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Article

Are Family Farms' Social Sustainability Concerns Addressed by Assessment Tools? A Literature Review and Coverage Check

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Abstract*: The study focuses on the social dimension of farm sustainability in Switzerland. The degree to which existing farm sustainability assessment tools captured what farmers perceived as important regarding farm social sustainability was investigated. First, a systematic literature review was conducted to identify themes that farmers are concerned with. Then, "sub-themes" of relevant social sustainability themes were further deduced. Six farm sustainability assessment tools (SALCAsustain, SMART, RISE, IDEA4, MOTIFS, and PGTool) were screened and categorised according to whether they (a) fully or partly included each identified sub-theme or (b) included a sub-theme explicitly or by a related aspect. It was found that among the selected tools, SMART covered the most sub-themes fully and explicitly (11 out of 19). SALCAsustain, RISE, and IDEA4 ranked similar with 8, 7, and 7 sub-themes addressed fully and explicitly. MOTIFS and PGTool captured fully and explicitly only 1 sub-theme each. Hence, it was concluded that the farm sustainability assessment tools available to Swiss farmers reflect the concerns of farmers to different degrees.*

Keywords*: Social sustainability; Agriculture; Sustainability assessment tool; Farmers' concerns.*

1. Introduction

Our agricultural systems suffer from a lack of social sustainability. Most of the child labour and forced labour takes place in farming in the Global South (Carter, 2017), whereas burnout and overwork rank high on farms in the Global North (Mann et al., 2019). Too little reflection on these problems is also indicated by the low rate of applying sustainability assessment tools by farmers (Binder et al., 2010; Triste et al., 2014). There are many sustainability assessment tools already available (De Olde et al., 2016; Desiderio et al., 2022; Janker and Mann, 2020). A hypothesis to explain the lack of applying sustainability assessment tools is that the benefits do not outweigh the effort to conduct the assessment. A point in case for this hypothesis is the finding that sustainability assessment tools lack a focus on the decision support for implementing improvement measures (Coteur et al., 2020). Therefore, a starting point of this study is the question of how the benefit of sustainability assessments for farmers can be increased. It is recommended that assessment tools capture themes that may be perceived as relevant by their users to foster engagement in sustainability enhancement (i.e., "broad acceptance by major stakeholders"; De Olde et al., 2017; Leite et al., 2024). Moreover, increasing the inclusions of farmers' expressions may improve the measurement of farmers' well-being, and there is a positive relationship between farmers' well-being and their willingness to adopt environmentally friendly farming practices (Isaac et al., 2024; Frątczak-Müller et al., 2024). Therefore, this study focuses on the degree to which farm sustainability assessment tools include concerns of farmers. We focus on farmers because they are

a main user group of farm sustainability assessment tools, and even more importantly, they must realize changes to improve sustainability on their farms (Binder et al., 2010).

Themes of high personal relevance for farmers can be found in all three sustainability dimensions, that is, the environmental, economic, and social dimensions, such as the financial viability of the farm or the feeling of responsibility for care of the environment (Röös et al., 2019; Saleh and Ehlers, 2023). This study looks at the social dimension. Social sustainability has recently caught up in concept development and operationalization after being given less attention in the beginnings of sustainability measurements (Janker and Mann, 2020). Social sustainability concerns people, specifically their norms and perceptions of a good state of society (Janker and Mann, 2020; Vallance et al., 2011). Since norms and perceptions about when people are well and how they can live well together can differ between places and times, social sustainability is said to be context- and place-specific and requires context-specific solutions and therefore measurement (Bélanger et al., 2015; Dempsey et al., 2011; Isaac et al., 2024). For this reason, it is challenging to provide a comprehensive, specific, and end-user-relevant, globally valid set of social sustainability indicators (Sannou et al., 2023; Triste et al., 2014). Consequently, it seems sensible to ensure a certain degree of context-specificity of social sustainability measurement, where context can refer to the geographical context, the farm size/type, or the production system, such as animal husbandry, crop farming or mixed systems, for instance (Bélanger et al., 2015; Leite et al., 2024; López-Ridaura et al., 2022). The focus of the study is on Switzerland, where 98% of the farms in the country are family farms (BfS, 2014). No context for the production system was defined.

This paper addresses two main questions: (1) Which themes or aspects of social sustainability are most relevant to Swiss family farms? (2) Which sustainability assessment tool(s) best reflect the concerns of Swiss farmers? We took inspiration from the study of Röös et al. (2019) and compared different sustainability assessment tools regarding their coverage of aspects that are relevant to Swiss farmers. Röös et al. (2019), the only publication we found on the inclusion of context-specific social sustainability concerns of farmers in sustainability assessment tools, initially identified aspects of social sustainability that are most important for Swedish livestock farmers before comparing three sustainability assessment tools regarding the coverage of these aspects. We contribute to the state of knowledge by collating the aspects of social sustainability relevant to family farmers from existing studies, by showing which tool(s) of a range of selected sustainability assessment tools cover most of these aspects, and by highlighting the gaps—that is, the concerns of family farmers that are not reflected by the selected tools.

In the next section, we describe how we identified topics relevant to family farmers and how we selected sustainability assessment tools or frameworks for the review of the identified topics. In the Results section, we present our findings on the aspects of social sustainability that are relevant to Swiss farmers and on the coverage of the relevant topics of the tools. We then discuss our findings and present some concluding remarks on indicators for social sustainability in the Swiss farming context.

2. Materials and methods

2.1. Identification of farmers' social sustainability perceptions

To identify social sustainability themes, aspects, or perceptions that are relevant for Swiss farmers, we conducted a literature search for scientific publications on this topic. The literature search was conducted using the databases Scopus and Web of Science in April 2024. The documentation of the literature search was done according to the PRISMA guidelines (Page et al., 2017). In the first step, we searched for publications specifically on Swiss farmers, given our aim of being as specific to the Swiss context as possible. However, since the first search yielded only two relevant publications, we decided to widen the search to include publications on family farms, since the majority of farms in Switzerland are family farms (BfS, 2014), and we assumed that there might be similarities in the problems that family farms face in other countries. The Boolean search term for the search is given in Table 1, together with further details on the search. Even after widening our search term, the search still resulted in only

five publications that reported information that was relevant to answering our research question (see Figure 1). Most studies that covered similar content predefined social sustainability themes or indicators. We refrained from including a search on human well-being and quality of life in farming because our focus was on aspects that farmers in our study context would find important in a sustainability assessment.

Table 1. Specifications of the literature search for social sustainability aspects and frameworks and tools for assessments

	Search for "social sustainability perception"		**Search for "frameworks and tools for sustainability assessments"**
Databases	Agrarforschung Schweiz [Agricultural research Switzerland]	Web of Science, Scopus	
Search terms	1: Soziale Nachhaltigkeit [social sustainability]	2: (social AND sustainability AND (Switzerland OR Swiss) AND (agriculture OR farm))	6: ((((social) AND (sustainability)) AND (indicator*)) AND (agriculture OR farm*) AND (sustainability AND assessment AND tool))
		3: (social AND sustainability AND (family AND farm*) AND (agriculture))	
		4: (perception* AND sustainability AND (family AND farm*))	
		5: (perception* AND (social AND sustainability) AND (family AND farm*))	
Search sections in the document	Not specified	Search in title, abstract and keywords (Scopus) or all fields (Web of Science)	
Search time	April 2024		
Publication time frame	2014 to 2024		
Search limitations	None	Research articles, written in English	

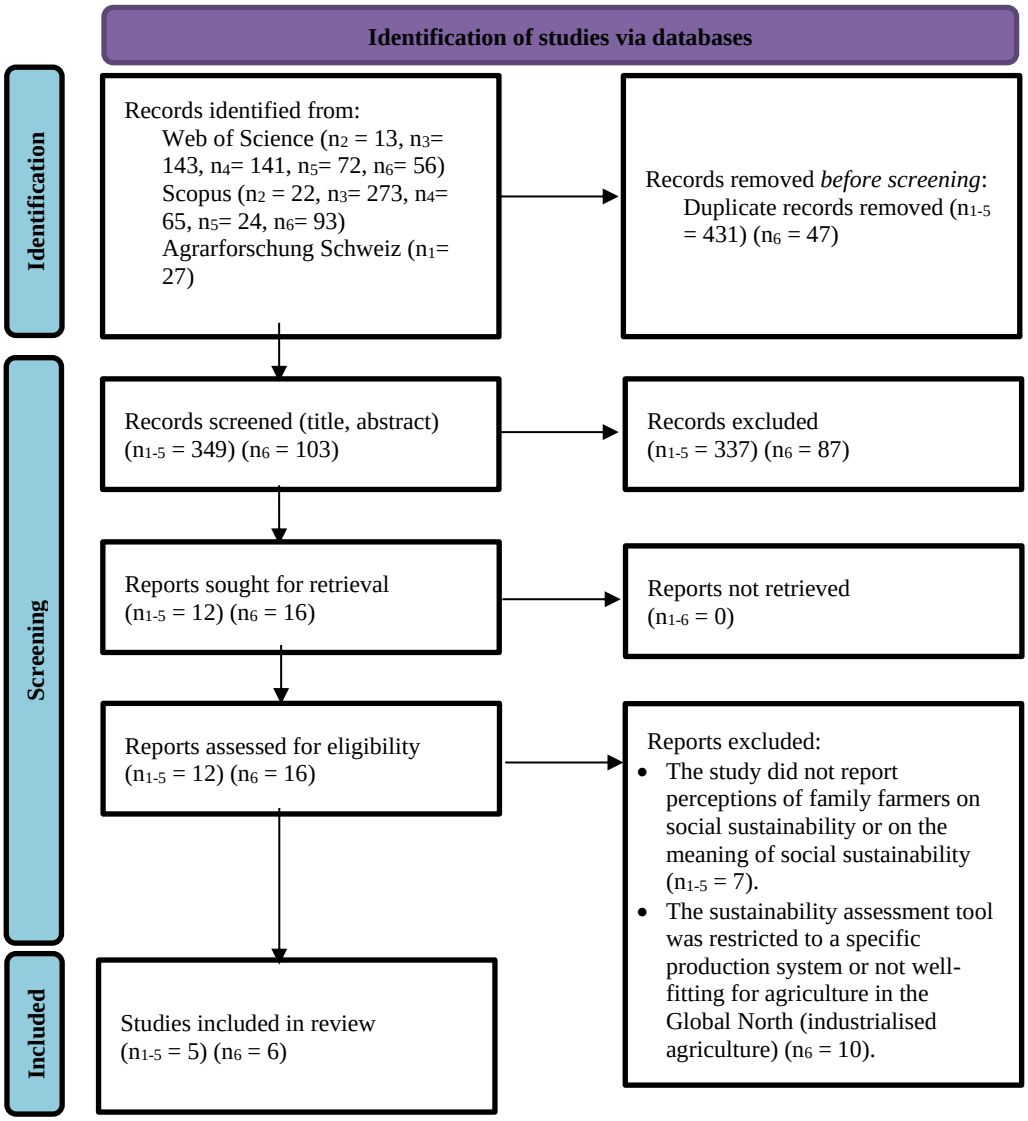

Figure 1. Process of the selection of publications included in this study (adapted from Page et al., 2017)

The number of records per search term and the number of excluded studies as well as reasons for exclusions are shown in Figure 1. The screening resulted in five publications that further informed this study on social sustainability themes (see Table 2). Four of the publications reported results that were relevant to our study from qualitative and one from quantitative research approaches. The research took place in different countries in Europe, Africa, and South America (see Table 2). Where possible, we indicated how often a topic was mentioned in a study—that is, the share of mentions linked to a specific theme of the total mentions of all themes. For some studies, these figures had to be calculated from the information given in the publications. In some cases, we have summarized several theme categories reported in a publication into one category or dismissed a category, which seemed to us not to represent a social sustainability theme relevant for sustainability assessments (e.g., "discouragement", "education" or "importance of social sustainability" from Saleh and Ehlers (2023), "modernization of agriculture", and "identify and respond to external threats" from Baccar et al., 2020).

Table 2. Publications on perceptions of farm social sustainability included in this study

Author(s) and publication year	Study topic	Data collection method and sampling	Country of study
Baccar et al. (2020)	The translation of farmers' perceptions of farm sustainability to their farms	In-depth interviews with 36 farmers ("What does 'a farm able to endure in the future' mean to you?")	Morocco
Contzen and Häberli (2021)	Swiss dairy farmers' perceptions of quality of life	Qualitative interviews or focus group discussions with 30 individuals of 16 Swiss dairy farms	Switzerland
Czismady et al. (2021)	The perceptions of young wine farmers regarding sustainability	Semi-structured interviews with 15 farmers and 5 representatives of local key actors, and 1 focus group with stakeholders, including farmers	Hungary
Laurett et al. (2021)	The perception of Brazilian family farmers of sustainable development in agriculture	Semi-structured face-to-face interviews with 23 farmers	Brazil
Saleh and Ehlers (2023)	What is important to Swiss farmers in relation to social sustainability on their farms	Online-survey (association with social sustainability, ranking of predefined themes) with 354 Swiss farmers	Switzerland

2.2. Selection of farm sustainability assessment tools

A large number of sustainability indicators, frameworks, and tools have been developed for different purposes (Singh et al., 2012). Moreover, the target audience for the results of the sustainability assessments may differ, as well as the assessment level, for example, a whole farm versus a farm branch (Bélanger et al., 2015). For our study, we aimed to identify sustainability assessment tools designed to assess the farm as a whole and suitable for a Global North farming context.

To identify frameworks and tools to be screened regarding their coverage of social sustainability themes relevant to Swiss or family farmers, we conducted a literature search in April 2024 on the Web of Science and Scopus databases. Table 1 provides the specifications of the search, including the search terms. The search in Scopus yielded 93 records, and Web of Science yielded 56 records, leading to 103 unique research articles after removing 47 duplicates (see Figure 1). The literature was screened to find sustainability assessment tools that include indicators for social sustainability, that are not restricted to a specific production system and thus applicable to all types of farms, and that are adapted to the farming context in industrialized countries.

Six articles were identified as relevant to our study and informed our choice of tools: Alaoui et al. (2022) compared six different tools regarding themes and indicators for the sustainability dimensions of environmental, economic, and social (LADA, MASC, PGTool, RISE, SAFA, SMART). De Olde et al. (2016) compiled a list of 48 sustainability assessment tools and compared four (RISE, SAFA, PG, and IDEA). Desiderio et al. (2022) provided a supplementary table of their literature search, which we screened to identify 17 assessment tools for the production stage. Janker and Mann (2020) examined 87 farm sustainability assessment tools and reviewed the indicators for social sustainability used by 33 of the tools. Marchand et al. (2014) compared PGTool, MOTIFS, RISE, and IDEA. Packer and Zanasi

(2023) identified social issues covered by scientific literature in social sustainability and compared the themes that are covered in the tools IDEA, MOTIFS, PGTool, RISE, SAFA, SOOAN, and S-LCA.

Tools that were frequently used in the reviewed publications are RISE[1], SMART[2], PGTool[3], IDEA[4], and MOTIFS[5]. These tools also met our inclusion criteria of having a clearly defined set of indicators, being developed for agriculture in industrialized countries, and being well-documented. Furthermore, they represent tools developed in different socio-cultural contexts: Switzerland (RISE, SMART), France (IDEA4), Belgium (MOTIFS), and the United Kingdom (PGTool). Additionally, we included SALCAsustain[6], which was developed by our organization in Switzerland (Roesch et al., 2021).

2.3. Assessment of the tools' degree of inclusion of social sustainability themes

To investigate whether and to what degree the selected farm sustainability assessment tools covered the identified social sustainability themes, we initially identified sub-themes of the themes (see Table 3) by interpreting their meaning. We then screened the tools to evaluate whether the tools covered a theme fully (i.e. included questions or items on all sub-themes), partially (i.e. included some sub-themes), or not at all. Moreover, we assessed whether the tool covered a sub-theme explicitly (based on the meaning of the sub-theme, as indicated in Table 3) or addressed a sub-theme of similar meaning.

The assessment was made based on the scientific publications or other documentation of the tools (web tool, Excel tool) by two researchers independently through screening, interpreting, and categorizing the available information. The researchers' interpretations and categorizations deviated in 5% of the cases. Further, the results were discussed with two other researchers to ensure robustness before they were finalized.

3. Results

3.1. Social sustainability themes

Twelve social sustainability themes were identified from the selected publications (see Table 3). Based on how often they were mentioned by participants, the most important themes were work–life balance, social security and old-age pension, satisfaction with life and work, freedom in decisions, relationships within the farm and with consumers, and farm succession. Social contacts outside the farm, farmers' health and well-being, working conditions for employees, and regional production and consumption were mentioned by fewer respondents. Regarding the availability of the labour force, the number of respondents mentioning the topic remains unknown. From the 12 themes, we derived 19 sub-themes.

Other topics mentioned by the respondents had a social connotation but were usually accounted for in assessments of the environmental and economic dimensions of sustainability. One of these themes is income. Many respondents mentioned that they needed to support the family with the farm income, that social sustainability meant that they could live a decent life from the income generated from the farm, or that financial security was important for farm sustainability (Contzen and Häberli, 2021; Laurett et al., 2021; Saleh and Ehlers, 2023). Furthermore, care for the environment was mentioned by many respondents, such as caring for the soil and water or using pesticides (Laurett et al., 2021; Saleh and Ehlers, 2023). The notion of care for the environment certainly has a social connotation; however, these aspects are usually covered by environmental sustainability assessments. Therefore, these topics were not further included in our analysis.

Regarding the different socio-cultural contexts of the included studies, there are many themes mentioned by participants in Swiss studies as well as by participants in other studies. These are social

[1] Response-Inducing Sustainability Evaluation
[2] Sustainability Monitoring and Assessment
[3] Public Goods Tool
[4] Indicateurs de Durabilité des Exploitations Agricoles
[5] Monitoring tool for integrated farm sustainability
[6] Swiss Agricultural Life Cycle Assessment for sustainability evaluation

security and old-age pensions, farm succession, relationships outside the farm, and farmers' health and well-being.

Table 3. Sustainability themes relevant to Swiss farmers and family farmers (based on Baccar et al. (2020)[a], Contzen and Häberli (2021)[b], Czismady et al. (2021)[c], Laurett et al. (2021)[d], Saleh and Ehlers (2023)[e])

Themes	Examples	Share of mentions	Socio-cultural context	Sub-themes
Work-Life-Balance	Enough time for breaks, for the family, for hobbies; being able to take holiday	8.3%[e], 39.4%[b]	Switzerland	• "Enough" time away from work during working times • Holiday
Social security and pension	Sufficient old-age provision; spouse coverage; pension plan	12.6%[e], <10%[a]	Morocco, Switzerland	• Old-age pension • Social security spouse coverage
Satisfaction with life and work	Satisfaction with life situation; doing what one likes to do; keeping pleasure in the work	10.6%[b], 1%[e]	Switzerland	• Satisfaction with life • Satisfaction with work
Freedom in decisions	Independence; freedom of action; deciding for myself; free scheduling of working hours	9.9%[b]	Switzerland	• Freedom in taking decisions
Relationships with people living and working on the farm	Cohesion on the farm; family cooperation	8.3%[e], 9.8%[b]	Switzerland	• Good relationship with farm family members
Relationships with consumers	Respectful interactions with and appreciation from consumers; lack of good relationship	8.3%[e], 0.7%[b] 6.0%[e]	Switzerland	• Appreciation from consumers
Farm succession	Type of succession; farm transfers; hand over a viable farm to successors	6.0%[e], <10%[a]	Morocco, Switzerland	• Ability to transfer farm to successor
Relationships outside the farm (not consumers)	Farm-farm relationships; social contacts outside the farm; government-farmer partnership	4%[e] 3.3%[b] 1%[d]	Brazil, Switzerland	• Relationships with other farmers • Relationships with non-farmers • Relationship with governmental offices

Farmers' health & well-being	Production that secures the health and well-being of farmers	2.6%[b], 4%[d]	Brazil, Switzerland	• Farmers' health
Employee working conditions	Wages of employees, fair treatment of employees	2.7%[e]	Switzerland	• Employee wages • Fair employee treatment
Regionalisation	Regional production and marketing; purchasing local products	1.7%[e]	Switzerland	• Regional marketing • Purchase of regional inputs
Availability of labour force	Difficulty in getting enough qualified labour force, ageing of labour force	Not available[c]	Hungary	• Availability of enough labour force

3.2. Coverage of themes in tools

None of the tools examined covered all the sub-themes identified above. However, SMART, RISE, SALCAsustain, and IDEA4 included many of them, either by their full meaning (fully and explicitly) or by parts of the meaning or by a related aspect (see Table 4). Aspects that were found to be addressed by the majority of tools were taking holidays, relationships with other farmers and non-farmers, and farmer (and farm workers) health. Also addressed by many tools, although often less fully or explicitly, were the treatment and wage of employees, farmers' satisfaction with work, and the issue of having "enough" time off from work during non-holiday times. SALCAsustain, SMART, and RISE touched on the latter topic by including indicators of the average weekly number of hours worked (see Table 4). However, the average weekly number of working hours does not provide information on whether farmers feel that the time off they have is enough. In IDEA4, this aspect was approached differently by asking farmers for the number of weeks they had felt overloaded and whether they took as much time off as they would like. Therefore, IDEA4 was assessed as including this sub-theme fully and explicitly, while SMART, RISE, and SALCAsustain were rated as including the aspect partially and by similar content. The latter three tools included a question on whether the farmers took holidays, while this aspect was assumed to be covered by IDEA4 by the previously described question on taking time off.

Although the aspect of old-age pension primed in social sustainability concerns in the survey of farmers by Saleh and Ehlers (2023), it was only covered by SALCAsustain through an explicit question regarding farmers' retirement provision. Sparsely covered was also the aspect of 'social security coverage of the spouse', which was included fully in SMART. RISE was rated to cover this aspect partially because it included a question on the wage continuation for self-employed or employed workers, but sometimes the spouse could be working at the farm without being employed or self-employed (Agridea, 2014).

Satisfaction with life and work was included fully and explicitly by SALCAsustain, RISE, and IDEA4. MOTIFS addressed the aspect of satisfaction with work partially by asking for farmers' feelings of professional pride. MOTIFS, by contrast, fully and explicitly covered the aspect of freedom in decision-making by asking for farmers' decision latitude, while RISE included a related question on satisfaction with personal freedom and values (see Table 4).

The relationships between persons living and working on the farm were treated less frequently by the tools included in this analysis. SALCAsustain and RISE implicitly included this aspect by asking for the farmers' satisfaction with their social relations, of which the relations to persons living and working

on the farm are a part. Similarly, IDEA4 included a question on the perceived feeling of isolation, which addressed relationships with persons living and working on the farm, if any.

The appreciation of farmers and their work by consumers was not covered explicitly, but similar aspects were addressed by IDEA4 with questions on measures taken to promote the relationship between consumers and farmers, on the unpaid reception of the public on the farm, and on the involvement of citizens in life and work on the farm. Similarly, PGTool included several related questions on this aspect (see Table 4). The theme 'farm succession' was covered explicitly and completely by the tools RISE and SMART, while PGTool included a similar question that asked for the expectation of the farmer on the farm continuation in the next decade.

Relationships with other farmers and other persons outside the farm (not consumers) were rated as fully and explicitly covered by SALCAsustain, SMART, and IDEA4, while the tools used different items (questions) to address the topic (see Table 4). RISE included a question on general satisfaction with social relationships, which was rated as not fully covering this aspect because it did not explicitly address the different parts of social relationships. PGTool and IDEA4 included related questions. The aspect of health was covered in a similar manner by the tools SALCAsustain, SMART, RISE, and IDEA4 by asking for professional safety systems, hazard identification, qualification/certification/training for using and handling potentially hazardous materials, protection gear, and the number of absent days due to illnesses or injuries.

The wage of employees was addressed by the SALCAsustain, SMART, and RISE tool, which ask for the wages to compare them to sector-level common or minimum pay or to the cost of living. The treatment of employees was included by a number of explicit questions in SMART and RISE, while PGTool used an item on the "working atmosphere at the farm", and IDEA4 used the "autonomy and responsibility in the tasks". SALCAsustain included the rather formal aspects of employee treatment, that is, the existence of a legally binding contract, payroll accounting, and compensation of overtime.

Finally, regional marketing and the purchase of regional input were covered by SMART, IDEA4, and PGTool, while the issue of the availability of enough labour force was addressed by SMART and RISE.

Table 4. Coverage of social sustainability themes relevant to farmers by six farm sustainability assessment tools (Legend: ✓ aspect fully and explicitly covered, ✓ aspect fully covered by a related aspect, ~ aspect explicitly but not fully covered, ~ aspect partly covered by a related aspect, ✗ aspect not covered)

Themes	Sub-themes	SALCAsustain[1]	SMART[2]	RISE 2.0[3]	IDEA4[4]	MOTIFS[5]	PGTool[6]	Items
Work–life balance	"Enough" time away from work during working times	~	~	~	✓	✗	✗	• Number of weeks per year when the farmer feels overloaded (IDEA4) • Do you find it necessary to take time off? (IDEA4) • Do you take as much time off as you like? (IDEA4) • Average weekly working time of farmer (farm manager) and farm workers (SALCAsustain, RISE, SMART)
	Holiday	✓	✓	✓	✓	✗	✗	• Number of holidays (weeks) taken by farmer/workers/farm family (SALCAsustain, RISE, SMART) • Do you take as much time off as you like? (IDEA4)
Social security and pension	Old-age pension	✓	✗	✗	✗	✗	✗	• Amount of money spent for retirement provision (SALCAsustain)
	Social security spouse coverage	✗	✓	~	✗	✗	✗	• Social security of the spouse and other dependent relatives of the farm manager in case he or she dies or if the couple gets divorced (clear ownership rights, etc.)? (SMART) • Income protection/continued salary payments for self-employed/employed workers (RISE)
Satisfaction with life and work	Satisfaction with life	✓	✗	✓	✓	✗	✗	• Degree of satisfaction of the farmer with areas of life other than work, finance relationships. (SALCAsustain, RISE) • Perception of degree of quality of life (IDEA4)
	Satisfaction with work	✓	✗	✓	✓	~	✗	• Degree of satisfaction of the farmer with her or his work/education/training. (SALCAsustain, RISE) • Perception of degree of quality of life (IDEA4) • Degree of professional pride (MOTIFS)

Themes	Sub-themes	SALCAsustain[1]	SMART[2]	RISE 2.0[3]	IDEA4[4]	MOTIFS[5]	PGTool[6]	Items
Freedom in decisions	Freedom in taking decisions	×	×	~	×	✓	×	• Degree of decision latitude (MOTIFS) • Satisfaction with personal freedom and values (RISE)
Relationships with persons living and working on the farm	Good relationship with farm family members	✓	×	✓	✓	×	×	• Satisfaction with social relationships (SALCAsustain, RISE) • Perceived degree of isolation (IDEA4)
Relationships with consumers	Appreciation from consumers	×	~	×	~	×	~	• Measures to promote the relationships between consumers and farmers (IDEA4) • Unpaid reception of the public (IDEA4) • Involvement of citizens in life and work on the farm (IDEA4) • Number of visitor events (PGTool) • Number of visitors (PGTool) • Use of listed means of communication with consumers (PGTool) • Transparency of production to consumers (SMART)
Farm succession	Ability to transfer farm to successor	×	✓	✓	×	×	✓	• Whether the succession of the farm has been organised/secured (SMART, RISE) • Farmer's expectation of whether the farm will be farmed in the next decade (PGTool)
Relationships outside the farm (not consumers)	Relationships to other farmers	✓	✓	~	✓	×	×	• Degree of the farm family's relations to other farmers (SALCAsustain) • Successful and long-term cooperation with other farmers (SMART) • Existence of work cooperation with other farmers (IDEA4) • Participation in professional organisations (IDEA4) • Satisfaction with social relationships (RISE)
	Relationships to other non-farmers	✓	✓	~	✓	~	~	• Degree of integration into local community (SALCAsustain) • Degree of relationships with non-farmers (SALCAsustain)

Themes	Sub-themes	SALCAsustain[1]	SMART[2]	RISE 2.0[3]	IDEA4[4]	MOTIFS[5]	PGTool[6]	Items
								• Communication with neighbours about current cultivation operations, collaborative work with consumers, social networks (IDEA4) • Participation in non-agricultural organisations (IDEA4) • Farm cooperation with customers (SMART) • Farm input from long-term suppliers (SMART) • Community engagement (social involvement outside the farm) (SMART) • Satisfaction with social relationships (RISE) • Provision of social services by the farm (MOTIFS) • Number of visitor events (PGTool) • Number of visitors (PGTool)
	Cooperation with governmental offices	✗	✗	✗	✗	✗	✗	
Farmers' health and well-being	Farmers' health	✓	✓	✓	✓	✗	✓	• Satisfaction with farmer's own health (SALCAsustain, RISE) • Consultation of specialists in workplace safety/professional workplace safety system/identification of safety hazards (SALCAsustain, SMART, RISE, IDEA4, PGTool) • Qualification of or training for persons handling potentially hazardous materials/training in using and storing plant protection and animal products/certification for use of plant protection products/pesticide storage according to regulatory recommendations (SALCAsustain, SMART, RISE, IDEA4, PGTool)

Themes	Sub-themes	SALCAsustain[1]	SMART[2]	RISE 2.0[3]	IDEA4[4]	MOTIFS[5]	PGTool[6]	Items
								• Protection gear for workers (SALCAsustain, SMART, RISE, IDEA4) • Number of days of absence due to incidences of illness or injury (SMART, RISE, IDEA4) • Contact of farmers and workers with pesticides (IDEA4)
Employee working conditions	Employee wages	✓	✓	✓	×	×	×	• Workers' job title and monthly gross salary to compare with common sector wage level (SALCAsustain) • Relationship between paid salary and regional or sector-specific minimum salary (SMART) • Relationship between salary and cost of living (RISE)
	Employee treatment	~	✓	✓	~	×	~	• Incidences of employee harassment (SMART) • Anti-discrimination measures at the farm (SMART) • Legally binding contracts (SMART, RISE, SALCAsustain) • Freedom to take breaks (SMART) • Payroll accounting (RISE, SALCAsustain) • Motivating workers (RISE) • Protection against dismissal (RISE) • Problematic labour obligations (RISE) • Working atmosphere at the farm (PGTool) • Autonomy and responsibility in the tasks entrusted to employees (IDEA4) • Overtime compensation (SALCAsustain, SMART, RISE)
Regionalisation	Regional marketing	×	✓	×	✓	×	✓	• Value of direct sales/sales via local channels (IDEA4) • Share of locally sold goods (PGTool) • Proportion of farm income from direct sales (SMART)

Themes	Sub-themes	SALCAsustain[1]	SMART[2]	RISE 2.0[3]	IDEA4[4]	MOTIFS[5]	PGTool[6]	Items
	Purchase of regional inputs	×	✓	×	✓	×	~	• Procurement within less than 50 km distance (SMART) • Proportion of consumed livestock feed produced locally (IDEA4) • Proportion of consumed organic fertiliser produced locally (IDEA4) • Whether material (e.g. for fencing) from the farm, the farm collective or from local producers is used (IDEA4) • Share of off-farm feed (PGTool)
Availability of labour force	Availability of enough labour force	×	✓	✓	×	×	×	• Whether staff shortages occured in the last five years could be resolved or not (SMART) • Staffing requirement known (RISE) • Replacement for employees leaving the farm (RISE)

[1]Roesch et al., (2016), [2]Supplementary Material A from Schader et al. (2019), [3]Grenz et al. (2012), [4]Girard et al. (n.d.), [5]Meul et al. (2008), [6]Organic Research Centre. (n.d.).

4. Discussion

Although there are journal articles that provide an overview of social sustainability indicators (see, e.g., Sannou et al., 2023), less insight was found on the coverage of social aspects relevant to farmers by sustainability assessment tools. Röös et al. (2019) compared three sustainability assessment tools regarding their coverage of social sustainability themes relevant to Swedish livestock farmers. A process-related difference between their study and ours, however, was their use of a survey to identify the themes relevant to the farmers, while we used a literature search to find information on social sustainability themes relevant to Swiss family farmers. Content-wise, whereas Röös et al. (2019) included the financial aspect in the collection of social factors, we decided to exclude it, since the economics of the farm are contained in indicators on economic farm sustainability.

Coteur et al. (2020) take a relevant but different turn by investigating farm sustainability assessment tools regarding their ability to support farmers' decision-making for more sustainable practices. A more similar research question than this study had the study of Leite et al. (2024). Leite et al. (2024) assessed whether sustainability indicators are on the operational agenda of farmers, meaning whether the indicators were useful for farmers. To this end, experts on crop-livestock farming systems scored the relevance of different indicators and themes. Among the themes of social sustainability, the theme of the workforce scored highest. A process-related difference between Leite et al.'s (2024) study and our study is again the method of finding relevant themes: they collected the assessment of experts while our study used scientific literature. Another noteworthy difference is that Leite et al.'s (2024) study is specific to the context of mixed crop-livestock systems.

In Röös et al.'s (2019) comparison of farm sustainability assessment tools, RISE was shown to capture Swedish farmers' social sustainability themes better than SAFA or IDEA. In our study, SMART captured more social sustainability themes relevant to Swiss farmers comprehensively and explicitly (11) than SALCAsustain (8), RISE (7), or IDEA4 (7). SMART was developed based on the SAFA guidelines for sustainability assessments, encompassing a globally valid approach (Schader et al., 2019).

Not all selected tools included exactly the extracted social sustainability sub-themes relevant to Swiss or family farmers. Some tools instead included indicators, which were based on similar aspects. An example of this phenomenon is the aspect of having "enough" time off during non-holiday times, which SALCAsustain, SMART, and RISE addressed using items on the average number of weekly working hours. Although this measure allows for a comparison between farms, it does not provide reliable information on whether individual farmers perceive that they have enough time off. This might be, in part, due to the tool developers' decisions on trade-offs between context specificity and the preference for quantifiable and generalizable indicators (Röös et al., 2019). In our study, only IDEA4 captured the sub-theme exactly by asking whether farmers took as much time off as they wanted. In the end, tool developers have to decide on many trade-offs, including the question of the purpose of a measurement, and Triste et al. (2014), for instance, showed that it is challenging to find a satisfactory compromise for all stakeholders of farm sustainability assessment tools.

At least one aspect of relevance for Swiss farmers was included in every one of the investigated tools. Even though we were able to show, based on our ratings, which tool included most of the aspects, we did not answer the question of how many and which of these aspects would need to be included to enhance a tool's relevance for farmers, given the potential trade-offs between the comprehensiveness and ease of implementation of a tool (De Olde et al., 2018). Beyond these limitations, we also acknowledge that this study investigated a limited aspect of the development and relevance of farm sustainability assessment tools: the social sustainability themes relevant to farmers. However, there are more stakeholders involved in farm sustainability, such as employees, the local community, upstream or downstream supply chain actors, and the general public as product consumers and landscape stakeholders. Depending on the aim of the tool, their interests should also be captured. This notion was excluded from the study.

The collection of social sustainability themes relevant to farmers showed that the widening of the scope from Swiss farms to family farms did not yield a substantially higher number of themes, except for two

('availability of labour force' and 'partnership between government and farmers'). This is interesting to note because it appears that social sustainability themes of family farms might be less specific to geographical context than expected by researchers (Bélanger et al., 2015; Janker and Mann, 2020; López-Ridaura et al., 2022; Vallance et al., 2011). Possibly, the context "family farm" is already a good common denominator.

5. Summary and concluding remarks

To answer our research questions on which social sustainability themes are relevant to Swiss or family farmers and the extent to which farm sustainability assessment tools capture these themes, we conducted a systematic literature review, interpreted the content of the retrieved themes, identified sub-themes, and categorized six assessment tools regarding the degree of coverage of the sub-themes. The analysis revealed that the SMART tool covered the highest number of sub-themes completely and explicitly. However, the fact that none of the tools covered all sub-themes does not allow us to draw conclusions on the sufficiency of sub-theme inclusion by the tools.

The strong heterogeneity with which sustainability assessment tools consider or ignore issues of social sustainability relevant at least to farmer groups is somewhat consistent with the limited availability of studies exploring social sustainability claims by family farm managers. The entire picture in the scientific discourse on social sustainability indicates the need to further develop a joint understanding of the minimum requirements for social sustainability. Future research should proceed in this respect and define the requirements that must be met to make statements about social sustainability. In many respects, such requirements will necessarily be context-specific and tailored to systems such as family farming or plantations. However, our observation suggests doing further research on the extent of geographical vs. production system context-specificity of social sustainability themes.

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Conflicts of Interest

The authors declare that there are no conflicts of interest regarding the publication of this paper.

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