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ORIGINAL RESEARCH PAPER

Farmers' perceptions of farm management practices and development plans on organic farms in Finland

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Abstract Organic farming is increasing in Finland, and organic farms have become larger than conventional farms, on average. As the structural change has been rapid, farmers need a broad range of new competencies to manage their farms, ranging from agronomic skills to advanced technology, labor management, and marketing skills. In this study, the characteristics of organic and conventional farms and farmers were assessed, with special focus on management practices and future development plans on organic farms. The study was based on telephone interviews of a sample of active farmers who applied for agricultural subsidies in 2014. The data consisted of 3045 farmers; 312 of them practiced organic farming and 2733 conventional farming. The data were analyzed using multivariable logistic regression. Having beef production as the main production line, having plans to develop farm production in the next 5 years, considering farm management as very important, and frequently experiencing mental strain because of farm management were significant predictors for being an organic farmer. Dairy production was less frequently organic compared to crop production. Nearly half (42%) of organic farmers planned to make changes in their farming, most commonly expanding their production. Thus, competence for managing the farm operation becomes more crucial, which increases the need for training and management consulting services. Organic farming may increase with both farm successions and new entrants joining the farming sector. Special attention should be paid to supporting these new entrants without farm-family background.

Keywords Organic · Agriculture · Farming · Management · Development · Succession · Competence

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Introduction

Organic farming area has increased in recent years in many European countries. In Finland, the target was set to increase the proportion of organic area to 20% of the total area under cultivation by 2020 (MMM 2014). In 2019, organic production covered around 13% of the total cultivated area; almost doubling in 20 years (Finnish Food Authority 2020). There were 5000 organic farms in Finland in 2019, which is about 11% of all farms (Finnish Food Authority 2020). On average, organic farms are larger (61 ha per farm) than conventional farms (51 ha per farm). Animal husbandry is more common on organic farms than on conventional farms (40% of organic vs. 24% of conventional farms). Organic dairy production covered 4% of dairy cows and 3% of all milk; a fourfold increase since the beginning of the 2000s. In egg production, the organic proportion has reached 7%, having tripled since 2010. The largest proportions of organic farmland were in grassland

(63%) and oats (14%) production (Finnish Food Authority 2020).

Despite the increase in the organic farming area, there are also farms deregistering every year. In fact, the expansion of organic production has slowed down in many countries since around 2010 (Koesling et al. 2012). This slowdown is the result of fewer farmers converting to organic production and a significant number of farmers deregistering (Koesling et al. 2012). In previous studies, organic farmers have had many kinds of financial and non-financial goals and objectives for converting, and these goals have changed over time (Padel 2001). As Koesling et al. (2012) summarized, "the reasons for choosing organic farming in the first place and thereafter to deregister include a complexity of reasons of technical, economic, social and cultural issues." In order to further promote organic farming and support the farmers, we need to understand the factors affecting the farmers' adoption or abandonment of organic farming (Cranfield et al. 2010; Läpple 2010). According to Padel (2001), farming-related motives to convert to organic include husbandry and technical reasons like animal health and soil fertility problems as well as financial motives like cost savings and premium marketing. Personal motives include health problems and risks from applying chemicals as well as more general concerns, such as food quality, conservation, and environmental concerns (Padel 2001). It seems that environmental concerns and economic reasons have become more important among farmers deciding to convert to organic farming (Padel 2001). The most important way of supporting organic production has been direct agricultural subsidies. In Finland, agricultural subsidies consist of support under CAP (EU's Common Agricultural Policy) as well as national aid schemes, which include specific support for organic production. Pietola and Lansink (2001) found that decreasing producer prices for conventional crops and increasing direct subsidies for organic production enhanced the conversion to organic farming. Similarly, Karali et al. (2014) pointed out the importance of economic incentives and subsidies paid to farmers as a reason for choosing organic production.

In Finland, the statistics clearly show that organic farms are more profitable than conventional farms on average (Economy Doctor 2020). This is not only due to higher subsidies and premium prices paid but also to lower productions costs which, in turn, compensate for lower yields in organic production (Koikkalainen et al. 2011). Pietola and Lansink (2001) found that farmers with large cultivated areas are more likely to convert to organic farming. Specializing in either livestock production or arable farming decreases the probability of converting (e.g., Pietola and Lansink 2001; Kallas et al. 2010). Kallas et al. (2010) found that older farmers with specialized large farms were not interested in converting. Among horticultural producers, owners of small farms were more interested in converting to organic production (Mattila et al. 2018).

Organic farming is usually considered more risky than conventional farming. Various risks associated with organic farming are considered a major disincentive for farmers to convert to organic farming (Gardebroek 2006). Likewise, risk-averse farmers are less likely to convert to organic farming (Läpple 2010). Besides production risks, organic farmers may also be more exposed to market risks. Even though organic farmers are less risk-averse than their non-organic peers (Gardebroek 2006), insecurities included in the organic production, markets, regulations, and payments may influence the farmers' decision to opt out (Koesling et al. 2012, Läpple 2010). This is why Cranfield et al. (2010) underlined the importance of external support from the government and marketing agencies in solving the problems and challenges faced by the farmers. Mattila et al. (2018) also suggested that besides advising on production, research and extension services should help organic farmers with business models, product processing, and marketing in order to improve their profitability.

Läpple (2010) found that Irish farmers were most likely to opt out of organic production after the expiration of the first 5-year contract, required for subsidy payments by the European Union (EU) regulations. This indicates that many farmers encounter problems after converting to organic farming. Possibly, better adapted advisory services during this period may contribute to support more farmers to maintain organic production also after the critical period of conversion. Similarly, Cranfield et al. (2010) stated that "There are many unknown variables and complications and several aspects for which farmers could use more information already during the transition."

As stated, agronomic, economic, personal, and environmental motives are behind converting to organic farming. Similar to organic production, Hansson (2011) described that the complex system in conventional dairy production also demands very broad

farmer competencies. In addition to managing a farm, which may involve agronomic skills, being an employer, constructing farm buildings, and maintaining advanced technical equipment, a farmer needs to clearly recognize the possibilities and threats of market changes, policy changes, and changes in consumer behavior (Rikkonen et al. 2013a). Further, Micheels and Gow (2011) noted that high market orientation benefits beef production farms in value creation. Therefore, more than before, a farmer needs to consider farm business aspects (i.e., value creation, cost structure, and revenue streams) in parallel with production processes and technologies (Rikkonen et al. 2013a). Earlier studies underlined organic farming as especially challenging not only in terms of professional competencies but also in terms of the social and cultural implications of choosing an alternative to the mainstream farming practice (Zagata 2010).

Converting to (or opting out of) organic production is a strategic choice for a farmer. Further, there are different strategic options after converting to organic production, e.g., diversifying farm production. Mattila et al. (2007) concluded that successful transition requires specific skills in managing change, which increases requirements for training and advisory services. The values and future goals of farmers influence how they approach their agribusiness. Rikkonen et al. (2013a) identified three farmer groups that weigh their future goals differently: growth oriented, economic success oriented, and traditional and environmentally oriented groups. Farmers focusing on economic success emphasize a more extensive time perspective in planning, i.e., combining operational, strategic, and visionary approaches. These farms had clearly the highest number of working hours, they were biggest in economic and farm size (turnover and area under cultivation), and they had a steady growth in cultivated area and quite rapid growth in revenue. Farms who emphasize economic success are also more often full-time farms.

Part-time farming has become common in all developed countries, including Finland. In 2000, 37% of the average farm-family income came from agriculture and forestry, while the corresponding share in 2017 was only 26% (Statistics Finland 2019). In 2017, about 75% of farm families obtained less than half of their total income from agriculture. Income from off-farm employment, machinery contracting, and other off-farm sources has become more prominent (Statistics Finland 2019). In 2016, about 29% of the farms had additional business activities such as contracting services, tourism, or food processing (Luke 2018).

Farm management choices are strongly influenced by the farm and farmer characteristics and farmer's objectives (Rikkonen et al. 2013b). This is caused by the unique position of the farmer engaging in strategic planning (as an entrepreneur or a manager) as well as the implementation of the chosen plan (as a manager or a craftsman), and the resulting performance (as a craftsman) (Ondersteijn et al. 2003). To plan better-tailored training and extension services to organic farmers, we should have better information on their special needs (Padel 2001; Ondersteijn et al. 2003). According to Läpple (2010), information and learning promote farmers to stay in organic production.

This study aimed to identify (1) differences between organic and conventional farms in their farm and farmer characteristics, future development activities, and management practices; (2) management competence needs among organic farmers, and (3) options to develop and strengthen existing and future organic farming. The results of the study will be useful when planning training and advisory services for organic farmers.

Methods and data

This report is based on telephone interview data collected by the Finnish Institute of Occupational Health between October 2014 and January 2015 for a study titled "Occupational health and safety in agriculture in Finland." The randomized sample was stratified by production sector to represent 12 major production sectors in Finnish agriculture. The sample consisted of 5774 Finnish-speaking active farmers who applied for agricultural subsidies in 2014 and were between 18 and 68 years of age. The data contained about 200 variables concerning agricultural production, farm management, and health outcome information for farmers (Perkiö-Mäkelä et al. 2016). The farmers in the study sample were slightly younger (49.5 years, on average) than all Finnish farmers on privately owned farms (51 years in the year 2015 (Luke Statistics 2020)). There was no statistically significant difference in the average age between farmers running organic and conventional farms in the sample.

The interview response rate was 54% (n = 3117, see Table 1). After eliminating incomplete answers, the final data used in the regression analysis consisted of 3045

farmers, 312 of which operated organic farms and 2733 conventional farms. The average arable land size of the responding farms was 51.6 ha. Organic farms were larger (on average 61 ha) than conventional farms (on average 50.5 ha). These average sizes were similar to the general average of Finnish organic and conventional farms (Finnish Food Authority 2020).

Criteria for organic

The outcome (dependent) variable for regression modelling was farm's production type, being either organic or conventional. A farm was classified as organic if it had either plant production or animal production or both in organic production, based on the farmer's answer in the interview. The proportion of organic farms in the sample (10.2%) was similar to the general average of Finnish farms at the time.

Potential determinants for organic farming

We selected variables that could potentially have an effect on the choice of the farming method (organic vs. conventional farming). These variables described farm and farmer characteristics, farm management practices, and farm development plans as listed in Table 1.

Earlier studies indicate that farm and farmer characteristics are linked to choosing whether to convert to organic or not (e.g., Kallas et al. 2010; Koesling et al. 2012). In the current study, farms were first divided into two classes based on farm size (ha). The main production line was divided into five classes: crop, other plant (including potato, vegetable, greenhouse, hay, and other, e.g., forestry), dairy, beef (other cattle than dairy), and other livestock (pig, poultry, goat, sheep, and horse husbandry) production. In addition, farms were classified into either having other business activity or not.

Farmer's age and level of education were included in the analysis. Age was divided into three and education level into two classes. Higher education included studies at a university or at a university of applied sciences. Lower education included lower professional studies, professional courses, or no professional studies at all.

In earlier studies, part-time farming was found to affect both farm decision-making and development. Off-farm income may stabilize farm-family income and reduce income risks (e.g., Kimhi and Bollman 1999). In this study, farmers were divided into full-time farmers (75–100%) and part-time farmers (< 75%) based on the farmer's estimate of what proportion of the income came from farming.

The farmers' views on farm management, management practices, and future development plans were included in the analysis. Farmers were asked about their plans to change farm production activities substantially in the next 5 years (Yes/No). Next, farmers were asked more closely about the planned changes. The responses were dichotomized with value of 1 if there were plans to develop farm production, such as increasing production, changing production line, acquiring other income, farm succession, converting to organic, or starting other business on the farm. If there were no planned changes or the change was not about developing the farm production (decreasing or discontinuing production, retiring), this variable received a value of 0.

One of the prime objectives for a family-farm business is farm succession, and the presence or absence of a successor may have a substantial effect on business objectives (e.g., Potter and Lobley 1992). In earlier studies, the likelihood of farm succession has been found to increase the probability of the farm's further development. On the contrary, farmers without a successor have little incentive to expand or develop their business ("a shadow effect") (e.g., Potter and Lobley 1992). In this study, the likelihood of farm continuation after the farmer's retirement (transfer) was included in the analysis (0/1).

Farmers were asked about their perceptions of farm management. Having hired labor on the farm and whether the farmer was co-operating with other farmers were included in the analysis (1/0). Importance of farm management for the success of the farm was dichotomized into very important (1) vs. fairly important, not so important, or not important at all (0). Mental strain from duties involved with farm management was dichotomized into often (1) vs. occasionally/seldom/never (0).

Analysis

Logistic regression (e.g., Hosmer Jr. et al. 2013) was applied for identifying determinants for being an organic farmer. First, univariable analyses were performed to explore the associations between farm production type (organic vs. conventional) with each of the selected potential determinant variables. Second, multivariable models were fitted to adjust for potential confounding factors. The final multivariable model selection was done using the stepwise (forward) selection process.

Table 1 Class frequencies of potential determinants for practicing organic farming

	Variable	Classes	Total, *N*	%	Organic farms, *n*	%	Conventional farms, *n*	%
Farm characteristics	Farm size, ha	< 50	1972	63	184	57	1788	64
		50–	1145	37	137	43	1008	36
	Production line	Crop production	1085	35	102	32	983	35
		Other plant production, other production	622	20	54	17	568	20
		Dairy	813	26	43	13	770	28
		Beef production	293	9	78	24	215	8
		Pig husbandry, other livestock	304	10	44	14	260	9
	Other business	Yes	1374	44	150	47	1224	44
		No	1724	56	168	53	1556	56
Farmer characteristics	Age	< 45	905	29	98	31	807	29
		45–54	1123	36	113	35	1010	36
		55+	1089	35	110	34	979	35
	Professional education	Lower education/no education	2094	67	196	61	1898	68
		Higher education	1015	33	124	39	891	32
	Proportion of farm income of farmer's total income	Full-time farmer, 75–100%	1747	56	178	56	1569	57
		Part-time farmer, < 75%	1347	44	142	44	1205	43
Development plans	Plans to develop farm in the next 5 years	No	2052	66	184	57	1868	67
		Yes	1065	34	137	43	928	33
	Farm succession plan	No	1979	63	182	57	1797	64
		Yes	1138	37	139	43	999	36
Management practices	Hired labor	No	2363	76	226	70	2137	76
		Yes	754	24	95	30	659	24
	Co-operation with other farmers	No	1562	50	137	43	1425	51
		Yes	1547	50	184	57	1363	49
	Perceptions of the importance of management for farm success	Fairly important/not so important/not important	1345	44	109	34	1236	45
		Very important	1741	56	208	66	1533	55
	Mental strain of farm management	Occasionally, seldom, or never	2467	79	227	71	2240	80
		Often	641	21	92	29	549	20

Both statistically significant ($p < 0.05$) unadjusted odd ratios with their 95% confidence intervals and the final adjusted model estimates are presented in Table 2. Analyses were conducted using SAS for Windows version 9.4.

In addition to statistical analyses, we conducted a descriptive analysis of the development plans and required know-how among organic farmers, based on their subjective assessments. Future plans expressed in structured and open-ended questions were analyzed and classified. Similarly, competence requirements were classified into themes.

Results

The final adjusted model showed that having beef production as the main production line, having plans to develop farm production in the next 5 years, considering farm management as very important for farm success, and experiencing mental strain because of farm management often were significant predictors for organic farming (Table 2). Dairy production was found to be less frequently organic compared to crop production. Several determinants that indicate initiative and development intentions were associated with organic farming

Table 2 Determinants of organic production in unadjusted and adjusted regression models (n = 3045)

	Frequency[a]	Unadjusted model		Adjusted model	
		OR	95% Cl	OR	95% Cl
Farm size, ha					
< 50	1919	Ref.			
50–	1126	1.32*	1.05–1.67		
Production line					
Crop production	1061	Ref.		Ref.	
Other plant production, other production	604	0.92	0.65–1.30	0.89	0.63–1.27
Dairy cows	799	0.54*	0.37–0.78	0.45*	0.31–0.66
Beef production	285	3.50*	2.51–4.86	2.89*	2.06–4.07
Pig husbandry and other livestock	296	1.63*	1.12–2.38	1.43	0.97–2.12
Professional education					
Lower education/no education	2066	Ref.			
Higher education	979	1.35*	1.06–1.71		
Plans to develop farm production in next 5 years					
No	2389	Ref.		Ref.	
Yes	656	2.01*	1.56–2.58	1.90*	1.46–2.47
Farm succession plan					
No	1930	Ref.			
Yes	1115	1.37*	1.09–1.74		
Co-operation with other farmers					
No	1524	Ref.			
Yes	1521	1.40*	1.11–1.77		
Perceptions of farm management, importance for farm success					
Fairly important/not so important/not important	1329	Ref.		Ref.	
Very important	1716	1.54*	1.21–1.96	1.35*	1.04–1.74
Strain of farm management					
Occasionally, seldom, or never	2417	Ref.		Ref.	
Often	628	1.65*	1.28–2.14	1.46*	1.10–1.92

OR, odds ratio estimates; *CI*, 95% confidence intervals

*Statistically significant $p \leq 0.05$

[a] Frequency that was used in adjusted modelling

including higher education, co-operation with other farmers, farm succession, and plans to develop farm activities.

Out of organic farmers, 42% (134 farmers) described their planned changes. Out of these farmers, 34% planned expanding, 20% planned to change the production line, and 19% planned farm succession (Table 3). Further, 12% planned to discontinue agricultural production, 11% planned to retire, and 10% planned to reduce production. Only 4% planned to increase other (off-farm) income. Other changes, such as starting food processing, farm tourism, or renting out farmland, were only mentioned 1–3 times each.

Expansion plans were most frequent among younger farmers and on farms having hay, silage, or other plant production as their main production line. Planning expansion was less common among crop and dairy farmers than among other livestock farmers having plans for change. Similarly, planning to change the production line was more common among younger farmers; about every fourth organic farmer under 54 years old with plans to change their production planned

to change their main production line. Further, every third dairy farmer and every fifth crop farmer planned to change their production line. This may correspond to the common trend of increasing crop production and decreasing livestock farming as a main production line (Niemi and Väre 2019) but this cannot be revealed from the data.

Among elderly farmers, farm succession was the most commonly planned change. Farmers with crop production had succession plans more frequently than farmers with other lines of production.

The most commonly mentioned competence requirement among full-time organic producers was economic competence, such as budgeting and book-keeping (38%), followed by administrative knowledge, such as agricultural subsidies, bureaucracy, and laws (20%), planning and managing the farm entity (14%), as well as ability and motivation to learn (14%). Only few farmers mentioned attitude and activity (11%), management of employees (9%), supervision of work (8%), management skills and education (6%), experience (6%), information technology (4%), control of networks and interest groups (2%), and interaction (1%).

Table 3 Development plans among organic farmers by production line, age, and type of planned change; (%) of farmers planning to change their production

	Expanding production (%)	Changing production line (%)	Farm succession (%)
Production line			
Crop production	28	21	28
Other plant production, other production	43	14	10
Dairy	28	32	20
Beef production	39	17	19
Pig husbandry and other livestock	38	13	6
Farmer's age			
< 45 years	54	24	2
45–54 years	33	26	9
> 55 years	17	10	44
All farmers planning changes	34	20	19

Discussion

Organic production can increase if existing organic farmers expand or diversify their production or if new farmers convert to organic production while opting out and converting back to conventional production remains at a low level. Such farmer choices are influenced by many financial and non-financial motives, reasons, and objectives. This study aimed to quantify the association of some of these factors with organic farming. Reported development plans and competence needs were also explored to gain a better understanding of the conditions that could support the growth of the Finnish organic agriculture sector.

Sustainability and profitability are among the main reasons behind the attractiveness to convert to organic farming. According to the synthesis study of Crowdera and Reganold (2015), organic agriculture was significantly more profitable (22–35%) and had higher benefit/cost ratios (20–24%) than conventional agriculture. The profitability of organic production has also increased in Finland in recent years, the biggest difference in favor of organic (vs. conventional) production occurring during the years 2013–2015 (Economy Doctor 2020). The better profitability of organic farms in Finland is based on higher prices of products, subsidies paid for organic production, larger farm sizes, and lower production costs, which all compensate for the lower crop yields (Koikkalainen et al. 2011). On average, Finnish organic farms are larger (61 ha per farm) than conventional farms (51 ha per farm) (Finnish Food Authority 2020). Earlier studies have also found that larger field area favors organic farming (e.g., Pietola and Lansink 2001; Koesling 2012). In our study, larger field area was a significant predictor in a univariable analysis, but not in the final adjusted model.

Organic farms are typically livestock farms as the strengths of organic farming are based on grassland and bovine production (Koikkalainen et al. 2011). Having beef production as the main production line was a significant predictor for organic farming in our study as well. In Finland, the proportion of organic producers is about 25% of all beef producers, whereas corresponding proportion among milk producers is only 2.5% (Finnish Food Authority 2020; Niemi and Väre 2019). This is highly different from the situation in other Nordic countries, e.g., in Denmark, where somewhat less farmland is managed organically than in Finland (10.9% by 2019) (Eurostat 2021), but about 15% of the 2800 dairy farms

in 2019 were organic (Statista 2020). In Finland, the number of organic dairy cows and amount of milk produced have increased lately more than number of organic dairy farmers, and organic dairy farms are typically bigger than conventional ones (Finnish Food Authority 2020; Niemi and Väre 2019).

In the current study, organic farmers had plans to develop their farm production in the next 5 years more often than farmers on conventional farms. One-third out of those organic farmers planning to change their farm production were planning to expand it. Expansion plans were most common among those farmers having "other plant production" (hay, grass, silage) or other livestock than dairy cows as their main production line. Corresponding development has also been noted in the development of organic area and production in Finland (Koivisto et al. 2020). While the organic area has increased almost 80% during 2010–2019 (Finnish Food Authority 2020), most of this increase has occurred in grassland area and less in crop production (Koivisto et al. 2020). More than half of the organic grass is produced on organic crop or other plant farms or on conventional cattle farms. This grass area is not utilized for pasture or feed for organic cattle, but to comply with the organic production rules. Therefore, the increase in organic grassland has not led to a corresponding increase in organic milk or beef production even though the number of organic calves and dairy cows has increased lately, too (Koivisto et al. 2020). Thus, the increase in organic area has not resulted in an increase in the volume of edible organic products to the same extent (Koivisto et al. 2020). One reason for this is that the subsidies paid are based on agricultural area, not production. Thus, it may be more profitable for the farmer to maximize the organic subsidies with low input usage instead of efficient production of organic products for the market. This difference and development should be taken into consideration when planning actions for promoting organic production further (Koivisto et al. 2020).

In 2019, the average age of Finnish farmers was 53 years; 30% of farmers on privately owned farms were over 60 years old and only 8% under the age of 35 (Luke Statistics 2020). The aging of the farmer population may have several implications, such as limited willingness to implement new technologies and innovations (Howley et al. 2012). In our dataset, the average age of farmers was slightly younger than that of all Finnish farmers, and there was no significant difference between organic and conventional farmers. The result is in accordance with findings of Mattila et al. (2018). However, some earlier studies suggest that converting to organic production is more likely among younger producers (Padel 2001; Kallas et al. 2010). In our data, the next generation's commitment to farm business was positively associated with organic production. A considerable proportion of the older farmers was also planning farm succession in the next years. Former studies, e.g., Potter and Lobley (1992), have found that farmers with a successor have a constant incentive for expansion and forward planning of their business. Aging of the farm population and decreasing number of successors may have a remarkable negative impact on the development of and interest in converting to organic production. In Finland, like in most European countries, farms are traditionally transferred to family members and only limited number of new farm entrants come from outside farming. These kinds of farm transfers have not been studied nor promoted much until lately (EIP-AGRI 2016). Earlier studies indicate that organic farmers are more likely to be new entrants (Padel 2001; Rigby et al. 2001). In other words, organic farming may increase with new entrants joining the farming sector. Expansion potential could be found with arrangements that make organic production possible and attractive for people without farm-family background. Further development should focus on this theme, including best practices in transferring know-how, organizing training and education, development of funding instruments for different company types, and other issues essential in change management.

When studying changes in farm and environmental performance over time, Ondersteijn et al. (2003) found these characteristics to be positively affected by the farmer's education. Besides education, importance of know-how and professional skills cannot be overemphasized when developing organic farms. As stated by Läpple (2010), information and learning support farmers to maintain organic production. In the current study, farmers on organic farms were found to be more educated than farmers on conventional farms. Higher prevalence of development plans among organic producers is a promising signal when the target is not only to increase but also to diversify the organic production in Finland. Existing organic farmers may already have the needed competencies and machinery, which both lower the risks and increase the usage level of machinery. However, as stated by Mattila et al. (2018), farmers

are very likely to need professional help with business models, product processing, and marketing. This especially applies to those diversifying their farming activities or starting their own food processing and marketing. Besides professional help and education, also policy measures are needed. In order to increase the volume of edible products, farmer incentives have to be improved so that they not only motivate to farm organically but also to produce and develop products that are sold to consumers (Koivisto et al. 2020).

Experiencing mental strain because of overloading by farm management tasks was also more common among organic farmers. Based on earlier reports, organic farms on average are more profitable than conventional ones, which also indicate that they have invested in improving farm economy and management (Economy Doctor 2020). According to Mäkinen (2013), even if causing strain, it seems to be essential for good performance that the farmer has a clear vision on how to develop farming in the long run and has a recognized business plan with plans for investments and how to achieve identified short-term goals. Firm confidence in the farmer's own managerial skills, the idea of a farm as an entrepreneurial business unit, and the intention to follow the corresponding principles with concise business management indicate a strong entrepreneurial orientation (Mäkinen 2013). Even if need for a productive farm business management have caught a lot of attention recently, it has to be noted that within farm enterprise, there are other aspects too. Hansson (2008) indicated that personal aspects, such as values, experience, and attitude, are more important for improving farm efficiency than the aspects of formal management systems.

As organic farming seems to be linked with experiencing more mental strain from management duties and also considering these duties as more important, it can be concluded that organic farmers would benefit from further competence building, the most important being economic competence and administrative knowledge. Quite many (14%) full-time organic farmers mentioned the importance of the ability to manage farm entities and the motivation and ability to learn as key competencies. As managing the farm entity becomes more crucial, both training and consultation on management are very much needed when developing organic farms and farming in the future. Hansson (2008) also suggested that, in order to support dairy farms to become more efficient and thus more profitable, it is important to organize combined training and discussion clubs where the farmers are able to learn from both each other and professional dairy farm advisors as well as inspiring each other. Similarly, Nuutila and Kurppa (2017) and Nuutila (2018) emphasized food chain level collaboration in order to enhance the fairness of the system, increase farmers' profits, and further develop the organic production in Finland.

There are many reasons for farmers to co-operate with other farmers, the most important being sharing risks and decreasing machinery costs (Samuelsson et al. 2008). Similarly, e.g., Asai and Langer (2014) underlined the importance of collaborative partnerships which could contribute to adaptability and flexibility of organic farmers when facing, e.g., changing regulations. Our study results suggest that organic farmers are co-operating more than conventional ones, even though the variable was not statistically valid and hence not included in the final adjusted model.

Further support is needed also from the government, not only for motivating professional and product-oriented organic farmers through policy measures (Koivisto et al. 2020) but also for solving the problems and challenges that farmers are facing (e.g., Cranfield et al. 2010). For example, the digitized services for economic monitoring and forecasting, as well as different easy-to-use tools for administrative work (such as applying for subsidies and permits), can help to meet the requirements on economic competence and administrative knowledge.

Conclusions

This study suggests that organic farmers in Finland are actively developing their farms but experiencing mental stress because of managing practices. Thus, they would benefit from further competence building, the most important being economic competence and administrative knowledge. In future, research and educational efforts should be directed particularly to managing of different change situations on farms. Special attention should be paid to supporting farm successions and, especially, new entrants without farm background. Possible strengths and attractive elements of organic farming should be studied further to be able to promote organic production, and collaborational activities between organic farmers should be encouraged.

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Declarations

Conflict of interest The authors declare no competing interests.

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