approach, the consequences of these attributes and finally, why these consequences are important to the farmers at a more abstract level, in terms of which financial, business, or productivity values and which non-financial, non-business, or non-productivity values they function to satisfy. We take the attributes to correspond to farmers' personal definition of their production system, which is also an explanation according to them for conducting this specific type of farming. The MEC approach can thus contribute to the understanding of financial, business or productivity values and non-financial, business or productivity values which determine farmers' choice of production type.

2.2. Typology of values

Several typologies of values have been developed in, or adapted to, the farming literature, in order to understand farmers' behaviours. Studies that have identified different typologies of values, specifically among farmers and in relation to a type of decision, fall into two

categories: studies that focus on values in relation to the farmer occupation and studies that focus on values in relation to farmers' farming practices.

Concerning the first type of studies, Gasson (1973) in her seminal article outlined a list of 20 dominant values for farming as an occupation, which emphasize the personal and social aspects of motivations towards farming. In this work, she identified four types of value classes: *instrumental*, *social*, *expressive* and *intrinsic*, which demonstrate the importance of non-financial motives in farming. Willock et al. (1999) identified five groups of objectives, including both values and goals that guide farmers' careers, based on a survey of Scottish farmers. The five identified clusters gathered motives related to *quality of life, status, sustainability, success in farming* and *off-farm work*. Maybery et al. (2005) identified typologies of values in relation to the work of farming, but more specifically associated values with the behaviour of land stewardship and land management. In particular, this study highlighted *economic*, *conservation* and *lifestyle* types of farming values. In more recent work, Ferguson and Hansson (2013) focused on Swedish dairy farmers' business behaviour to expand, maintain, or exit their enterprise. They identified three distinct categories of values influencing these behaviours: *identity*, *business* and *farm-living* values.

The aforementioned second type of studies identified value typologies related not to the farming occupation in a broad sense, but to farming practices specifically. For instance, values in relation to the uptake of environmental practices were considered by Barnes et al. (2011) who focused on the values of farmers operating in a specific Scottish area belonging to a compulsory water quality management scheme. Three different types of value categories were found: *economic*, *environmental* and *social*. Another value categorization that has been developed in relation to farming practices is the distinction between the *use* and *non-use* values in animal welfare, first suggested by McInerney (2004) and developed by Lagerkvist et al. (2011), focusing on the economic value of animal welfare to farmers. A binary type of value classification that has also been used in relation to ethical dimensions of farming practices and farmers' motives, is the distinction between *intrinsic* and *extrinsic* types of values which originates from the field of philosophy and ethics (Zimmerman, 2018). These two have been studied in connection to the adoption of genetically modified (GM) crops by farmers (Vänninen et al., 2009).

The value typologies presented above have specifically been identified in agricultural and environmental economics, however in-depth value theory originates from psychology. In particular, two major frameworks from psychology have typically been adopted to study farmers' values (Hansen and Greve, 2014; Baur et al., 2016): the Rokeach (1973) framework and the framework of Schwartz (1992). As indicaded above, Rokeach (1973) distinguished between *instrumental* and *terminal* types of values, which are positioned at different hierarchical levels. While instrumental values correspond to desirable modes of conduct and provides a mean to an end goal, terminal values are desirable end-states of existence. These two types of values have further sub-categories. Terminal values can be either *personal*, i.e. self-oriented, or *social*, i.e. focused on others. Similarly, instrumental values are divided into *moral* and *competence* values. Moral instrumental values refer to, "certain kinds of instrumental values, which, when violated, arouse pangs of conscience or feelings of guilt for wrongdoing" (Rokeach, 1973:8). For competence values, "their violation leads to feelings of shame about personal inadequacy rather than feeling of guilt about personal wrongdoing" (Rokeach, 1973:8). The Theory of Basic Human Values originally developed by Schwartz (1992) defines a total of 10 universal personal values. The 10 personal values are organized into four higher-order groups: *openness to change*, *self-enhancement*, *conservation* and *self-transcendence* (Schwartz, 1992). However, as Schwartz (1992:47) noted, "Studies combining our abstract level of measurement with contextually specific measures would increase our understanding of how values enter into concrete decision-making." In fact, Rokeach (1973) and Schwartz (1992) measured values that are personal in such a way that they are considered to be guiding principles in life, generally. These two different frameworks and associated types of values should therefore be seen at a higher level of abstraction than those presented from the agricultural and environmental economics literature.

Both the value typologies focused on farming occupation and the ones focused on farming practices from the economics literature, are relevant for our study. With the MEC approach, farmers are asked to characterize their choice of production system, which can be related to the type of farming practices used. Farmers are however, also questioned about the reasons why they decided to run a specific production system and this can be interpreted as being a question of the role of the farmer for a specific type of production system. For this reason, it was useful for the purposes of this study not to limit our conceptual framework to one or another pre-defined value typology that has been defined for the farming sector, but instead, to use a more abstract typology which is based on more broadly defined concepts. For the purposes of this study, we adopted the Rokeach (1973) framework to classify the values identified in our context. Hansen and Greve (2014) emphasized the usefulness of Rokeach's distinction between instrumental and terminal values to understand if farmers are in a state they prefer to remain, or in a state that aims to achieve something else in the future. The Schwartz classification has also been considered not suitable to study values in farmers' choices because of its high level of abstraction (Hansson and Sok, 2021).

From the literature review, it is evident that farmers hold both *personal* and *competence* values such as "pride of ownership" or "expanding the business" (Gasson, 1973) but also *social* and *moral* values such as "be respected for my work" (Ferguson and Hansson, 2013) or "leaving the land in a better shape" (Maybery et al., 2005). We therefore expand the framework by Rokeach (1973) to classify values in this paper across four different categories: *instrumental competence*, *instrumental moral*, *terminal personal* and *terminal social* values. Understanding whether farmers with conventional production or farmers with certified organic production hold more predominantly *moral* or *competence* goals or are more self-oriented or focused on others can support targeted policy communication to farmers.

3. Data and methods

3.1. Laddering interviews

The data for this study were collected through laddering interviews with a sample of 38 conventional farms, including 20 from Sweden, 5 from France and 13 from Ireland; and 40 organic farms, including 19 from Sweden, 6 from France and 15 from Ireland. Laddering is an in-depth, one-to-one interviewing technique during which respondents are asked a series of probes, typified by the question, "Why is that important to you?" (Reynolds and Gutman, 1988). The technique was developed to identify MEC elements in a structured way. The laddering interview technique has been used in many cases to collect data on consumers' MECs (e.g. Lind, 2007; Van Rijswijk et al., 2008; Roininen et al., 2010; Humble et al., 2021) and recently also to collect data on farmers' MECs (Hansson and Kokko, 2018; Hansson and Lagerkvist, 2015) to identify drivers underlying their decisions. The laddering interviewing technique involves two main procedures (Olson, 1989). The first step is to identify an entry point from where the interviewer can then start the probing process as a second step. The series of probes has the intended goal of determining sets of linkages between attributes (A), consequences (C) and associated values (V), forming an A/C/V ladder. Probing is repeated as many times as needed, so that the respondent can "climb up" the ladder and reveal all possible A/C/V elements (Reynolds and Gutman, 1988). The interview ends once the respondent can no longer think of an answer to the probe. Different elicitation techniques are suggested by literature to uncover the entry points from each respondent (Bech-Larsen and Nielsen, 1999). We used the direct elicitation technique, which entailed asking the respondents to list attributes

in relation to their choice of production system. More specifically, we asked farmers to list five aspects or keywords that summarized their chosen production system and what they associated with it or what it meant to them and alternatively, what led them to conduct this type of business. From these entry points, the "soft" laddering technique was used instead of the "hard" type (Costa et al., 2004). Soft laddering allows for the respondents' flow of speech to remain as natural as possible, as they can provide different reasons for answering one probe, leading to more than one (forked) answer, in contrast with the hard type of laddering structure (Costa et al., 2004), where respondents are forced to focus on only one answer. The soft laddering was preferred in our case given our rather small sample and the exploratory nature of our study (Costa et al., 2004; Hansson and Lagerkvist, 2015).

Prior to the interview, letters were sent to farmers in each country informing about the purpose of the study, the interview procedure and seeking their participation. Farmers who agreed to participate, were encouraged to prepare prior to the interview by thinking about through: what their production system (conventional/certified organic farming) meant to them and why was it important for them to work with their particular production approach. Interviews were undertaken by members of the research team, who participated in training sessions concerning the interviewing technique prior to carrying out the interviews.

In Sweden and Ireland, respondents were sampled through non-proportional quota sampling with the objective of interviewing the same number of farmers in each type of production system and of achieving a representative regional distribution. Swedish farmers were selected based on the criteria that all farmers, both conventional and organic, had crops and livestock. More so, during the sampling process, the researchers made the decision to foremost contact farmers with farms of greater size, both in terms of area (Ha) and production. This decision was made due to the greater proportion of those farmers initially contacted with smaller farms, who did not run their farms as professional businesses, but rather for purposes such as a hobby activity or subsistence farming. Livestock (beef) systems are the predominant system in Ireland, however many organic farms are mixed (livestock and crops). The Irish farms were thus sampled to cover both livestock and mixed systems for both organic and conventional farms. In France, we focused geographically on the sub-region Puy-de-Dôme and targeted mixed crop-livestock farmers, although two of the interviewed farmers with organic production turned out a posteriori to be specialised in livestock with no crop production. Tables 1 and 2 provide further details on the interviewing mode used in each country as well as information on each country's sample in relation to farm and farmers' characteristics.

3.2. Coding process

All ladders obtained from the interviews were broken down by splitting up each "ladder response", into their so called "MEC elements", which were then organized according to their correct, successive laddering order: attribute, consequence, value (Gengler and Reynolds, 1995). The French and Swedish ladders were translated into English for coding purposes. The coding involved both deductive and inductive coding. Deductive coding was first carried in order to structure the data in line with the theoretical framework of MEC. The coding scheme for deductive coding was based on the three MEC categorical concepts of attribute, consequence and value. Concerning the value concept, the Rokeach's framework (1973) was used in order to define and guide the classification of responses within this category which resulted in the value categories presented in Section 2.2: instrumental moral, instrumental competence, terminal personal and terminal social.

Inductive coding was then used for each deductive category: the *attribute*, *consequences* and the four types of *values*, in order to refine the data and create summary content codes under which the responses were categorized. Summary content codes should be constructed in a way which achieves a balance between accuracy and broadness of meaning (Costa et al., 2004). This second step, the inductive coding, was carried out separately for the conventional farms and the sample of certified organic farms and without distinction between the country cases. This first inductive coding process resulted in 105 different summary content codes for the conventional farmer interview content and 109 codes for the organic farmer interview content.

This original list of summary content codes and their corresponding definitions were then discussed among the authors, in two coding rounds. Three different coders, including the author who developed the summary content codes, in the first round, coded a 20% representative sample with these codes, to check for inter-coder reliability. Coding agreement was of 75% and the Perreault's and Leigh's reliability index (Reynolds and Phillips, 2009) of 75% for the conventional sample. They were of 73% and 84% respectively, for the organic sample. The remaining codes for which there was disagreement between all three coders, were discussed among the coders until an agreed code was reached for these. The list of summary content codes was then revised based on these discussions, which led to the second round of inter-coder reliability with similar results in terms of the levels inter-coder reliability.

3.3. Hierarchical value maps

The last step of the analysis encompassed the graphic representation of the farmers' dominant ways of reasoning, through the construction of hierarchical value maps (HVM) based on the MEC elements (Reynolds and Gutman, 1988). This type of cognitive map is drawn from an implication matrix, which outlines both the direct and indirect dominant connections among summary content codes. For the purposes of this study, six different HVMs were drawn with the LadderUX software, one for each country case study and production system, in order to identify similarities and differences of motivations between the conventional and the certified organic farms samples, as well as between

Table 1
Descriptive statistics for organic farms.

Countries	Interviewing mode	Gender (female)	Average farm size (ha)	Farming specialization	N
Sweden	Phone	16% (n = 3)	291	Mixed farming: 47% (n = 9) Livestock: 53% (n = 10)	19
France	Phone/ face to face/ video meeting	17% (n = 1)	103.5	Mixed farming: 67% (n = 4) Livestock: 33% (n = 2)	6
Ireland	Zoom	20% (n = 3)	52.8	Mixed farming: 47% (n = 7) Livestock: 53% (n = 8)	15

Table 2
Descriptive statistics for conventional farms.

Countries	Interviewing mode	Gender (female)	Average farm size (ha)	Farming specialization	N
Sweden	Phone	5% (n = 1)	242	Mixed farming: 15% (n = 3) Livestock: 85% (n = 17)	20
France	Phone/ face to face/ video meeting	0%	155	Mixed farming: 100%	5
Ireland	Zoom	0%	57	Mixed farming:15% (n = 2) Livestock: 85% (n = 11)	13

geographical regions. The HVMs enabled us to visualise connections between concepts present in the minds of the farmers, which contribute to our understanding of the farmers' decision-making processes when choosing a specific production system. As the HVM aggregates the relationships between concepts, a balance needs to be found between the quantity of data mapped and its interpretation as much data as possible should be kept in the map, while facilitating the interpretation of the HVM. As advised by Reynolds and Gutman (1988), we generated several HVMs using different cut-off values until finding the most interpretable HVM with the conservation of at least 50% of the data. The cut-off value selected for the conventional farms was at 2. For the organic farms the cut-off value was at 2, except for the Irish case for which the cut-off value was at 3. The respective HVMs are shown in the results section.

4. Results

We identified 216 ladders from the interviews undertaken with farmers with conventional farms. This includes 71 ladders for France, 144 for Ireland and 101 for Sweden. However, not all of these ladders were complete from attribute to terminal value, with some ending at the consequence level. French respondents provided on average 14 ladders with 4.3 elements each, with a total of 239 direct links and 358 indirect links between elements. Irish respondents provided on average 11 ladders with 3.51 elements together with a total of 362 direct links and 412 indirect links. Swedish respondents provided on average five ladders, with 3.32 elements per ladder and a total of 225 direct and 180 indirect links.

In the organic case, we identified a total of 610 ladders from the interviews. This includes 262 ladders for France, 195 for Ireland and 153 for Sweden. Similar to the conventional case, not all ladders were complete from attribute to terminal value, with some ending at consequence level. French respondents provided on average 13.6 ladders with 4.2 elements for each ladder, with a total of 262 direct links and 373 indirect links between elements. Irish respondents provided on average 13 ladders with 3.71 elements for each ladder, together with a total of 528 direct links and 667 indirect links. Swedish respondents provided on average eight ladders, an average of 3.7 elements for each ladder and a total of 402 direct and 424 indirect links.

4.1. France

The HVM (Fig. 1) derived from the French respondents indicate that conventional farming methods are justified with the reasoning that they allow for a "sustainable approach", to be "precise", "environmental", "a passion", "less restrictive", that they can "use of chemical inputs" and have a "healthy production". Additionally, the attributes of "progressive", "sensible" and "diversified practices" were also found among French conventional farms. In the French organic case (Fig. 2), the attribute of "no or less use of chemicals" is central, together with "low-intensive system" and "technical". Other market-oriented attributes are present such as "premium" and "certified".

"Ensure production" is a central concept in the conventional HVM (Fig. 1) and is directly connected to the attributes "healthy production" and "progressive" and to the consequences of having "less inputs",

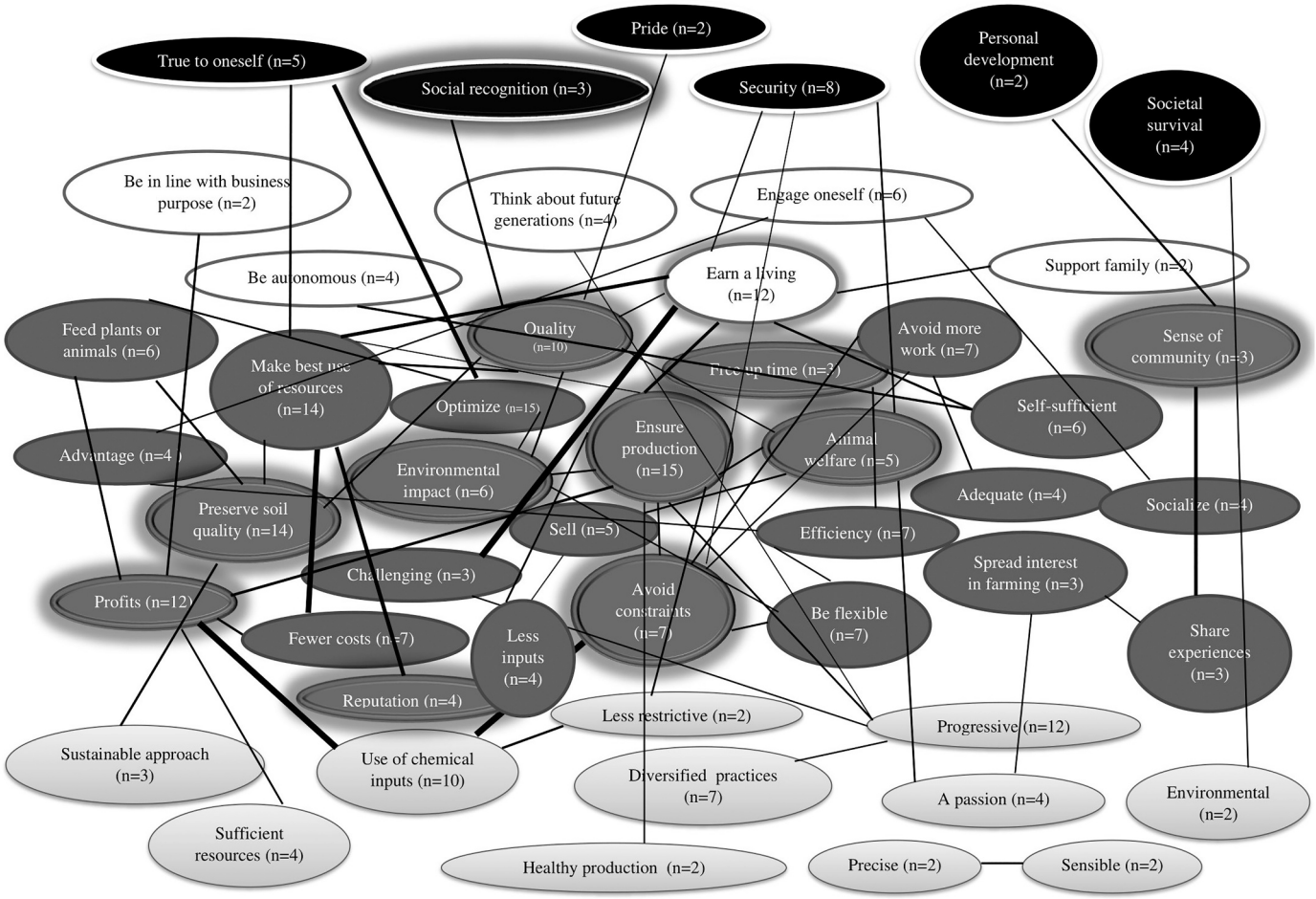

Fig. 1. French conventional HVM; Note: cut-off = 2, concepts organized from attributes-consequences-instrumental values to terminal values, from bottom elements (attributes) to top elements (terminal values), n = number of times element has been mentioned. The bolder the link is, the more often it has been repeated. Glowed bubbles correspond to the central concepts.

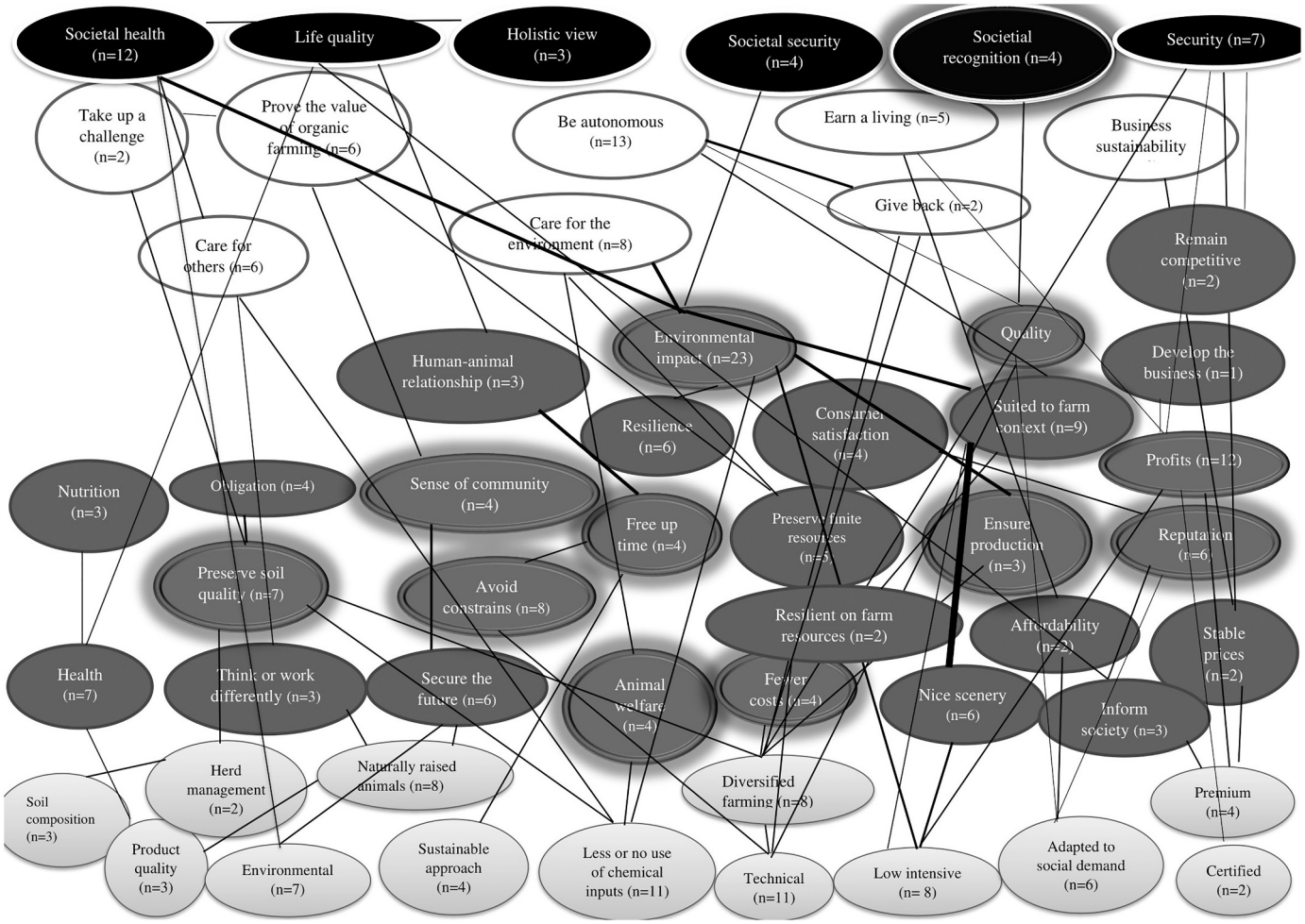

Fig. 2. French organic HVM; Note: cut-off = 2; concepts organized from attributes-consequences-instrumental values to terminal values, from bottom elements (attributes) to top elements (terminal values), n = number of times element has been mentioned. The bolder the link is, the more often it has been repeated. Glowed bubbles correspond to the central concepts.

"profits", "animal welfare", "making best use of resources" and "avoiding constraints". "Earn a living" is a central instrumental competence value which is strongly connected to the other central concept of "making best use of resources", as well as to the consequences of being "self-sufficient", "quality" and "challenging". The concept of quality is key in the motivations made by farmers holding a conventional farm.

"Environmental impact", which refers to any positive (e.g. improved water quality) or negative (e.g. pollution) impact on the environment is a central concept for the French certified organic farms that results from the attributes "less or no use of chemical inputs" and "low-intensive system" (Fig. 2). The other central consequence of being "suited to farm context" strongly results from the attribute of having a "low-intensive system" and leads to the consequences of "profits" and "environmental impact".

The bolder links in the conventional HVM (Fig. 1) reveal that "use of chemical inputs" was often linked to "avoiding constraints". "Use of chemicals" was also recurrently associated with "profits". Finally, the consequence of doing something "challenging" was often connected to the instrumental competence value to "earn a living". Comparatively the most prominent links in the organic HVM (Fig. 2) connects the consequences "nice scenery" and "suited to farm context". Another important connection is that between the consequence to "give back" and the instrumental competence value to "be autonomous".

4.2. Ireland

In Ireland, entry points given by respondents as justifications for choosing a conventional production approach, were related to personal aspects including that farming occupation, or the farm, is "inherited", "a passion", "for personal interests", "traditional", "social" and provides the opportunity to "work with animals" (Fig. 3). Furthermore, some attributes that might have been expected to be organic attributes were also mentioned such as "sustainable approach", "low-intensive", "environmental", "healthy production" and "local supply chain". In the Irish organic case, (Fig. 4) the attribute "environmental", stemming from nature or one's surroundings, "low-intensive", as well as "sustainable approach", are prominent attributes in the characterization of organic farming and the justification for choosing this system.

The central concept of the conventional HVM (Fig. 3) in the Irish case regards the economic motivation of "profits" which directly links to conventional farming being "low-intensive" and "environmental" and to the direct consequences of "fewer costs", to "sell", to "develop the business", "animal welfare" and being "self-sufficient". "Preserving traditions" and to "transmit" are other central concepts which highlight the importance of social motivations among Irish respondents with a conventional farm, whereby "legacy" and "traditions" are important. Furthermore, the terminal personal value of "life quality" is prominent for Irish respondents and is sometimes mentioned as an attribute to justify a production system. "Self-care" and "work environment" are other central concepts that show the importance of well-being in the

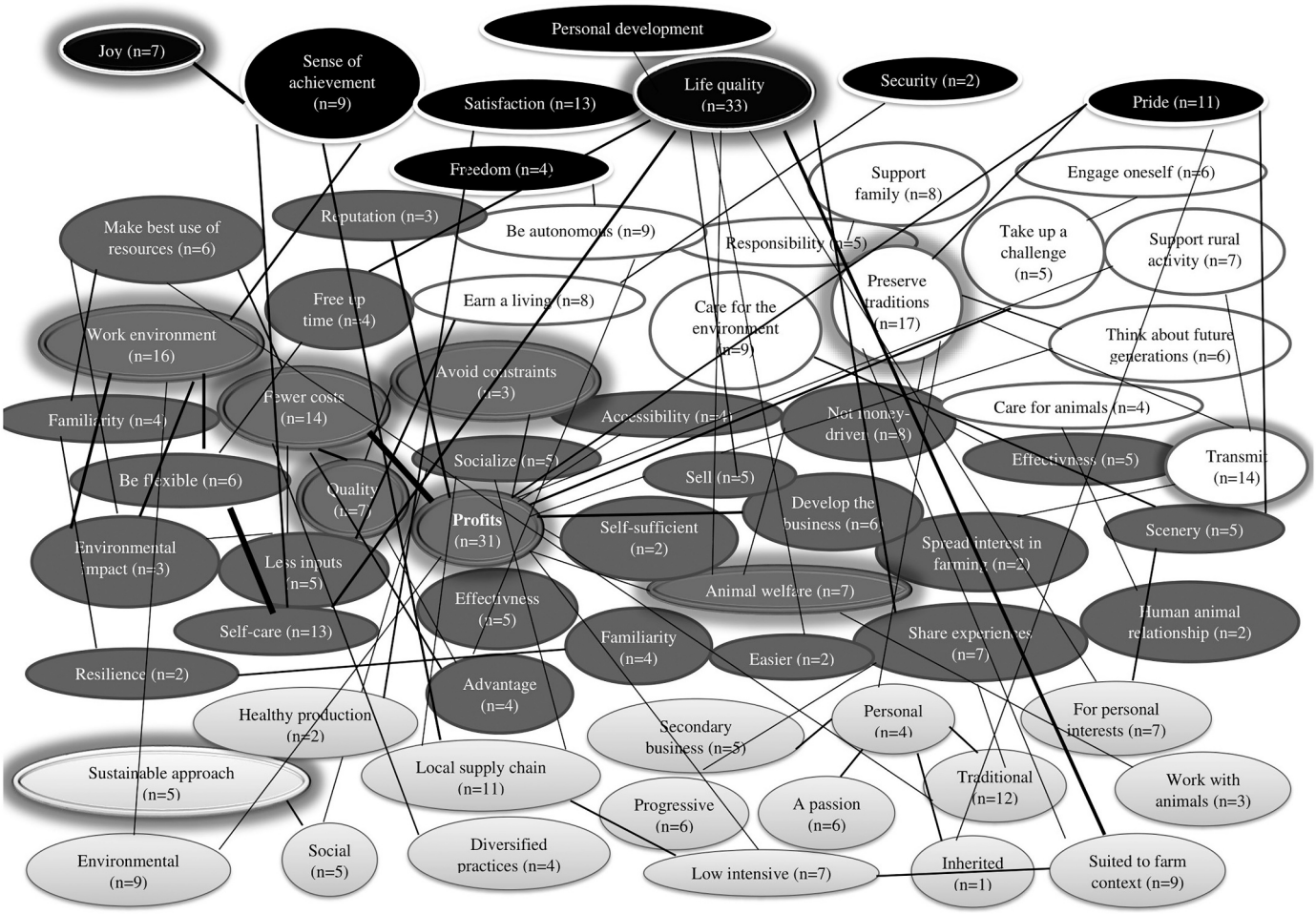

Fig. 3. Irish conventional HVM. Note: cut-off = 2, concepts organized from attributes-consequences-instrumental values to terminal values, from bottom elements (attributes) to top elements (terminal values), n = number of times element has been mentioned. The bolder the link is, the more often it has been repeated. Glowed bubbles correspond to the central concepts.

Irish case. The conventional HVM (Fig. 3) suggests that the "security" value is also important to Irish respondents with a conventional farm being linked to the instrumental competence value of "earning a living".

In the organic case, "profits" and "less inputs" are central economic consequences that dominate the Irish HVM (Fig. 4) and the link between these two concepts is the strongest for the Irish organic case. The consequence of "environmental impact", which has less of an economic affiliation, is also a central concept and strongly linked to implementing a "sustainable approach". Compared to French respondents, terminal social values are not dominant in the Irish case. However, several terminal personal values are important such as "life quality" which is central and links to the instrumental competence value of "earning a living" and to the consequences of having a good "work environment" and "profits".

The two most prominent links that the conventional HVM (Fig. 3) displays include the connection between to "be flexible" and "self-care" and the connection between the consequences of having "fewer costs" and "profits". The most prominent connections in the Irish organic case (Fig. 4) link from the "environmental" attribute to the consequences of "benefit biodiversity", which then links to "preserve soil quality", which leads to "profits", which ultimately leads to having "less inputs". One link that comes up several times is the one between "sustainable approach" and "environmental impact".

4.3. Sweden

The HVM (Fig. 5) derived from the Swedish respondents indicate that conventional farming methods are justified with the reasoning that they allow for "precision", they are "less restrictive", "suited to the farm context", make "use of chemical inputs", provide "sufficient resources" and ensure the upholding of "open landscapes". Several of the respondents also provided a justification in which they compared their production system to organic farming, hence the "in contrast to organic" attribute in the HVM (Fig. 5). The organic HVM (Fig. 6) further indicates that the central attributes that are used by farmers with organic production to characterize their production systems are related to using "less or no chemical inputs", "diversified farming" and to have "naturally raised animals". Other attributes that are related to market aspects were given in the organic case such as having a "premium", being part of a "short supply chain" and producing "products of quality" which are also "adapted to social demand".

The consequence, to "ensure production", is one of the main concepts of the conventional HVM for the Swedish respondents in the conventional case (Fig. 5) and is linked to several attributes and leads to the consequences of "effectiveness", "quality", "scenery" and "sustainability". "Profits", "effectiveness" and "efficiency" are other prominent concepts that are directly or indirectly connected to the instrumental values of "business sustainability", as well as the terminal values of "security" and "societal survival". The "suited to farm context" attribute is a central concept that leads to the consequences of "ensuring

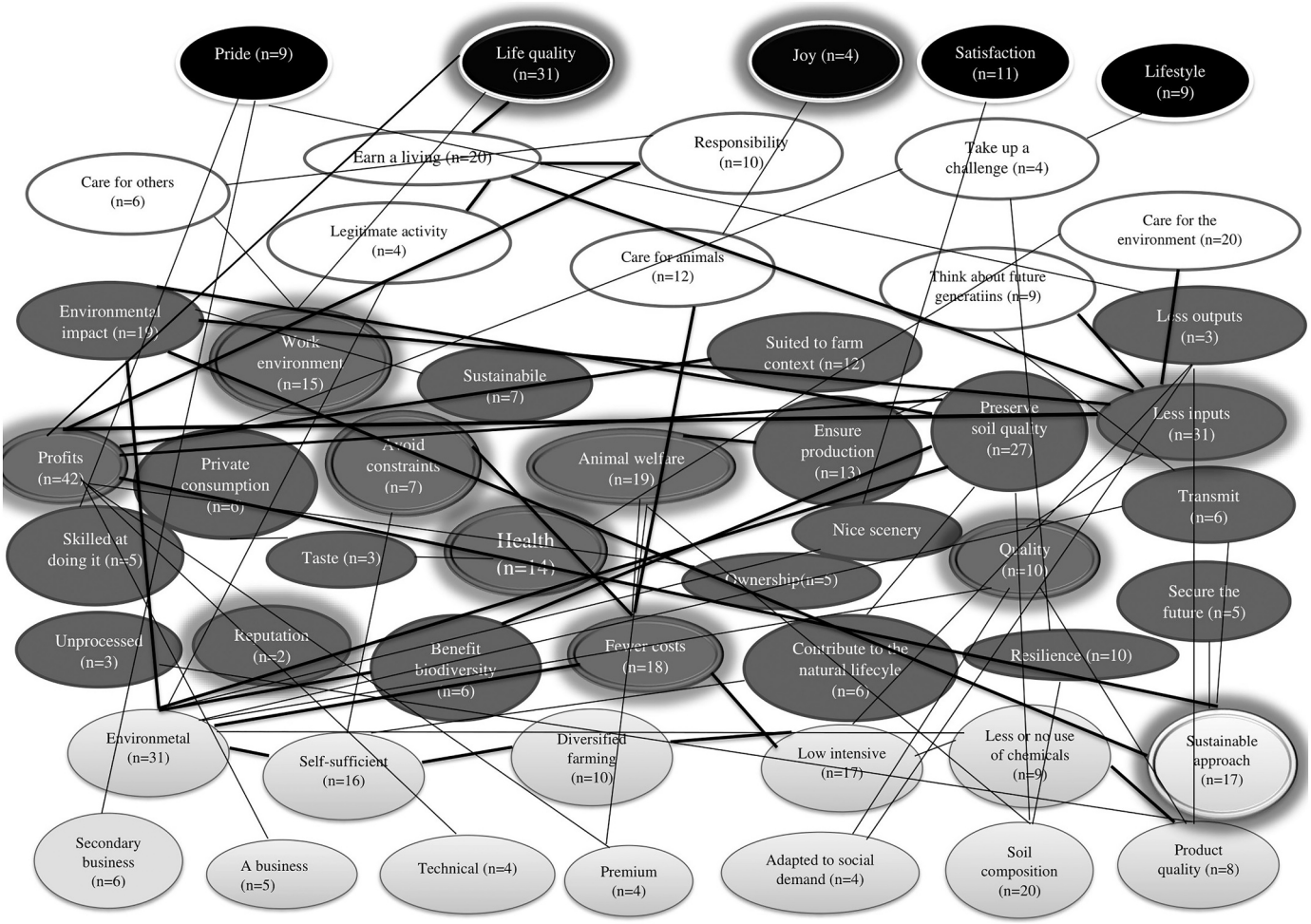

Fig. 4. Irish organic HVM; Note: cut-off = 3; concepts organized from attributes-consequences-instrumental values to terminal values, from bottom elements (attributes) to top elements (terminal values), n = number of times element has been mentioned. The bolder the link is, the more often it has been repeated. Glowed bubbles correspond to the central concepts

production" and "transparency", and to the instrumental values to "care for the environment" and to "earn a living". The most central consequences identified from the HVM for the respondents in the certified organic case (Fig. 6) are the "sustainability" concept and to "benefit biodiversity". "Sustainability" linked mostly to the instrumental moral value to "think about future generations" and to the terminal social value of "holistic view".

The most prominent ladder in the HVM obtained from the conventional case in Sweden (Fig. 5) interlinks the attribute, "suited to farm context" and the consequences of, "ensuring production" and "effectiveness". The most prominent links in the organic case in Sweden, are between the consequences of "variety", "benefit biodiversity" and "preserve soil quality" (Fig. 6). Another important connection links the attribute "less or no use of chemical inputs" to the consequence of being "reliant on farm resources", which leads to "preserve soil quality". Similarly, the attribute "sustainable approach" links to the consequence of "sustainability" which is highly linked to the instrumental moral of "thinking about future generations".

5. Discussion and conclusions

This study identified how the choice of production system among samples of farmers engaged in conventional or certified organic production from a subset of three European countries, namely France, Ireland and Sweden, can be characterised. This helps inform about the values which motivate farmers to use conventional or certified organic production approaches. This study adopted a Means-end chain (MEC) approach (Gutman, 1982) by conducting laddering interviews with respondents from conventional and certified organic farming systems, in the three considered countries. The MEC-approach, combined with the laddering interviewing technique, enabled us to uncover precise values held by the interviewed farmers. This stands in contrast to analyses conducted with surveys, in which respondents are asked to describe or order their values from a selection of pre-defined values, used in many previous studies on farmer values (Ilbery, 1983; Maybery et al., 2005; Barnes et al., 2011). Respondents' values uncovered in this study were classified along Rokeach's typology (Rokeach, 1973), which distinguishes between instrumental and terminal values and which we adapted for our purposes to understand if farmers are in a state they prefer to remain, or in state that aims to achieve something else in the future. Six HVMs were developed to summarise the cognitive representation of attributes, consequences and values related to production systems operated by the respondents. Comparing the HVMs allowed us to identify similarities and differences in the motives and values held across the different production systems (both practice-wise and geographically). The HVMs generated in this study also enabled an understanding of the links present between attributes, consequences and values, which are present in the respondents' minds and part of their decision-making processes. Our study makes a contribution to literature focused on farmers' decision-making and their choices (Gasson, 1973; Willock et al., 1999; Maybery et al., 2005; Ferguson and Hansson, 2013; Vänninen et al., 2009; Lagerkvist et al., 2012; Barnes et al., 2011;

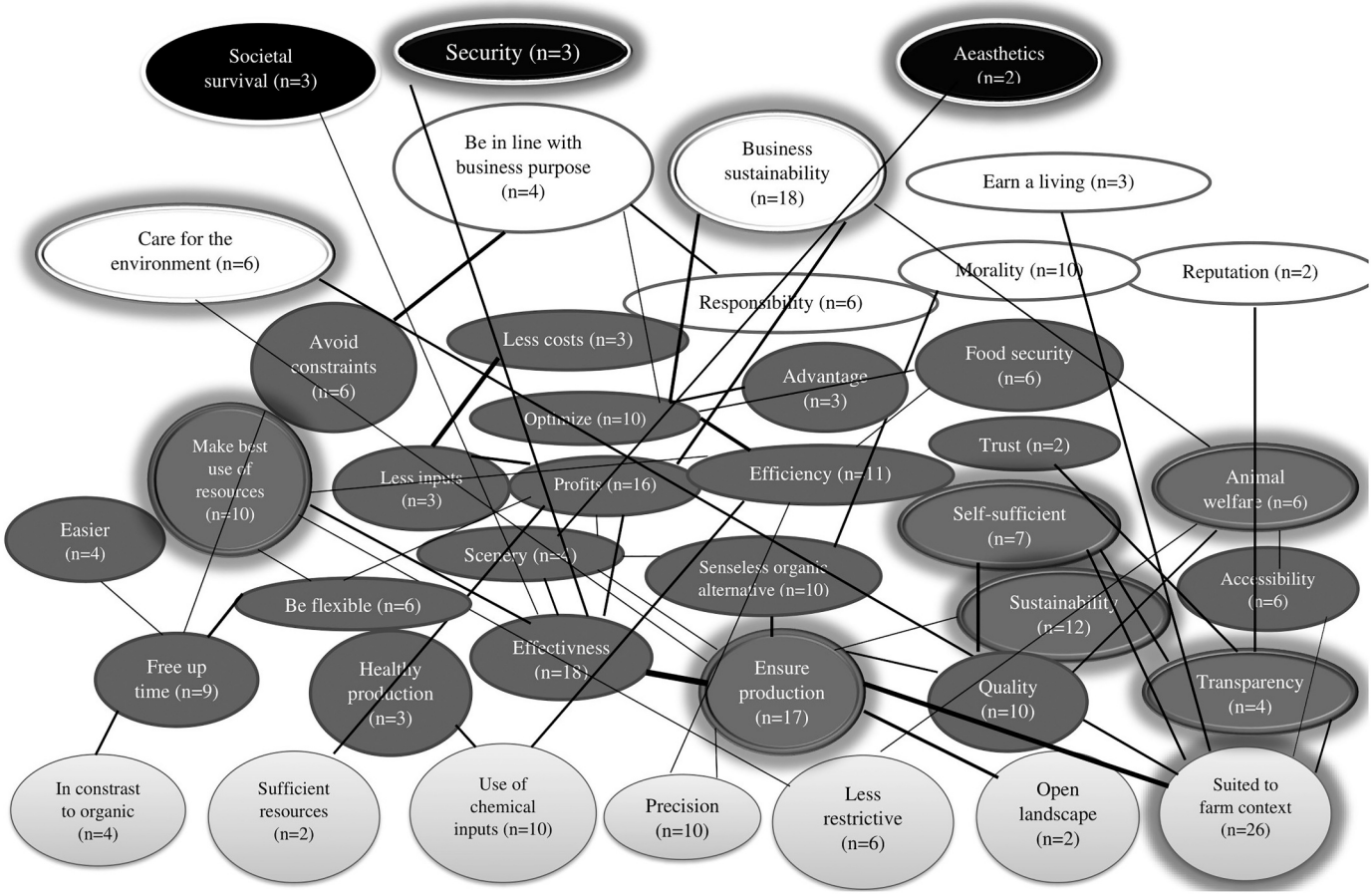

Fig. 5. HVM for Swedish respondents, conventional case. Note: cut-off = 2. concepts organized from attributes-consequences-instrumental values to terminal values, from bottom elements (attributes) to top elements (values), n = number of times element has been mentioned. The bolder the link is, the more often it has been repeated. Glowed bubbles correspond to the central concepts.

Hansson and Lagerkvist, 2015; McInerney, 2004; Vänninen et al., 2009).

To discuss the results, we distinguish between financial, business, or productivity (FBP) values and non-financial, non- business, or non-productivity (non-FBP) values, that we specifically define and use for this analysis. FBP values correspond to the types of instrumental values or consequences that concern the business (e.g. maintain the business, develop the business etc.), financial, or monetary aspects (e.g. earn a living) or the productivity of the farm (e.g. efficiency, remaining competitive etc.). Non-FBP values correspond to all instrumental values and consequences that are not related to financial, business and productivity aspects. FBP and non-FBP values are broader than the concept of pecuniary and non-pecuniary benefits developed by Howley (2015), as our defined values go further than the monetary aspect. We only refer to the FBP values and non-FBP values for the interpretation of the results, once the values were classified along Rokeach's framework. First, results indicate that both FBP and non-FBP types of values underlie both the conventional farmer's and organic farmer's decision to implement a specific production system. For example, concerning instrumental types of values, FBP values which motivate certified organic production include, "maintaining the business", "earning a living", as well as more social motives such as "morality", "care for others" and "prove the value of organic farming". Non-FBP values also motivate conventional farming such as "preserving traditions", "morality", "responsibility" and "supporting family", as well as FBP values, including "earning a living", "being autonomous" and "taking up a challenge".

With regard to terminal values, personal values are relatively more dominant than social values for both production systems as depicted by the HVMs, although the HVMs for the respondents with certified organic farms display more social terminal values than the HVMs in the conventional cases. This finding indicates that respondents with certified organic production may have more socially preferable end-states of existence, while the end-states of existence may be relatively more self-oriented among farmer with conventional production. The respondents from both the conventional and certified organic production systems, value "life quality", "security", "pride" and "joy". Both types of respondents also hold the terminal social value of "social recognition", but respondents engaged in certified organic production also hold other, as well as a greater number, of social terminal values such as, "societal security". "Societal security" was held as a value by the respondents with a certified organic farm in all studied countries. "Holistic view" and "societal health" were values held by our study's respondents engaged in certified organic production in Sweden and France.

The central concepts identified for the respondents with conventional production systems, such as "earning a living", "profits" and "ensuring production", indicate that FBP values direct and centre the other types of consequences and rationales within this type of production system. Contrastingly, for the responses from the certified organic production systems sample, the identified central concepts of "sustainability", "environmental impact" and "benefit biodiversity", indicate that farmers' decision-making with organic farms is inter-connected with non-FBP rationales. This does, however, not apply to the Irish organic case, in which decision-making is interlinked with rationales based on "profits" and "less inputs". Finally, our results highlight that farmers engaged in organic production have a more complex decision-making structure than farmers engaged in conventional production, as evident from more complex HVMs. This was especially the case for Irish

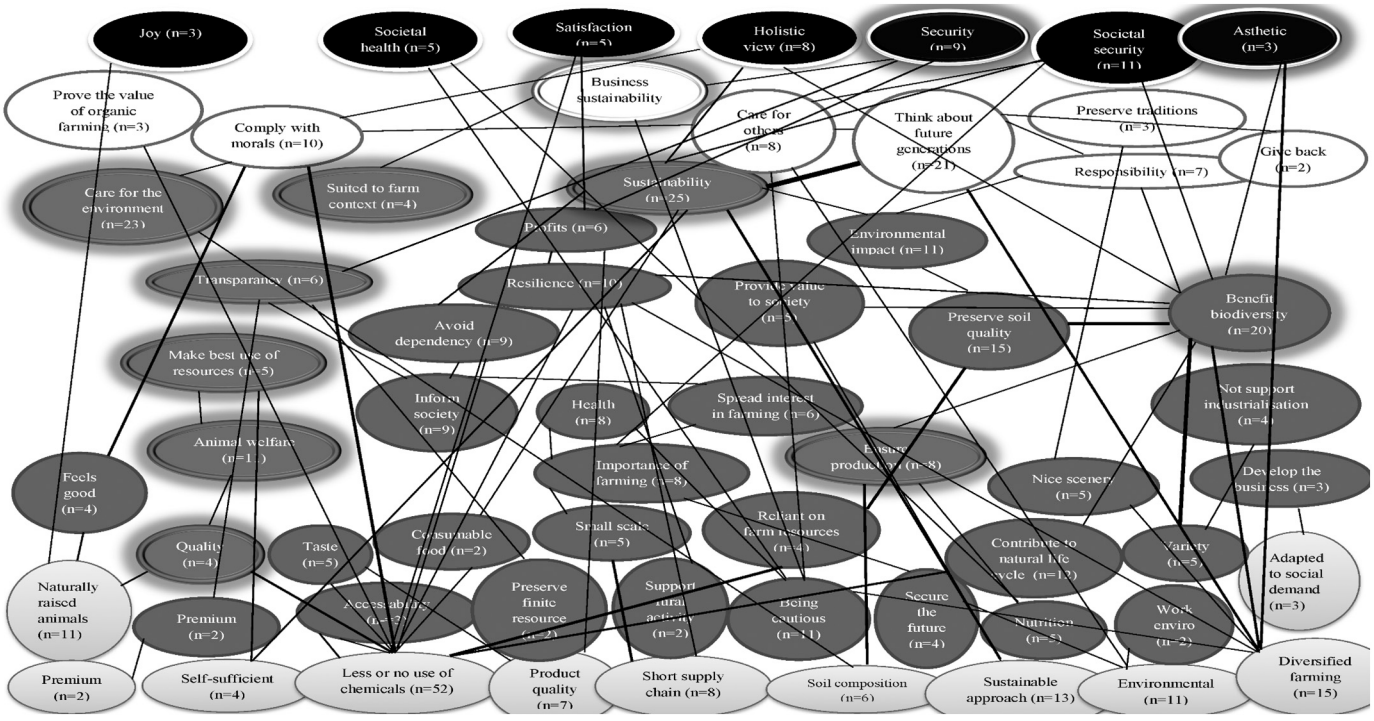

Fig. 6. Swedish organic HVM; Note: cut-off = 2; concepts organized from attributes-consequences-instrumental values to terminal values, from bottom elements (attributes) to top elements (terminal values), n = number of times element has been mentioned. The bolder the link is, the more often it has been repeated. Glowed bubbles correspond to the central concepts.

and Swedish respondents. In fact, respondents engaged in certified organic production from Sweden and Ireland presented longer ladders compared with conventional respondents, showing that these respondents tended to communicate a higher number of rationales from the same starting point. The ladders from organic farmers displayed a more complex, forked structure than ladders from conventional farmers.

Both types of respondents display values that cover terminal, as well as instrumental values. Except for in the work of Hansen and Greve (2014), farmers' values have rarely been classified along these two dimensions, despite the valuable distinction which this two-dimensional categorization provides. Instrumental values dominate terminal values in terms of frequency for all farmer sample groups, except in the case of the organic Swedish farmer group. The respondents engaged in conventional production- considering all countries together- have 1.5 times more instrumental values than terminal values, while respondents with organic production have 1.1 more instrumental values than terminal values. This may indicate that respondents with conventional production are predominantly in a state that aims at accomplishing other and more permanent life goals. Among the conventional farmers there are more respondents who end the reasoning with an instrumental value rather than a terminal value, which may reflect that these persons see farming as a means to reach a state which is not a fulfilled end-state itself, but rather a means to an end. This may be the case for respondents who farm as a secondary business, which is characteristic of the Irish sample, as this would be an activity to achieve another mean. This result also reflects the fact that some respondents sometimes reasoned with two different instrumental values succeeding each other. For instance, the willingness to "think about future generations" led to the willingness to "comply with morals". This is consistent with Rokeach (1973) who does not assume a one-to-one relationship between any instrumental and any terminal value. For instance, one terminal value may be instrumental to another terminal value or an instrumental value may be instrumental to another instrumental value (Rokeach, 1973:12).

It is worth noting that some respondents found the attribute – consequence – value focus of the interviews challenging and started their ladders with a more abstract value. This was especially the case for the Irish conventional and organic respondents. These respondents provided abstract starting points to the initial probing question regarding what motivated them to work with a specific production system, including "life quality", "pride", "satisfaction" and "joy". Furthermore, some farmers often skipped one MEC level between MEC-elements by, for instance, directly associating an attribute to a value. Instead, the MEC approach used in this analysis, assumes a linear relationship from attributes (A) to consequences (C) and consequences to values (V). This A/C/V hierarchical relationship depicts a human cognitive structure based on concreteness-abstraction dimensions and knowledge of the model may influence the researcher working with such theory to "force" such patterns on the data. This may prevent the important consideration and acknowledgement that cognitive structures of individuals may not be as linear and organized as this model. Our results instead indicate that the cognitive structures may be better represented by another relationship between the MEC-elements and future research will have an important task in furthering the understanding about the possible reversed structure or circularity of MEC-elements. There may also be cultural differences attributed to how respondents reason along their MECs, which is a topic that could be investigated in future research.

Our study's findings is useful in a policy perspective, whereby enhancing the adoption of certified organic farming practices across the EU is one of the cornerstones of the Farm to Fork Strategy (European Commission, 2020). In their policy recommendations to the European Parliament, Guyomard et al. (2021) suggest that the achievement of Green Deal objectives requires the need for changes in food consumption patterns that should be driven by the agricultural and food retail sectors, but also by public awareness campaigns of the health and environmental benefits of food such as organic produce. The identified consequences and values in this analysis can be of use for advisers to farmers and for policy makers, to support targeted communication concerning these production systems. This would comprise the promotion or marketing of the potential perceived benefits of organic farming, which are here both

non-FBP and FBP, as well as socially oriented and self-oriented. For farmers with organic farms, environmental values such as sustainability, biodiversity, and soil quality, and economic values such as earning a living and autonomy, are important and mirror many of the objectives of the EU Farm to Fork strategy (European Commission, 2020). These values could be used in promotional campaigns to show that farmers with certified organic production are already well on their way to achieving the Farm to Fork strategy. They can also be mirrored with conventional farming in order to encourage conventional farmers to make the switch. In addition, farmers with certified organic production place greater value on social values such as societal health and care for others – values that are increasingly driving consumer behaviour. While social norms are strong predictors of organic food consumption behaviour (Shahriari et al., 2019), they could also be explicitly incorporated in food awareness campaigns to attract participation in organic schemes by focusing on these social values that are important to farmers engaged in certified organic production, but which are also increasingly important to other individuals such as consumers.

The cross-country comparison of this analysis can also be used to adapt such communications and their encompassing arguments to the French, Irish and Swedish contexts. The food industry's stakeholders, including organisations such as KRAV in Sweden and Bord Bia in Ireland, could also benefit from a better understanding of farmers' choices and the personal values which drive them to apply for organic certification. Indeed, certification organisations can make use of the revealed goals and values from this study in their discourse to promote their certifications and associated labels. Furthermore, the study can be of interest to consumers in order to understand how farmers come to make the decision to maintain or implement a specific production system and the values which underlie these decisions. Finally, the farmers themselves have shown interest in gaining insight into the results of this analysis, which may indicate a willingness to understand how they themselves compare to their peers, either within the same or between different production systems. This highlights the potential sense of community that is important to continue farming in a specific way.

As a final, yet important note, future research can utilise the novel distinction of values in this paper, namely FBP values and non-FBP values, for the classification of values in theoretical frameworks. This qualitative distinction, as well as the detailed information about the nature of consequences and values from this analysis, can be adapted or utilised within future economic models regarding farmers' decision-making in relation to production systems. Today's economic models can extract further unobservable variables, to which personal values belong, by defining them more precisely based on the results of this analysis.

CRediT authorship contribution statement

Gaëlle Leduc: Conceptualization, Project administration, Formal analysis, Writing – original draft, Writing – review & editing. Helena Hansson: Conceptualization, Supervision, Project administration, Writing – review & editing. Larissa Billaudet: Investigation, Writing – review & editing. Ebba Engström: Investigation, Writing – review & editing. Mary Ryan: Investigation, Writing – review & editing.

Declaration of Competing Interest

The authors declare that they have no competing interests

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Data availability

Data will be made available on request.

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References

Adamie, B.A., Hansson, H., 2021. Rationalising inefficiency in dairy production: evidence from an over-time approach. Eur. Rev. Agric. Econ. 00 (00), 1–39. https://doi.org/10.1093/erae/jbaa034.

Ashby, A.W., 1926. Human Motives in Farming. Welsh J. Agric. 2 (1), 5.

Bardi, A., Schwartz, S.H., 2003. Values and behavior: Strength and structure of relations. Pers. Soc. Psychol. Bull. 29 (10), 1207–1220. https://doi.org/10.1177/0146167203254602.

Barnes, A.P., Willock, J., Toma, L., Hall, C., 2011. Utilising a farmer typology to understand farmer behaviour towards water quality management: nitrate vulnerable zones in Scotland. J. Environ. Plan. Manag. 54 (4), 477–494. https://doi.org/10.1080/09640568.2010.515880.

Baur, I., Dobricki, M., Lips, M., 2016. The basic motivational drivers of northern and central European farmers. J. Rural. Stud. 46, 93–101. https://doi.org/10.1016/j.jrurstud.2016.06.001.

Bech-Larsen, T., Nielsen, N.A., 1999. A comparison of five elicitation techniques for elicitation of attributes of low involvement products. J. Econ. Psychol. 20 (3), 315–341. https://doi.org/10.1016/S0167-4870(99)00011-2.

Costa, A.I.A., Dekker, M., Jongen, W.M.F., 2004. An overview of means-end theory: potential application in consumer-oriented food product design. Trends Food Sci. Technol. 15 (7–8), 403–415. https://doi.org/10.1016/j.tifs.2004.02.005.

European Commission, 2020. Farm to Fork Strategy (Issue DG SANTE/Unit 'Food information and composition, food waste'). https://ec.europa.eu/food/farm2fork_en.

Eurostat, 2020. Area Under Organic Farming % of Utilised Agricultural Area. https://ec.europa.eu/eurostat/databrowser/view/sdg_02_40/default/table?lang=en.

Ferguson, R., Hansson, H., 2013. Expand or exit? Strategic decisions in milk production. Livest. Sci. 155 (2–3), 415–423. https://doi.org/10.1016/j.livsci.2013.05.019.

Fritzsche, D.J., 1991. A Model of Decision-Making Incorporating Ethical Values.

Gasson, R., 1973. Goals and values of farmers. J. Agric. Econ. 24 (3), 521–542.

Gengler, C.E., Reynolds, T.J., 1995. Consumer understanding and advertising strategy: analysis and strategic translation of laddering data. J. Advert. Res. 35 (4), 19–33. August.

Gutman, J., 1982. Chain model consumer categorization. J. Mark. 46 (2), 60–72.

Guyomard, H., Bureau, J., Chatellier, V., Dupraz, P., Jacquet, F., Reboud, X., Soler, L.G., Tysebaert, M., 2021. The Green Deal and the CAP: Policy Implications to Adapt Farming Practices and to Preserve the EU ' S Requested by the AGRI Committee the Green Deal and the CAP: Policy Implications to Adapt Farming Practices and to Preserve the EU ' s Natural Resources.

Hansen, B.G., Greve, A., 2014. Dairy farmers' values and how their values affect their decision making. Agric. Food Sci. 23 (4), 278–290. https://doi.org/10.23986/afsci.46423.

Hansson, H., Kokko, S., 2018. Farmers' mental models of change and implications for farm renewal – a case of restoration of a wetland in Sweden. J. Rural. Stud. 60 (July 2017), 141–151. https://doi.org/10.1016/j.jrurstud.2018.04.006.

Hansson, H., Lagerkvist, C.J., 2015. Identifying use and non-use values of animal welfare: evidence from Swedish dairy agriculture. Food Policy 50, 35–42. https://doi.org/10.1016/j.foodpol.2014.10.012.

Hansson, H., Sok, J., 2021. Perceived obstacles for business development: construct development and the impact of farmers' personal values and personality profile in the Swedish agricultural context. J. Rural. Stud. 81 (December 2019), 17–26. https://doi.org/10.1016/j.jrurstud.2020.12.004.

Hansson, H., Manevska-Tasevska, G., Asmild, M., 2020. Rationalising inefficiency in agricultural production - the case of Swedish dairy agriculture. Eur. Rev. Agric. Econ. 47 (1), 1–24. https://doi.org/10.1093/erae/jby042.

Howley, P., 2015. The happy farmer: the effect of nonpecuniary benefits on behavior. Am. J. Agric. Econ. 97 (4), 1072–1086. https://doi.org/10.1093/ajae/aav020.

Howley, P., Buckley, C., Donoghue, C.O., Ryan, M., 2014. Explaining the Economic "Irrationality" of farmers' Land Use Behaviour: The Role of Productivist Attitudes and Non-pecuniary Benefits. https://doi.org/10.1016/j.ecolecon.2014.11.015.

Humble, M., Palmér, M., Hansson, H., 2021. Internalisation of farm animal welfare in consumers' purchasing decisions: a study of pork fillet at point of purchase using the means-end chain and laddering approach. Anim. Welf. 30 (3), 355–363. https://doi.org/10.7120/09627286.30.3.013.

Ilbery, B.W., 1983. Goals and values of hop farmers. Trans. Inst. Br. Geogr. 8 (3), 329–341. https://doi.org/10.1111/j.1477-9552.1973.tb00952.x.

Lagerkvist, C.J., Hansson, H., Hess, S., Hoffman, R., 2011. Provision of farm animal welfare: Integrating productivity and non-use values. Appl. Econ. Perspect Policy 33 (4), 484–509. https://doi.org/10.1093/aepp/ppr037.

Lagerkvist, C.J., Ngigi, M., Okello, J.J., Karanja, N., 2012. Means-end chain approach to understanding farmers' motivations for pesticide use in leafy vegetables: the case of kale in peri-urban Nairobi, Kenya. Crop Prot. 39, 72–80. https://doi.org/10.1016/j.cropro.2012.03.018.

Lind, L.W., 2007. Consumer involvement and perceived differentiation of different kinds of pork - a means-end chain analysis. Food Qual. Prefer. 18 (4), 690–700. https://doi.org/10.1016/j.foodqual.2006.10.004.

Maybery, D., Crase, L., Gullifer, C., 2005. Categorising farming values as economic, conservation and lifestyle. J. Econ. Psychol. 26, 59–72. https://doi.org/10.1016/j.joep.2003.10.001.

McInerney, J., 2004. Animal welfare, economics and policy. In: Report on a Study Undertaken for the Farm & Animal Health Economics Division of Defra, 68.

Mzoughi, N., 2011. Farmers adoption of integrated crop protection and organic farming: do moral and social concerns matter? | Elsevier enhanced reader. Ecol. Econ. 70 (8), 1536–1545. https://reader.elsevier.com/reader/sd/pii/S0921800911001054?token=E12BD0D7327F946B274249C46B3D8F7101792105866AB3D346760EA44B04818C192B0A77978F41BAD970125FE490B480&originRegion=eu-west-1&originCreation=20210916115344.

Olson, J.C., 1989. Theoretical foundations of means-end chains. In: Werbeforschung & Praxis Folge, 5.

Reynolds, T.J., Gutman, J., 1988. Laddering theory, method, analysis and interpretation. J. Advert. Res. 28 (1), 11–31.

Reynolds, T.J., Phillips, J.M., 2009. A review and comparative analysis of laddering research methods : recommendations for quality metrics. Rev. Market. Res. 5, 130–174. https://doi.org/10.1108/S1548-6435(2008)0000005010.

Rohan, M.J., 2000. A rose by any name? The values construct. Pers. Soc. Psychol. Rev. 4 (3), 255–277. https://doi.org/10.1207/S15327957PSPR0403_4.

Roininen, K., Lähteenmäki, L., Tuorila, H., 2010. Ecology of Food and Nutrition An application of means-end chain approach to consumers' orientation to health and hedonic characteristics of foods. https://doi.org/10.1080/03670244.2000.9991605.

Rokeach, M., 1973. The Nature of Human Values. The Free Press.

Schwartz, S.H., 1992. Universals in the content and structure of values: theoretical advances and empirical tests in 20 countries. Adv. Exp. Soc. Psychol. 25 (C), 1–65. https://doi.org/10.1016/S0065-2601(08)60281-6.

Seufert, V., Ramankutty, N., 2017. Many shades of gray-the context-dependent performance of organic agriculture. Sci. Adv. 3 (3). http://advances.sciencemag.org/.

Shahriari, E., Torres, I.M., Zúñiga, M.A., Yarlou, P.M., 2019. Values driving organic food purchase intention: a comparative analysis between a developing eastern country (Iran) and a developed Western Country (US). J. Int. Consum. Mark. 31 (4), 317–329. https://doi.org/10.1080/08961530.2018.1561345.

Sweikert, L.A., Gigliotti, L.M., 2019. A values-based private landowner typology to improve grassland conservation initiatives. Soc. Nat. Resour. 32 (2), 167–183. https://doi.org/10.1080/08941920.2018.1501526.

Van Rijswijk, W., Frewer, L.J., Menozzi, D., Faioli, G., 2008. Consumer perceptions of traceability: A cross-national comparison of the associated benefits. Food Qual. Prefer. 19 (5), 452–464. https://doi.org/10.1016/j.foodqual.2008.02.001.

Vänninen, I., Siipi, H., Keskitalo, M., Erkkila, M., 2009. Ethical compatibility of GM crops with intrinsic and extrinsic values of farmers: a review. Open Ethics J. 3 (3), 104–117. https://doi.org/10.2174/1874761200903030104.

Willock, J., Deary, I.J., McGregor, M.M., Sutherland, A., Edwards-Jones, G., Morgan, O., Dent, B., Grieve, R., Gibson, G., Austin, E., 1999. Farmers' attitudes, objectives, behaviors, and personality traits: the Edinburgh study of decision making on farms. J. Vocat. Behav. 54 (1), 5–36. https://doi.org/10.1006/jvbe.1998.1642.

Zimmerman, M., 2018. Intrinsic vs. extrinsic value. In: Zalta, E.N. (Ed.), The Stanford Encyclopedia of Philosophy. Winter 201. https://stanford.library.sydney.edu.au/archives/win2018/entries/value-intrinsic-extrinsic/.