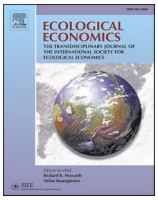
Ecological Economics 187 (2021) 107107

Contents lists available at ScienceDirect

Ecological Economics

journal homepage: www.elsevier.com/locate/ecolecon



Analysis

Potential outcomes and impacts of organic group certification in Italy: An evaluative case study

Francesco Solfanelli [a], Emel Ozturk [a], Patrizia Pugliese [b], Raffaele Zanoli [a,*]

[a] Department of Agricultural, Food and Environmental Sciences (D3A), Università Politecnica delle Marche, Ancona, Italy
[b] Mediterranean Agronomic Institute of Bari (CIHEAM-IAMB), Bari, Italy

ARTICLE INFO

Keywords:
Theory of change
Smallholders
Organic farming
Internal control system
Case study research

ABSTRACT

The new EU Organic Regulation 848/2018 allows group certification to be applied to EU organic smallholders. Group certification is endorsed by IFOAM-Organics International and is the dominant approach to certify small organic farmers in many non-EU countries. This study provides a cross-case study evaluation of the future implementation of group certification among organic smallholders in Italy. A Theory of Change logic model is used as the analytical framework to evaluate the outcomes and impacts of such implementation. By using multiple sources of evidence, and triangulating them, the study establishes four profiles of potential adopters. Groups of small fruit and vegetable farms producing one main product and implementing formal coordination mechanism among the members, such as delivery contracts and internal standard for quality controls, seems to be more likely to adopt Group Certification. Groups that may be unlikely to adopt are those composed by farmers producing various products and using several market channels. The paper also uncovers the critical points of the new Organic Regulation concerning group certification and provides insights into policy interventions and other mechanisms that may help or hinder transition towards more inclusive, transparent and accountable organic food systems.

1. Introduction

The potential contribution of organic farming to the provision of public goods has been the subject of intensive debate among scholars of many disciplines (see among others Eyhorn et al., 2019; Gabriel et al., 2013; Reganold and Wachter, 2016; Seufert and Ramankutty, 2017; Smith et al., 2019). As part of the new European Green Deal, the European Farm to Fork strategy establishes organic agriculture as a key instrument for the provision of ecosystem services to society (EC, 2020). To stimulate the supply of organic products in EU member states, an ambitious goal to increase the share of EU organic farmland to 25% by 2030 was set. Over the past ten years, the EU organic sector has already experienced significant growth opportunities, mainly owing to policy support and growing market demand. In line with this development, many EU farmers have converted to organic farming each year, contributing to reach an organic share of total farmland of 7.7% in, 2018 (FIBL and AMI, 2020). However, to meet the objective set by the EC strategy in a way that reflects the different farm structure in different EU countries, policy makers need to be aware of the potential role that smallholder farmers can play in the development of the organic sector in Europe. In Italy, as in many other EU countries, many small farms are located in marginal areas (Guiomar et al., 2018; Salvioni et al., 2014) where they already adopt ecological production systems and provide important ecosystem services to the rural community (Guiomar et al., 2018; Zanoli et al., 2010). In 2016, there were almost 1.2 million farms in Italy. Of these, 62% had less than 5 ha utilized agricultural area (UAA), which together represent about 12% of the total UAA in Italy (EUROSTAT, 2020). Nevertheless, in Italy, in recent years, the growth in terms of organic farmers has been lower that the growth in terms of organic land, confirming the ongoing challenges facing small to medium-sized farms in the sector. According to the latest official data, since 2010 the number of organic operators has grown by 69%, while UAA have increased by 79% (SINAB, 2020a; SINAB, 2020b); currently, the average UAA of Italian organic farms is more than 30% higher compared with the average UAA of all farms in Italy (EUROSTAT, 2020).

The farmers' motivations for adopting and maintaining organic standards have been explored through various qualitative and quantitative studies in Europe (see among others Dabbert et al., 2014; Läpple, 2010; Läpple and Kelley, 2013; Sahm et al., 2013; Serebrennikov et al., 2020). Most of these empirical works demonstrated that, beside

* Corresponding author.
E-mail address: zanoli@agrecon.univpm.it (R. Zanoli).

https://doi.org/10.1016/j.ecolecon.2021.107107
Received 20 August 2020; Received in revised form 16 May 2021; Accepted 21 May 2021
Available online 27 May 2021

ideological and ethical motivations, factors influencing farm economic viability are likely to play a major role in a farmer's decision regarding the adoption or maintenance of organic standards, especially for smallholders (Serebrennikov et al., 2020; Zanoli et al., 2010). Relevant factors include: the level of subsidies paid to farmers, access to profitable and value-added markets, compliance with organic standards as well as costs regarding organic certification and control (Bouttes et al., 2019; Darnhofer et al., 2005; Sahm et al., 2013; Zanoli et al., 2010). The organic certification system is at the heart of the current EU Regulation (EC, 2007) and entails diverse types of transaction costs that must be at least partly borne by the organic farmers. A more efficient and cost-effective certification system would contribute to a significant reduction of costs in the organic supply chain, generating opportunities in terms of adoption of organic farming practices by the EU smallholder farmers (Dabbert et al., 2014; Zanoli et al., 2014).

The new EU organic Regulation 848/2018 (EU, 2018), coming into force in January 2022 introduces several changes to the existing control and certification system. The main novelty is the extension of group certification (GC), previously accepted only for imports from developing third countries in the equivalence regime, to EU small organic farmers. After the implementation of the new regulation, a group of small organic farmers can get organised and be certified as a single entity. GC requires the implementation of an internal control system and that the compliance of each member of the group is verified by internal controllers under internal control system. Afterwards, an external control body controls the internal control system and performs spot-check re-controls on a predetermined number of randomly-designated individual members of the group (See Appendix A for the structure of the EU organic certification process). The Regulation defines certain rules for the groups to be certified under GC. Accordingly, members should have maximum 5 ha (0.5 ha for greenhouse or 15 ha for grassland) or maximum EUR 25,000 annual turnover (or total output from organic EUR 15,000 or certification costs are 2% higher than turnover). Besides, members should be in geographical proximity to each other and marketing of the organic products should be managed through a joint marketing system (See Appendix B for a summary of the GC requirements under the Regulation).

The main rationale of GC is to reduce bureaucratic overkill and certification costs for smallholders (Herrmann and Steidle, 2013; Stolze et al., 2012). Outside the EU, the concept of GC has been applied in organic agriculture over the past twenty years. The International Federation of Organic Agricultural Movements (IFOAM) included GC in its accreditation criteria and guidelines back in 1994. In 2003, IFOAM submitted its position paper on GC to the European Commission (EC). The EC adopted the GC approach for the first time in 2003 for imported organic products (EC, 2003) and in 2008, published the 'Guidelines on Imports of Organic Products into the European Union' to allow the organic GC outside of the EU (EC, 2008). To the best of our knowledge, there are no official statistics available on GC. According to recent estimations (Meinshausen et al., 2019), more than 2.6 million (80%) organic producers in the world, mainly in Africa, Asia and Latin America, can reach the global organic market through internal control system based certification. Coffee and cocoa are the primary organic products provided by GC together with some other commodities (e.g. sugar, cotton, bananas). Besides, the GC approach is applied in other various voluntary sustainability certification schemes; Fairtrade International, The Rainforest Alliance and UTZ certification programs certify around 3.5 million farmers globally (Meinshausen et al., 2019). The Global Partnership for Good Agricultural Practice (GLOBALG.A.P.) certifies fruits and vegetables, aquaculture and livestock products under GC. Elements similar to GC, such as the organisation of farmers in groups, can be found in a Participatory Guarantee System (PGS). However, a PGS is a self-regulated system (Sacchi et al., 2015) and more local-market oriented, remaining still marginal on the global scale (Fouilleux and Loconto, 2017).

The impact of organic and other sustainability certification standards on smallholders' farmers has been the subject of previous research, mainly in developing countries. Several studies have shown the positive economic impact of certification on farmer income in terms of price premiums, reduced vulnerability against market fluctuations, higher yield and product quality as well as fewer production risks (Arnould et al., 2009; Bolwig et al., 2009; Karki et al., 2016; Ruben et al., 2009; Valkila and Nygren, 2010). Few studies found no impact of certification on smallholders income due to lower land or labour productivity (Akoyi and Maertens, 2018), absent/insignificant price premiums (Akyoo and Lazaro, 2008) or poor organizational structure of the farmer co-operatives (Jena et al., 2012). Improved capacity building, enhanced organizational capabilities, better education and sanitation were mentioned as social benefits of certification (Lima et al., 2009; Raynolds et al., 2004; Ruben and Zuniga, 2011). In the case of GC, organisations are expected to monitor and train the members. Consequently, the impact assessment of GC would be affected by both certification and characteristics of the organisation that influences members (Ssebunya et al., 2019).

The main objective of this study was to evaluate the feasibility of GC that will come into force with the new EU organic Regulation and to assess the potential impact of the adoption of GC on smallholders in an exemplary context. The choice of Italy as a case-study country was not just based on convenience. Italy has been a pioneer country for organic farming in Europe and also has one of the most complex certification and inspection system (Zezza et al., 2020). ACCREDIA, the Italian accreditation agency for certification bodies, has among the most complex systems to classify non-compliance, which is very demanding for certifiers and farmers (Gambelli et al., 2014b; Gambelli et al., 2014a; Zanoli et al., 2014). Among the European countries, Italy is the one which has the highest number of small farms. According to (ISTAT, 2016), about 63% of the total Italian agricultural holdings have less than 5 ha. Therefore, the adoption of GC potentially significant, given it could introduce simplifications for low-risk, small family farmers and potential cost reductions. In absolute term, Italy had the third largest organic area in 2019, with almost two million hectares, representing about 14% of EU agricultural area cultivated organically; and the highest number of organic producers which, at over 70,000, represent more than 20% of the EU total (Willer et al., 2021). Proportionally, Italy is among the European countries with the highest organic share of the total agricultural land (15.2%) and the highest organic share of the total farms (6,2%) (SINAB, 2020a; Willer et al., 2021). However, the latest data also show that while in the last two years the development of the whole sector remained relatively stable in terms of both number of organic producers and agricultural land, in several Italian regions the number of organic farmers has reduced ranging from a minimum of 1 to a maximum of 8% (SINAB, 2020b). There are many possible explanations for this development pattern. Among these, difficulties with certification (e.g., the bureaucratic overkill of inspection procedures and impact of certification costs of family farm budgets) might explain reversion to conventional agriculture, as previously discussed in literature (Sahm et al., 2013; Zanoli et al., 2010). Group certification is advocated as a mean to achieve more cost-effective inspection procedures for smallholders (Auer, 2012).

A secondary objective was to draw some policy recommendations for the implementation of the Regulation and its future amendments.

The research was designed as a multiple-case embedded case study. Multiple cases were selected for theoretical relevance, based on a priori theoretical assumptions on their readiness to adopt GC. Each case embedded different units of analysis, as different perspectives were collected within the same case from various sources and informants.

2. Material and methods

2.1. Theoretical framework and conceptual approach

In this study, a theory-of-change (ToC) logic model was developed to

evaluate the potential outcomes and impacts of introducing GC in the EU organic sector. The ToC has been applied to assess the social and economic impact of specific projects (Vogel, 2012). Recently, it has been used to evaluate the impact of various certification schemes (e.g., ISEAL Alliance, 2017; Romero and Putz, 2018). ToC explains a chain of occurrences or events over a long period (Vogel, 2012). In impact studies, ToC is used to explain the change process by defining the causal linkages of a project or an initiative. The identified changes are mapped, showing how an action is taken to lead to the end-results. According to Gertler et al. (2016), the ToC can be represented by a diagram considering four main components: Input, Output, Outcome, and Impact. In this study, the focus was on three main types of actors involved in the organic certification system, namely farmers, group leaders, and control bodies.

Fig. 1 illustrates the ToC applied to the case study by showing the expected changes/impacts deriving from the adoption of GC in organic farming. The *Inputs* are represented by the three main components of GC defined by the EU Reg. 848/18 Article 36: the set-up and functioning of the internal control system, the set-up of a joint marketing system and the external controls by control bodies.

The *Output* is the direct effect of the implementation of the GC legal requirements (*Input*). The governance mechanisms of the GC will lead to an improvement of the inter-firm relationships and interdependency. The governance used by the group of farmers to define the functioning of internal control system and Joint marketing can be divided into formal and informal coordination mechanisms (Nassimbeni, 2004). Written agreements, bureaucratic control, and production planning define the formal mechanisms between the parties and are considered essential instruments to coordinate the GC activities. Many authors (see, among others, Kreutzer et al., 2016; Nassimbeni, 2004; Poppo and Zenger, 2002) have observed that inter-firm relationships involve more than just formal mechanisms. There are unwritten, informal behavioural rules that emerge from the inter-firm relationship itself, such as shared values and goals, trust, etc. Kreutzer et al. (2016) confirm that formal and informal controls complement each other in their influence on performance outcomes, with a high level of informal mechanisms enhancing the positive effect of formal arrangements, and vice versa. In Fig. 1, the intermediate effect (*Outcome*) is represented by the improvement of the economic and managerial performance of supply chains, such as better product quality, reduced non-compliances, reduced cost of certification, reduced opportunity costs of bureaucratic overkill, and increased marketing effectiveness (Naspetti et al., 2011; Simatupang and Sridharan, 2004). These four concepts were used to build the research protocol and to assess potential advantages /challenges of GC. We assume that these intermediate effects can make a significant contribution to the uptake and the continuation of organic farming practices by smallholders (*Impact*) (Bouttes et al., 2019; Darnhofer et al., 2005; Sahm et al., 2013; Zanoli et al., 2010).

A cross-case synthesis was performed to assess the potential adaptation of Italian organic farmer groups to GC. According to Yin (2018), the case-study approach allows investigating a contemporary phenomenon with its real-life context using multiple sources of evidence to answer 'how' and the 'why' questions especially if the boundaries between phenomenon and context are not clear yet. In a case-based approach to cross-case synthesis, the aim is to retain the holistic features of each case while being able to compare or synthesise any within-case patterns across the individual cases (Sinkovics, 2018; Yin, 2018).

The diffusion model of innovation, first developed by Rogers (1983) was used to analyse case study evidence and evaluate the effect of the adoption of GC existing among Italian organic groups. Accordingly, each of the nine cases analysed in this research (see Section 2.2 for more details) was classified based on two main dimensions:

The first dimension concerns the expected effort made by the group to implement GC. We assume that the higher the level of inter-firm relationship in the supply chain, the lower the effort needed to activate the elements of GC (e.g. implementation of internal control system, joint marketing initiatives). To establish whether or not the group of farmers has a high-level of inter-firm relationship with their members – thus, it is potentially 'ready' to activate GC -, the following factors were selected based on relevant literature (De Toni et al., 1995; Naspetti et al., 2011; Simatupang and Sridharan, 2004):

- Contracts and production planning;
- Mandatory sale of products by the farmers through the group;
- Adoption of an internal standard for quality controls (e.g. existing GlobalG.A.P);
- Provision of field advisory services;
- Provision of agricultural inputs such as seeds and fertilisers;
- Financial support to cover certification costs.

An index of 'Readiness' (R) was defined as

$$R_i = \frac{IF_i}{IFtot_i}$$

where IF_i is the total number of inter-firm relationship factors observed in the *i-th* group of farmers, and $IFtot_i$ is the maximum number of inter-relationship factors found in the same group. When no inter-relationship factors were identified at the group (i), this resulted in $IF_i = 0$. R_i theoretically ranges between $R_i = 0$ (i.e. at the time of the interview, the

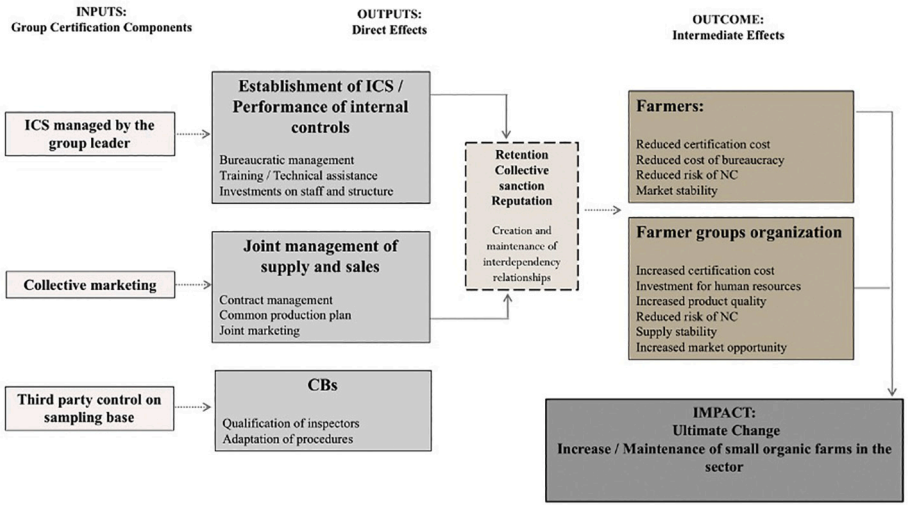


Fig. 1. Theory of change logic model (source: own elaboration).

group of farmers shows a low level of inter-firm relationship, meaning that a substantial change in the managerial organisation is needed to set up the GC system) and $R_i = 1$ (i.e. at the time of the interview, the group of farmers shows a high level of inter-firm relationship, meaning that the GC system can be implemented without any specific changes in the managerial asset).

The second dimension concerns the expected level of impact of the GC in terms of the characteristics of small farmers adopting or maintaining organic farming practices. We assume that, for each group of farmers, the higher is the number of factors facilitating the adoption of GC, the higher is the impact of the GC in the group of farmers. The following facilitating factors mentioned below were selected from the relevant literature (Meinshausen et al., 2019; EU, 2018; EC, 2008):

- Members' characteristics (more than 50% consist of small farmers according to the EU Reg. 848/18 Article 36);
- Similar production systems of members;
- Members are in geographical proximity to each other;
- Members are specialised in one type of production (e.g. production of vegetables only);
- Certified products are usually sold to only one buyer;
- Members have high certification costs (for more than 50% of the farms, the individual certification cost represents more than 2% of their agricultural turnover);

An index of 'Expected Impact' (I_i) was defined as:

$$I_i = \frac{FF_i}{FFtot_i}$$

where FF_i is the total number of facilitating factors observed in the *i-th group* of farmers, and $FFtot_i$ is the maximum number of facilitating factors found in the same group. When no facilitating factors were identified for *i*, this resulted in $FF_i = 0$. I_i theoretically ranges between $I_i = 0$ (i.e. the adoption of GC is expected to have a low impact in terms of the number of farmers potentially involved) and $I_i = 1$ (i.e. the adoption of GC is expected to have a high impact in terms of the number of farmers potentially involved).

2.2. Selection of cases and data collection

Cases are not samples, and case study research differs from both surveys and experiments. Case studies are the best at answering questions on the 'how' and the 'why' of social phenomena. In multiple-case studies like this one, a replication logic is used to select cases: 1. *literal replication,* to duplicate similar conditions than other cases, predicting similar results; 2. *theoretical replication*, to predict contrasting results for anticipated changes in the conditions, bearing some theoretical interest (Yin, 2018). Overall, seven cases from the existing organic farmer groups and two cases chosen among organic districts were selected in order to assess their potential adoption of GC in Italy. An organic district or bio-district is "a geographical area where farmers, citizens, tourist operators, associations and public authorities enter into an agreement for the sustainable management of local resources, based on organic principles and practices, aiming at the fulfilment of the economic and sociocultural potential of the territory" (Basile, 2017, p.1). The first organic district was established in Italy in 2009 and has become a point of reference for other similar initiatives across all Europe. In ten years, the growth of these initiatives has been massive, placing Italy among the leading countries in the EU in terms of organic districts. So far, 32 districts have been officially established in 11 Italian regions from north to south (Facchini, 2020). Organic Districts, according to the new European action plan for the development of organic production, should have the aim to (EC, 2021) foster networking among local and small-scale organic operators.

Different levels of a priori compliance with the criteria of the recently adopted EU organic Regulation (EU, 2018), regional differences, diverse crops groups (cereals, vegetables, fruits, olive and livestock) and organic certification by different certification bodies were considered in the selection process (See Table 1 for the short description of the cases). Besides, four control bodies and one organic farmers' association were involved into the study for data triangulation with expert views on GC in Italy.

Following the choice of cases, in-depth interview guidelines for each case and interviewee type (farmer group, farmer, Organic Districts, control bodies, and farmers' association) were developed based on the case study protocol. Open-ended questions allowing probing were formalised within two blocks. The first block addressed the description of the structure and the functioning of the relevant supply chain. The second block concerned the adoption of GC and the potential advantages as well as challenges in terms of costs, product quality, certification effectiveness, and market opportunities. At the end of each interview, interviewees were asked to express their opinion on any other potential challenges or success factors that could be relevant for GC. Interviewees were chosen based on their current role in the cases and general background/experience in the organic sector. In total, twenty-eight (either in-person or online) interview were performed in Italy between November and December 2019. In detail, nine leaders/managers of the

Table 1
List of selected cases.

Case acronym	Region	Description
ReB	North East	A cooperative of 32 small- to medium-sized organic farmers, producing and marketing organic vegetables through local shops and supermarkets. About 20% of the farmers are eligible for GC being small in size. Farms are distributed over a large area.
MoB	Centre	A cooperative of 400 organic farmers, producing cereals for organic pasta production. The cooperative has facilities for organic pasta production and works for domestic and foreign markets. About 10% of the farmers are eligible for GC being small in size. Farms are distributed over Italy.
VaG	North East	A cooperative of 110 small organic and conventional farmers, producing mainly vegetables that are sold to local supermarkets and shops. About 50% of the farmers are organic, and about 95% eligible for GC being small in size. Farms are distributed over a small area.
LaB	North East	A cooperative of about 400 conventional and organic livestock farmers (about 10% organic), collecting milk from the members to produce cheese, milk, and yoghurt. Products are sold to local and national markets. About 10 to 15% of farmers are eligible for GC being small in size. Farms are distributed over a tiny highland region.
MeL	North East	A consortium of 3400 members producing conventional and organic apples. About 137 farmers are organic. Almost all members are eligible for GC as small farmers. Farms are distributed over a small area.
CoB	South	A consortium of 70 organic farmers producing cereals and pulses mainly. Products are sold in bulk to processors, while vegetables and fruits are sold to local markets. About 15% of the farmers are eligible for GC being small in size. Farms are distributed at the regional level.
NuC	South	A cooperative of 400 conventional and organic farmers (20% organic) producing and processing olive. Olive oil is sold to local and national markets. Almost all members are eligible for GC as small farmers.
VdV[a]	North West	An organic district with high potential of small farms that can meet the GC criteria. The main activities consist of fruit and livestock production. Few livestock producers may have grassland higher than 15 ha (remaining annual turnover less than EUR 25,000).
CiL[a]	South	An organic district with high potential of small farms that can meet the GC criteria. There are only a few medium-large sized farmers. The main crop is olive grown by small farmers.

[a] Organic Districts.

cases, fourteen farmers from farmer groups (two for each) and five experts who are general directors of control bodies and organic farmers' association were interviewed. Farmers were chosen considering their potential eligibility for GC according to New Regulation (i.e., maximum 5 ha or annual turnover of less than EUR 25,000). Interviewees were made aware of the objectives of the study and signed informed consent and privacy forms. Interviews on average lasted 35 min.

Based on the theoretical framework developed in Section 2.1, the impact of GC was analysed by identifying and coding the perceived changes according to four analytical constructs: (i) impact on costs; (ii) impact on the market; (iii) impact on product quality; (iv) impact on non-compliance (NC).

The findings of the coding process were grouped into the different profiles of the supply chain, identified based on the index developed in the theoretical framework. By triangulating multiple sources of information (interviews, desk research) and the views of different investigators in data analysis and interpretation, the convergence of evidence may be achieved.

3. Results and discussion

The results of the study are presented and discussed following two main themes. The first concerns the potential adoption of GC in Italy, focusing on the impacts of GC for both smallholder producers and group leaders. The second theme refers to policy and regulatory issues stemming out from the case study results, discussing recommendations for the implementation of the Regulation and its future amendments.

3.1. Adoption of GC in Italy

Based on the results of the analysis of Readiness and Expected Impact indexes, the cases were classified under four profiles (Fig. 2): (i) Groups 'ready to adopt' GC; (ii) Groups having 'competitive advantage' in the transition to GC; (iii) Groups of 'unlikely adopters', and (iv) Groups of potentially 'late adopters'. The findings are organised and discussed around these four profiles. A table setting out the scores of each case study for the 12 factors included in the two indexes can be found in Appendix C, while Table 2 provides a summary of potential impacts of GC for farmers and group leaders considering each profile.

3.1.1. Groups 'ready to adopt'

Three cases (MeL, NuC, and VaG) out of nine are classified under this profile. One of the distinguishing features of this profile is the existence of high levels of inter-firm relationships. Besides, the number of farmers included in each group, which could benefit from GC, is relatively high. The groups included in this profile are characterised by farms specialised in horticultural products, with an average size of about 2 ha. However, some of these farmers have an annual turnover which exceeds EUR 20,000, mainly in fruit supply chains in northern Italy (MeL).

Some of these groups have adopted other certification programs, such as GLOBALG.A.P. option two or ISO 22000. These voluntary programs have a similar GC approach that is based on internal control system (Meinshausen et al., 2019). The internal control system required by the organic GC could be easily adopted by using the existing structural and managerial resources of these programs, leading to significant opportunities for the group leaders in terms of cost-effective improvement of the current control and certification activities. These results are consistent with those found in Gambelli et al. (2014b) and Fouilleux and Loconto (2017), who confirm the positive impact of farmer's participation in other certification schemes besides the organic regulation on both costs and compliance with organic standards.

Both group leaders and farmers agreed that GC could be cheaper for producers than individual certification. This is particularly true for the fruit and vegetable farmers where the annual certification fee is the major relevant expenditure respect to the total cost of organic certification (Stolze et al., 2012). In general, the results of this study are consistent with those of Pinto et al. (2014), though in a different geographical and regulatory context. On the other hand, the case study findings show that the introduction of GC would not lead to any significant change in the cost of the bureaucratic handling of the certification for the farmers, as the groups included in this profile already support producers for all the activities connected to the certification process.

Based on interview results, GC would not contribute to further increasing either the level of product quality or the effectiveness of the quality assurance system as these supply chains have already invested a lot of resources in the management of quality and safety issues. The internal control system set-up under the GlobalG.A.P. and the ISO 22000 standards are already considered as a useful tool for achieving quality control and improvement (Santacoloma, 2013). The impact on the risks of non-compliance, for the same reasons, is null.

Joint marketing of certified products through the cooperative/consortium is not perceived as a limitation for the farmers as they are highly specialised in horticulture or fruit production and, mostly, they are characterised by a minimal number of products and marketing channels. The group already represents the only possible market channel. Farmers

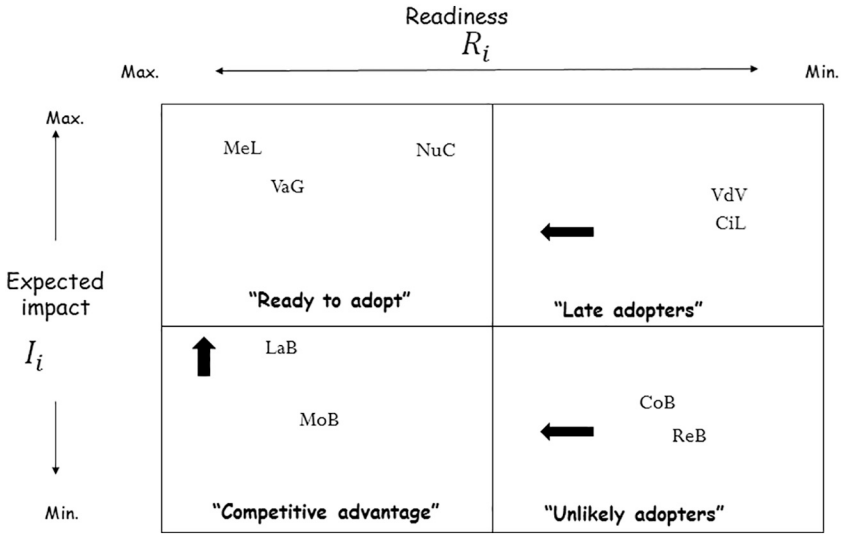


Fig. 2. Profile matrix.

Table 2
Summary of member characteristics and key impacts of GC by profiles.

	Ready to adopt	Competitive advantage	Unlikely adopters'	Late adopters'
Members	Mainly specialised in fruits/vegetables, the average farms size is around 2 ha and they are in geographical proximity.	Mainly specialised in cereal/legume farming or livestock production. Several farms are medium-large sized (>5 ha). Groups of arable farmers usually scattered over a vast area.	Group composed by farmers producing various products and using several market channels. The majority of farms are medium-large size (>5 ha) and scattered in a vast area.	Mainly specialised in fruits/ vegetables or livestock production. The majority of farms are small-medium size (<5 ha) and distributed in a very small geographical area.
Impact on costs	Technical assistance for farming and bureaucratic support for certification is already provided to farmers. Internal control system already exist for the management of other internal standard for quality control. No additional investment is needed for the implementation of the internal control system.	Although technical assistance for farming is provided, investment is needed for the establishment of internal control system and qualification of internal controllers.	The number of farmers entering into GC criteria is limited but considerable investments are needed for technical and managerial resources such as logistics, technical assistance and internal control system which is not established yet.	organic districts can help farmers to set up an organised supply chain and to implement internal control system. By this way, certification cost for small farmers may decrease significantly.
Impact on the market	No impact is expected as joint marketing of certified products through the cooperative already represents the only possible market channel.	Cooperatives specialised on cereals/ legumes need to organize marketing of other crops coming from members who have mixed farming systems. This may cause additional responsibilities and costs.	Common marketing may limit the farmers independence, especially for farmers producing large amount of products.	Range and amount of products marketed as organic can increase through GC with the entrance of new farmers to the organic certification system.
Impact on product quality	No significant impact is expected on product quality; group leaders already provide farmers with technical assistance on quality and safety issues.	No significant impact is expected on product quality; group leaders already provide farmers with technical assistance on quality and safety issues.	internal control system is expected to improve both the product quality and the inter-firm relationship.	internal control system is expected to improve both the product quality and the inter-firm relationships
Impact on NC	No significant impact is expected in term of reduction of NCs, as the group already implement a well organised internal quality management system.	No significant impact is expected in term of reduction of NCs, as the group already implement a well organised internal quality management system.	Reduction of NCs is expected as internal control system can improve the effectiveness of the control activities.	Reduction of NCs is expected as internal control system can improve the effectiveness of the control activities.

enjoy the exclusive contractual partnership with the group, as it brings a relatively secured demand in the medium and long term. Together with other studies conducted to analyse organic supply chain performance in Europe (Kottila and Rönni, 2008; Orsini et al., 2019), this case study suggests that farmers do not perceive exclusive contractual partnership as a significant limitation in case of either long-term or cooperative supply agreements.

3.1.2. Groups with 'competitive advantage'

The cases included in this profile (MoB and LaB) have many similar elements with the previous one, as they currently adopt many formal and informal mechanisms for the planning of their activities. Their well-organised structure can facilitate the transition to GC. For these groups, motives for adoption appear to be the same as those found for the groups 'ready to adopt': reduced cost of certification, and similar quality assurance, safety, and risk of non-compliance. However, potential barriers to the adoption of GC may be found in the structure and size of the farmers belonging to this group. For example, the mixed farming systems adopted by MoB producers could limit the implementation of GC. The cooperative makes contracts with farmers for cereal and legumes and is not interested in other products such as olives and grapes. Including other products in GC would require the group leader to take on additional responsibilities for the planning and inspection of the additional crop or livestock activities such as the establishment of agreements with buyers for the commercialisation of the relative products or the setting up of new quality management systems. Our findings are in line with those of (Darnhofer et al., 2009), who emphasised the rising difficulties encountered by the organic supply chain to provide effective and efficient strategies to promote smallholder farmers diversifications.

Geographical proximity is another important aspect that may hinder the development of GC in the cereal supply chain. Those working in the cereal sector are composed of farms that are usually scattered over a vast area, making it more difficult and costly for the internal control system to monitor. The case study results confirm that the macro-environment of the farm embeds several barriers for the development of the organic supply chain, as had been suggested in other studies (Kaltoft and Risgaard, 2006; Sahm et al., 2013).

MoB and LaB have several large and medium farms members that are bigger than the threshold set by the EU regulation. According to the interviews, the exclusion of them from the GC may have negative consequences for the creation of a favourable environment for the adoption of GC. These results are consistent with those of Bechini et al. (2020) who indicated that the endorsement from other farmers is a strong determinant to farmer's decision to adopt an innovation.

3.1.3. Groups of 'unlikely adopters'

Two cases (ReB and CoB) are classified as 'unlikely adopters', as the high efforts that they could potentially make to increase their collaborative planning may not be followed by a significant impact in terms of the number of farms involved in the group. They are characterised by a loose interdependence among operators, and the adoption of the GC system would require considerable investments in technological and managerial resources (i.e. logistics, technical assistance, set-up of an internal control system). Moreover, they operate in an environment where the expected impact could be relatively low compared to the others. Structural and socio-economic characteristics of the members (e.g., high occurrence of medium/large farms in the group; the presence of non-organic farms; farmers scattered over a vast area) hinder the potential benefits of GC for this profile. Also, many interviewed experts identified some concerns regarding the presence in the groups of farms with mixed farming systems. These farms may find difficult to comply with the criteria of joint marketing, as they currently produce a diverse products that they sell to different market channels.

The most important benefit perceived by the farmers of these groups is the reduction of the inspection fee to be paid to the control bodies, which is felt as one of the most relevant differential costs for organic operators. Besides, the interviewed operators perceived GC as a way to significantly reduce the time spent in bureaucratic handling of certification.

In these groups, where internal control system is not yet implemented, the setting up and the running of such system is perceived by both farmers and group leaders as an expensive activity. Nevertheless, similarly to other studies (Preißel and Reckling, 2010; Taufik, 2019), the internal control system concept is perceived by both farmers and group

leaders as a viable tool that may guarantee a durable effect in establishing quality assurance mechanisms as well as a high impact on the prevention of severe non-compliances and frauds.

The group leaders of the two cooperatives have a clear perception of the benefit they can gain from the implementation of GC in terms of value chain improvements. For example, in CoB, the joint effort to increase product quality and a more efficient internal control system are seen as critical to develop a shared understanding of the customer requirements and to develop the market further. The case study findings do not contradict those of Lindh and Olsson (2010), who highlight the value of close formal relations between the actors of the organic supply chain when addressing consumer concerns about product characteristics.

Likewise, GC may have the potential to strengthen the group's management capacity and help the establishment of an informal mechanism of governance, such as trust, collective sanctions, and reputation. From this perspective, GC can play an inclusive role, helping small farmers better position themselves in the group and the community. GC could help other small farmers in the area in joining the group, as it can help farmers work together and strengthen their managerial and technical skills. According to the interviewees, collective marketing could encourage farmers to increase the level of compliance with the standards, as the joined ownership of the quality of the product may affect both trust and reputation. These findings are consistent with those of Ton (2008) and Romero Granja and Wollni (2019), who analyse the role of trust and reputation in the prevention of opportunistic behaviour in groups of smallholder farmers.

The results of this case study indicate that groups of farmers classified as 'unlikely adopters' are those who may benefit more from GC. However, it is unclear if, currently, these benefits are worth the effort.

3.1.4. Groups of potentially 'late adopters'

According to the representatives of two organic districts, GC offers the possibility of creating conditions for smart and competitive supply chains within organic districts. Organic districts have the advantage of being a delimited geographical area where farmers and citizens, represented by associations and public authorities, already set up an agreement for the sustainable management of local resources. Besides, in the two organic district cases, as in most of the organic districts in Italy, the share of both the number of organic farms and organic land area is higher compared to the respective regional average (Pugliese et al., 2015). Here, internal control system is easier to implement, as the local communities can help in checking the compliance of the supply chains with the EU organic regulations. Also, farmers are more motivated since they are aware of playing an important role in the local community. Literature has already provided strong evidence concerning the potential of local communities to self-organize the promotion sustainable territorial development (Ostrom, 2014; Sturla et al., 2019).

However, to activate GC, a propulsive role of processors and retailers is needed. In accordance with studies conducted to analyse the potential of 'food hub' for local economies in EU rural areas (Berti and Mulligan, 2016), this case study results indicate that organic districts can facilitate this transition by helping small farmers set up an organised supply chain and to implement internal control system for food quality certification. As a good deal of diversification of agricultural products usually characterises organic districts, a various range of products can be included in organic certification thanks to GC. organic districts may promote the setting up of territorial guarantee schemes as an alternative to the single internal control system linked to the buyer or processor. According to the representatives of two organic districts, these systems would prevent farmers in the organic districts from joining more than one internal control system group, with a significant reduction of direct costs and bureaucracy.

However, there are two main aspects which could hinder the creation of a common internal control system specifically dedicated to organic districts: (i) the absence of national regulations defining the roles of organic districts may limit their activities as manager of internal control system; (ii) so far, there is no clear guidance nor established rules about the setting up of joint marketing systems for the products produced by the group. It is not clear, for instance, if an association of cooperatives or groups may be an acceptable legal entity for GC under the new Organic Regulation.

3.2. Critical regulatory aspects

The research provided several successful examples for GC implementation along with cases where further work needs to be done by the group leader in terms of collaborative planning before a GC system can be set up. In such a context, a stable and more transparent policy framework reducing the uncertainty about requirements for group certification at the EU and national level might be fundamental for the future development of GC. According to the expert interviews conducted in this research, the following aspects can be considered for possible future amendments of the GC requirements given in the new regulation.

3.2.1. Group structure and farm size

The new EU Organic Regulation, coming into force in 2022, clearly defines criteria for the inclusion of small farms in the concept of GC (EU, 2018). The results of this case study showed that some existing farmer groups, especially those working with fruits and vegetables, are currently meeting the requirements set up by the EU regulation, as specialised farms with a land size lower than 5 ha characterise almost all of their members. However, the annual turnover of these farms usually exceeds EUR 20,000. The cereal cases showed an opposite scenario, as the farms under these groups are generally larger in hectares, but with a very low annual turnover. For the organic farmers, the average inspection fee in all studied cases represents more than 2% of the yearly farm turnover. However, this percentage varies a lot among sectors. Lower fees can be found in the arable sector, whereas in the fruit and vegetable sectors the fees represent on average about 8% of the annual turnover. These results are consistent with the findings of Stolze et al. (2012). They show the difficulty which may be encountered by the competent authorities to verify if farms can be included in or excluded from the group. As the supply chains are composed not only of members who meet the restrictions, it is important to consider the possibility to include even medium and large farms in the group, providing that they should be controlled annually. Exclusion of medium and large farms from the group may be a limiting factor for the development of GC in EU countries for many reasons: (i) without the medium and large farms, some groups would probably be very small (e.g., MoB has 40 small farms out of 400, while CoB only 10 out of 70). Small group size would make the internal control system less efficient, thus reducing the benefit for the farmers in terms of costs saved for certification; (ii) in some marginal areas, where the only way to sell products for farmers, regardless of whether they are large or small, is to be part of a farmer group, the exclusion of medium and large farms from GC may have substantial implications in terms of information sharing and decision synchronisation. According to Simatupang and Sridharan (2004), these are two important enablers of long-term collaboration which can bring to a better overall performance of the group. In general, long-term collaboration– as shown by Parvathi and Waibel (2016) and Ssebunya et al. (2019) – is the factor explaining most of the benefits of GC. Land size and annual turnover, according to the EU Regulation 2018/848, Article 36, 1 (b), form the bases for making farms eligible to GC (EU, 2018). However, as stated by Guiomar et al. (2018), there is no generally accepted measure of farm size in the economic literature and therefore there can be no strict definition of smallholder farm. Alternative ways of defining smallholder farmers should be explored in future amendments, considering also the role of small-scale agriculture in local economy (Khalil et al., 2017).

3.2.2. Joint marketing and farm dependence

Joint or collective marketing of the certified crops by the group is one of the fundamental requirements in GC. The certification is provided for the group, and the farmers cannot sell their product as organic individually. In the case of monoculture (e.g. dairy livestock) or highly specialised supply chain (e.g. apple, olive), farmers usually produce only one or few products, which are all sold through the group. In these cases, farmers do not seek alternative selling channels or, due to the nature of the product or region, alternative channels even do not exist. In these supply chains, both the group leader (usually a cooperative) and the farmers benefit from the high level of inter-dependency generated by joint marketing, as it can help to reduce supply chain risk and transaction costs (Niu et al., 2016; Wang et al., 2014). However, there are several other groups in Italy where small- and medium-sized farmers have a relatively large variety of products that they usually sell through as many market channels. In these specific cases, joint marketing can bind the farmers to a situation of non-mutual dependence, where the less dependent partner (the group leader) tends to exert greater control over the decision. The more dependent partner (the farmers) is the most vulnerable to potential threats and coercion (Van Lange and Rusbult, 2012). Likewise, in the case where the group leader is not interested in or capable to buy all crops, farmers may be forced to sell their products as conventional, thus losing the relative organic premium price. In the long term, this situation may hinder the development of diversified farming systems, with several consequences in both economic and environmental terms (Lin, 2011). Management of transactions among the operators remains a complicated issue given that the organic certificate is issued to the group and not to the individual farmer. Policy-makers must consider the possibility to redefine the concept of joint marketing, at least for the groups composed by farmers producing a large variety of products.

3.2.3. Geographic proximity

The geographic proximity of group members is one of the GC requirements included in the new EU organic regulation. The similarity in production systems and geographic proximity of the members can also be found in the IFOAM norms (IFOAM, 2014). However, no specific details are provided so far by these regulations for geographical proximity. The results of the present study showed that in the majority of cases, organic farms are distributed over a very small region and close to each other. However, there are some groups with members scattered over the whole national territory. As detailed rules on geographical proximity would be hard to define, the definition of prescriptive rules on geographic proximity and homogeneity of production may have the unintended effect to hinder the implementation of GC further. This hindrance would be worst in the cases where the number of organic farmers in the group is low and scattered in more than one region.

3.2.4. Setting up and functioning of internal control system

Non-compliance (NC) at the group/internal control system level causes the withdrawal of the certification for all members of the group. In the case of an individual farmer's non-compliance, the consequences can be the exclusion of the farmer from organic certification. Besides, individual non-compliance may also have impact on the organic integrity of group products; consequently, the certificate of the group can be withdrawn as a whole. According to the interviews conducted with control bodies and group leaders, two main issues have emerged as crucial in this respect. First, more precise and harmonised guidelines for dealing with NCs and sanctions in GC are needed. Second, continuous training of the farmers about organic production rules is of great importance for the sound functioning of the system. Additional standards for the set-up and operation of internal control system, including regular risk assessments, should ensure efficient application of internal controls. Another critical aspect that is under evaluation by the Commission is the maximum number of farmers allowed in a group and the minimum number of the farmers to be inspected by the external control body. According to control bodies interviewed in this research, groups need to be large enough to run a viable internal control system, while the minimum number of farmers to be controlled by control bodies should be affordable but large enough to guarantee consumer trust for both small and large groups. In line with studies conducted to analyse the feasibility of risk-based inspection in organic farming (Gambelli et al., 2014a; Zanoli et al., 2014), this paper suggest that additional standards for the set-up and operation of internal control system, including regular risk assessments, should be implemented to ensure efficient application of internal controls. As described by Zorn et al. (2013) the integration of method developed for quantitative risk analysis would assist both internal control system inspectors and control bodies, allowing them to plan better targeted inspections, and hence contribute to a more cost-effective system.

4. Conclusion

Small organic farms contribute to the maintenance of the European rural landscape, with its associated cultural and ethical values (Lefebvre et al., 2012). The recognition of their potential contribution to agricultural policy objectives in the EU is the cornerstone to develop policies aiming at reducing the certification burden for small organic farmers.

This case study results suggest that GC, initially developed for small farmers in developing countries, might be a viable solution also for small farmers in the EU. Especially smallholders involved in highly specialised supply chains, such as fruit and vegetable growers, could benefit from GC. Furthermore, GC is promising for farmer groups with a strong collaborative approach, which are interested in investing resources in establishing an internal control system.

The study highlights several aspects connected to the implementation of GC that may influence smallholders to convert to or maintain organic production methods. These are mainly related to the reduction of the cost of certification through coordinated internal control system and to the implementation and maintenance of quality assurance systems. A well-functioning internal control system, with continuous training of the actors involved, can improve organic production system quality and reduce the risk of non-compliances. At the same time, farmers can benefit from the reduction of both the cost for the control visit and the opportunity costs connected to bureaucratic efforts needed for the organic certification. Several aspects should be considered in the secondary legislation, which is currently being prepared by the EU Commission and the member states, to fully exploit the potential of GC in EU countries. One of the areas where more explicit guidelines are required is related to the joint marketing of group products. The EU regulation does not clearly define if individual member farmers are allowed to sell part of their production as organics to other buyers. However, this issue is controversial, as a strict interpretation of the joint marketing criterion may bring farmers into a strong dependency relationship with buyers and, in some cases, undermine the diversification of the farm crops.

Another concern is related to the definition of specific rules related to the structure and composition of a group of operators. Although the EU regulation clearly defines criteria for the inclusion of farms in the concept of GC, no specific indications were provided regarding the possibility to include medium and large size farms in the GC. Results of our study indicate that the exclusion of medium and large farms from the GC could be an obstacle to the creation of new organic groups, as it may seriously affect its governance and operations. A mechanism should be found to ensure that medium and large size farms could be part of the group even if not benefiting from GC.

The results of the case study suggest that, regardless of whether a supply chain is composed of small or large producers, GC may help in differentiating between minimum requirements and improvement of all production systems. As the intention of the EU organic regulation is not only to verify that operators follow minimal rules, but that they continuously improve the effectiveness of their systems, GC can be

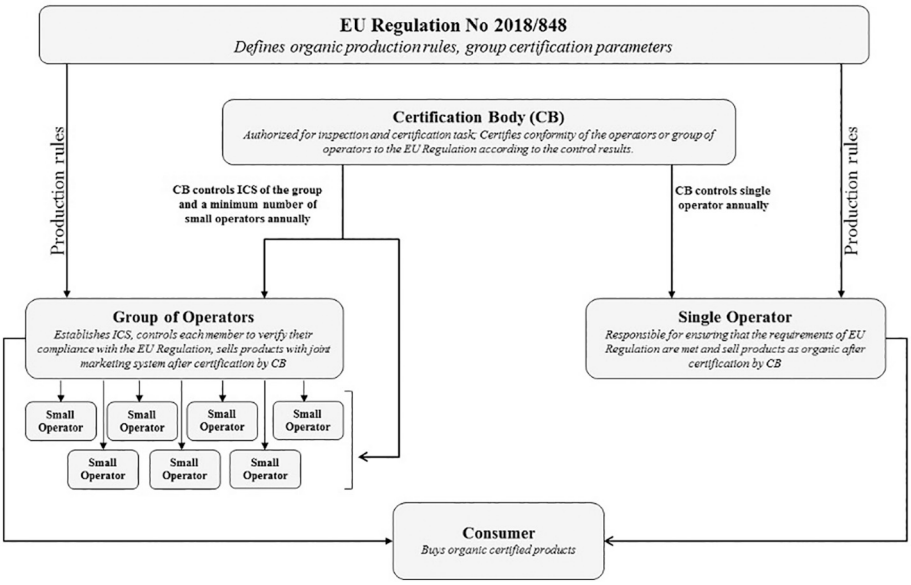
considered as a viable tool to integrate a more developmental perspective in the current EU organic sector.

To encourage the development of groups of organic farmers in Italy, a wide range of supportive measures should be introduced at both EU and member states level. These include not only financial incentives for the establishment and maintenance of groups of farmers but also information activities (i.e. communication by organic districts) which may help small farmers, processors and retailers to set up an organised supply chain. By creating a more inclusive and efficient organic agricultural system, the post-2020 CAP might be a decisive tool to trigger this process. With the 'new delivery model' framework, EU member states have the possibility to design the CAP to match their specific context. The creation of Eco-Schemes under pillar 1 of the CAP allows member states supporting a wide range of environmental actions, some of which may be specifically addressed to group of small organic farmers implementing the GC. Furthermore, the reinforcement of the Agricultural Knowledge and Innovation Systems (AKIS) under the pillar 2 of the CAP may stimulate collaborative and learning networks among smallholders, where, besides the technological innovation, social and organizational innovations for internal control system setting up and functioning could be experimented.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Appendix A. Structure of the organic certification process according to EU (No 2018/848)



According to the EU Organic Regulation No 2018/848 (EU, 2018) there are two certification options that may be applied:

(i) Certification of single operator[1] which is similar to what was endorsed under the previous regulation. In this case, the certification of the farmer[2]s compliance with the organic standards is done by an authorized public or private control body at least once a year, including an on-the-spot inspection. The certificate is issued for the single operator.

(ii) Certification of 'group of operators', which is composed of farmers[2] or operators establish a documented internal control system that should enact all control procedures and activities. The compliance of each member of the group is verified by an identified person or body, as defined by the internal control system. The control body conducts on-the-spot inspections on an annual basis, including the verification of the functioning of the group internal control system and annual controls of a minimum number of members. Finally, the organic certificate is issued to the whole group, with an annex including the list of group members.

Appendix B. Summary of rules for operator groups according to EU (No 2018/848)

Reference	Theme	Requirements
Art. 36 1 (a)	Type of members	Group members could be farmers or operators that produce algae or aquaculture animals; they may be engaged in processing, preparation or placing on the market of food or feed (p. 41).

(continued on next page)

[1] Operator means the natural or legal persons responsible for ensuring that the requirements of the organic regulation are met at every stage of production, preparation and distribution that are under their control (EC, 2007. P.4; EU, 2018, p.18)

[2] Farmer means a natural or legal person, or a group of natural or legal persons, regardless of the legal status of that group and its members under national law, who exercises an agricultural activity (EU, 2018, p.18)

(*continued*)

Reference	Theme	Requirements
Art. 36 1 (b)	Eligible members	Members should have an annual turnover of less than EUR 25,000 (or total output from organic of less than EUR 15,000 or certification costs that are more than 2% of turnover) OR; Members should have maximum 5 ha (0,5 ha in the case of greenhouses or 15 ha exclusively in the case of permanent grassland) (p. 41, 42).
Art. 36 1 (d)	Legal status	Group of operators should have legal personality (p. 42).
Art. 36 1 (e)	Geographical proximity	The group should be composed of members whose production activities take place in geographical proximity to each other (p. 42).
Art. 36 1 (f)	Joint marketing	The group shall set up a joint marketing system for the products produced by the group (p.42).
Art. 36 1 (g)	internal control system	Establish a system for internal controls comprising a documented set of control activities and procedures (p.42).
Art. 36 2	Collective sanction	Authorized control bodies shall withdraw the organic certificate for the whole group where deficiencies of the internal control system or non-compliance by individual members affect the integrity of organic products (p.42).

Appendix C. Readiness and expected impact scores by cases

Indexes	Factors	Scores by cases (1 = yes, 0 = no)								
		ReB	MoB	VaG	LaB	MeL	CoB	NuC	VdV	CiL
Readiness	Existing contracts/production planning	1	1	1	1	1	1	1	0	0
	Mandatory sale of through the group	0	1	1	1	1	0	1	0	0
	Adoption of an internal control system	1	1	0	1	1	0	1	0	0
	Provision of field advisory services	0	0	1	1	1	0	1	1	1
	Provision of agricultural inputs	0	1	1	0	1	1	0	0	0
	Financial support for certification	0	0	0	1	1	0	0	0	0
Total		2	4	4	5	6	2	4	1	1
Expected Impact	>50% of members are small farmers	0	0	1	0	1	0	1	1	1
	Similar production systems of members	1	0	1	1	1	0	1	0	1
	Members are in geographical proximity	0	0	1	1	1	0	1	1	1
	Specialised members in one type production	0	0	1	1	1	0	1	0	1
	Products are usually sold to only one buyer	0	0	1	1	1	0	1	0	0
	>50% of members have high certification costs	0	0	1	0	0	0	1	1	1
Total		1	0	6	4	5	0	6	3	5

References

Akoyi, K.T., Maertens, M., 2018. Walk the talk: private sustainability standards in the Ugandan coffee sector. J. Dev. Stud. 54, 1792–1818. https://doi.org/10.1080/00220388.2017.1327663.

Akyoo, A., Lazaro, E., 2008. An accounting method-based cost-benefit analysis of conformity to certified organic standards for spices in Tanzania. In: DIIS Working Paper no 2008/30. Danish Institute for International Studies (DIIS), Copenhagen.

Arnould, E.J., Plastina, A., Ball, D., 2009. Does fair trade deliver on its core value proposition? Effects on income, educational attainment, and health in three countries. J. Public Policy Mark. 28, 186–201. https://doi.org/10.1509/jppm.28.2.186.

Auer, M.R., 2012. Group Forest certification for smallholders in Vietnam: an early test and future prospects. Hum. Ecol. 40, 5–14. https://doi.org/10.1007/s10745-011-9451-6.

Basile, S., 2017. The Experience of Bio-Districts in Italy, 52 Profiles on Agroecology.

Bechini, L., Costamagna, C., Zavattaro, L., Grignani, C., Bijttebier, J., Ruysschaert, G., 2020. Drivers and barriers to adopt best management practices. Survey among Italian dairy farmers. J. Clean. Prod. 245, 118825. https://doi.org/10.1016/j.jclepro.2019.118825.

Berti, G., Mulligan, C., 2016. Competitiveness of small farms and innovative food supply chains: the role of food hubs in creating sustainable regional and local food systems. Sustain. 8 https://doi.org/10.3390/su8070616.

Bolwig, S., Gibbon, P., Jones, S., 2009. The economics of smallholder organic contract farming in tropical Africa. World Dev. 37, 1094–1104. https://doi.org/10.1016/j.worlddev.2008.09.012.

Bouttes, M., Darnhofer, I., Martin, G., 2019. Converting to organic farming as a way to enhance adaptive capacity. Org. Agric. 9, 235–247. https://doi.org/10.1007/s13165-018-0225-y.

Dabbert, S., Lippert, C., Zorn, A., 2014. Introduction to the special section on organic certification systems: policy issues and research topics. Food Policy 49, 425–428. https://doi.org/10.1016/j.foodpol.2014.05.009.

Darnhofer, I., Schneeberger, W., Freyer, B., 2005. Converting or not converting to organic farming in Austria: farmer types and their rationale. Agric. Hum. Values 22, 39–52. https://doi.org/10.1007/s10460-004-7229-9.

Darnhofer, I., Lindenthal, T., Bartel-Kratochvil, R., Zollitsch, W., 2009. Conventionalisation of organic farming practices: from structural criteria towards an assessment based on organic principles. Sustain. Agric. 2, 331–349. https://doi.org/10.1007/978-94-007-0394-0_18.

De Toni, A., Nassimbeni, G., Tonchia, S., 1995. Small local firms inside the supply chain: challenges and perspectives. Small Bus. Econ. 7, 241–249. https://doi.org/10.1007/BF01135369.

EC, 2003. Guidance Document for the Evaluation of the Equivalence of Organic Producer Group Certification Schemes Applied in Developing Countries.

EC, 2007. Council regulation (EC) no 834/2007 of 28 June 2007 on organic production and labelling of organic products and repealing regulation (EEC) no 2092/91. Off. J. Eur. Union L189, 1–23.

EC, 2008. Guidelines on Imports of Organic Products into the European Union [WWW Document]. URL. https://ec.europa.eu/info/sites/info/files/food-farming-fisheries/farming/documents/guidelines-imports-organic-products_en.pdf.

EC, 2020. Farm to Fork Strategy for a Fair, Healthy and Environmentally-Friendly Food System [WWW Document]. URL. https://ec.europa.eu/food/sites/food/files/safety/docs/f2f_action-plan_2020_strategy-info_en.pdf.

EC, 2021. Action Plan for the Development of Organic Production.

EU, 2018. Regulation (EU) 2018/848 of the European Parliament and of the council of 30 may 2018 on organic production and labelling of organic products and repealing council Regulaiton (EC) no 834/2007. Off. J. Eur. Union L150, 1–92.

EUROSTAT, 2020. Farm Indicators by Agricultural Area, Type of Farm, Standard Output, Legal Form and NUTS 2 Regions [WWW Document]. URL. https://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=ef_m_farmleg&lang=en.

Eyhorn, F., Muller, A., Reganold, J.P., Frison, E., Herren, H.R., Luttikholt, L., Mueller, A., Sanders, J., Scialabba, N.E.H., Seufert, V., Smith, P., 2019. Sustainability in global agriculture driven by organic farming. Nat. Sustain. 2, 253–255. https://doi.org/10.1038/s41893-019-0266-6.

Facchini, M., 2020. I biodistretti che tutelano i territori e fanno fiorire nuove economie. Altreconomia la Riv. dell'economia solidale 226.

FIBL & AMI, 2020. European Organic Market - Media Release [WWW Document]. URL. https://www.fibl.org/en/info-centre/news/european-organic-market-grew-to-40-7-billion-euros-in-2018.html.

Fouilleux, E., Loconto, A., 2017. Voluntary standards, certification, and accreditation in the global organic agriculture field: a tripartite model of techno-politics. Agric. Hum. Values 34, 1–14. https://doi.org/10.1007/s10460-016-9686-3.

Gabriel, D., Sait, S.M., Kunin, W.E., Benton, T.G., 2013. Food production vs. biodiversity: comparing organic and conventional agriculture. J. Appl. Ecol. 50, 355–364. https://doi.org/10.1111/1365-2664.12035.

Gambelli, D., Solfanelli, F., Zanoli, R., 2014a. Feasibility of risk-based inspections in organic farming: results from a probabilistic model. Agric. Econ. (United Kingdom) 45, 267–277.

Gambelli, D., Solfanelli, F., Zanoli, R., Zorn, A., Lippert, C., Dabbert, S., 2014b. Non-compliance in organic farming: a cross-country comparison of Italy and Germany. Food Policy 49, 449–458. https://doi.org/10.1016/j.foodpol.2014.05.012.
Gertler, P.J., Martinez, S., Premand, P., Rawlings, L.B., Vermeersch, C.M.J., 2016. Impact Evaluation in Practice, 2nd ed. International Bank for Reconstruction and Development/The World Bank, Washington DC.
Guiomar, N., Godinho, S., Pinto-Correia, T., Almeida, M., Bartolini, F., Bezák, P., Biró, M., Bjørkhaug, H., Bojnec, Brunori G., Corazzin, M., Czekaj, M., Davidova, S., Kania, J., Kristensen, S., Marraccini, E., Molnár, Z., Niedermayr, J., O'Rourke, E., Ortiz-Miranda, D., Redman, M., Sipiläinen, T., Sooväli-Sepping, H., Šūmane, S., Surová, D., Sutherland, L.A., Tcherkezova, E., Tisenkopfs, T., Tsiligiridis, T., Tudor, M.M., Wagner, K., Wästfelt, A., 2018. Typology and distribution of small farms in Europe: towards a better picture. Land Use Policy 75, 784–798. https://doi.org/10.1016/j.landusepol.2018.04.012.
Herrmann, G.A., Steidle, M., 2013. A key for the future of agriculture empowering smallholders. Ecol. Farming 3, 4–7.
IFOAM, 2014. The IFOAM Norms Organic Production Processing [WWW Document]. URL. http://www.ifoam.bio/sites/default/files/ifoam_norms_version_july_2014.pdf (accessed 12.8.20).
ISEAL Alliance, 2017. Evaluating the Impacts of Sustainability Standards; Lessons Learnt on Research Design and Methods from Three Impact Evaluations. London.
ISTAT, 2016. Istat [WWW Document]. URL. https://www.istat.it/it/dati-analisi-e-prodotti/banche-dati/statbase.
Jena, P.R., Chichaibelu, B.B., Stellmacher, T., Grote, U., 2012. The impact of coffee certification on small-scale producers' livelihoods: a case study from the Jimma zone. Ethiopia. Agric. Econ. 43, 429–440. https://doi.org/10.1111/j.1574-0862.2012.00594.x.
Kaltoft, P., Risgaard, M., 2006. Has organic farming modernized itself out of business? Reverting to conventional methods in Denmark. In: Holt, G.C., Reed, M. (Eds.), Sociological Perspectives of Organic Agriculture: From Pioneer to Policy. CABI, pp. 126–141.
Karki, S.K., Jena, P.R., Grote, U., 2016. Fair trade certification and livelihoods: a panel data analysis of coffee-growing households in India. J. Agric. Resour. Econ. 45, 436–458. https://doi.org/10.1017/age.2016.3.
Khalil, C.A., Conforti, P., Ergin, I., Gennari, P., 2017. Defining small-scale food producers to monitor target 2.3. of the 2030 agenda for sustainable development. In: FAO Statistics Working Paper Series, ESS/17–12 (Rome).
Kottila, M., Rönni, P., 2008. Collaboration and trust in two organic food chains. Br. Food J. 110, 376–394. https://doi.org/10.1108/00070700810868915.
Kreutzer, M., Cardinal, L.B., Walter, J., Lechner, C., 2016. Formal and informal controls as complements or substitutes? The role of the task environment. Strateg. Sci. 1, 235–255. https://doi.org/10.1287/stsc.2016.0019.
Läpple, D., 2010. Adoption and abandonment of organic farming: an empirical investigation of the Irish Drystock sector. J. Agric. Econ. 61, 697–714. https://doi.org/10.1111/j.1477-9552.2010.00260.x.
Läpple, D., Kelley, H., 2013. Understanding the uptake of organic farming: accounting for heterogeneities among Irish farmers. Ecol. Econ. 88, 11–19. https://doi.org/10.1016/j.ecolecon.2012.12.025.
Lefebvre, M., Espinosa, M., Gomez-y-Paloma, S., 2012. The Influence of the Common Agricultural Policy on Agricultural Landscapes. https://doi.org/10.2791/94269.
Lima, A.C.B., Novaes, Keppe André Luiz, Maule, F.E., Sparovek, G., Alves, M.C., Maule, R.F., 2009. Does Certification Make a Difference? Impact Assessment Study on FSC/SAN Certification in Brazil. Imaflora, Piracicaba.
Lin, B.B., 2011. Resilience in agriculture through crop diversification: adaptive management for environmental change. Bioscience 61, 183–193. https://doi.org/10.1525/bio.2011.61.3.4.
Lindh, H., Olsson, A., 2010. Communicating imperceptible product attributes through traceability: a case study in an organic food supply chain. Renew. Agric. Food Syst. 25, 263–271. https://doi.org/10.1017/S1742170510000281.
Meinshausen, F., Richter, T., Blockeel, J., Huber, B., 2019. Group Certification - Internal Control Systems in Organic Agriculture: Significance, Opportunities and Challenges. Research Institute of Organic Agriculture FiBL, Frick.
Naspetti, S., Lampkin, N., Nicolas, P., Stolze, M., Zanoli, R., 2011. Organic supply chain collaboration: a case study in eight EU countries. J. Food Prod. Mark. 17, 141–162. https://doi.org/10.1080/10454446.2011.548733.
Nassimbeni, G., 2004. Supply Chains: a network perspective. In: Westbrook, S.N.R. (Ed.), Understanding Supply Chains: Concepts, Critiques, and Futures. Oxford Univesity Press, New York, US, pp. 43–68.
Niu, B., Jin, D., Pu, X., 2016. Coordination of channel members' efforts and utilities in contract farming operations. Eur. J. Oper. Res. 255, 869–883. https://doi.org/10.1016/j.ejor.2016.05.064.
Orsini, S., Padel, S., Gambelli, D., Lernoud, J., Sanders, J., Solfanelli, F., Stolze, M., Willer, H., Zanoli, R., 2019. Beyond "mainstream" and "alternative" in organic food supply chains: empirical examples of added value distribution from eight European countries. Br. Food J. 122, 798–812. https://doi.org/10.1108/BFJ-07-2019-0508.
Ostrom, E., 2014. Collective action and the evolution of social norms. J. Nat. Resour. Policy Res. 6, 235–252. https://doi.org/10.1080/19390459.2014.935173.
Parvathi, P., Waibel, H., 2016. Organic agriculture and fair trade: a happy marriage? A case study of certified smallholder black pepper farmers in India. World Dev. 77, 206–220. https://doi.org/10.1016/j.worlddev.2015.08.027.
Pinto, L.F.G., Gardner, T., McDermott, C.L., Ayub, K.O.L., 2014. Group certification supports an increase in the diversity of sustainable agriculture network-rainforest alliance certified coffee producers in Brazil. Ecol. Econ. 107, 59–64. https://doi.org/10.1016/j.ecolecon.2014.08.006.
Poppo, L., Zenger, T., 2002. Do formal contracts and relational governance function as substitutes or complements? Strateg. Manag. J. 23, 707–725. https://doi.org/10.1002/smj.249.
Preißel, S., Reckling, M., 2010. Smallholder group certification in Uganda - analysis of internal control systems in two organic export companies. J. Agric. Rural. Dev. Trop. Subtrop. 111, 13–22.
Pugliese, P., Zanasi, C., Basile, S., 2015. L'agricoltura in Chiave Territoriale: l'esperienza dei Bio-Distretti, Bio in Cifre 2015 (Rome).
Raynolds, L.T., Murray, D., Taylor, P.L., 2004. Fair trade coffee: building producer capacity via global networks. J. Int. Dev. 16, 1109–1121. https://doi.org/10.1002/jid.1136.
Reganold, J.P., Wachter, J.M., 2016. Organic agriculture in the twenty-first century. Nat. plants 2, 15221. https://doi.org/10.1038/nplants.2015.221.
Rogers, E.M., 1983. Diffusion of Innovations, 3rd Ed, an Integrated Approach to Communication Theory and Research, 3rd ed. A Division of Macmillan Publishing Co., Inc., New York https://doi.org/10.4324/9780203710753-35.
Romero, C., Putz, F.E., 2018. Theory-of-change development for the evaluation of forest stewardship council certification of sustained timber yields from natural forests in Indonesia. Forests 9, 547. https://doi.org/10.3390/f9090547.
Romero Granja, C., Wollni, M., 2019. Opportunistic behaviour and trust: experimental results from broccoli farmers in Ecuador. J. Agric. Econ. 70, 62–80. https://doi.org/10.1111/1477-9552.12271.
Ruben, R., Zuniga, G., 2011. How standards compete: comparative impact of coffee certification schemes in northern Nicaragua. Supply Chain Manag. 16, 98–109. https://doi.org/10.1108/13598541111115356.
Ruben, R., Fort, R., Zúñiga-Arias, G., 2009. Measuring the impact of fair trade on development. Dev. Pract. 19, 777–788. https://doi.org/10.1080/09614520903027049.
Sacchi, G., Caputo, V., Nayga, R.M., 2015. Alternative labeling programs and purchasing behavior toward organic foods: the case of the participatory guarantee systems in Brazil. Sustainability 7, 7397–7416. https://doi.org/10.3390/su7067397.
Sahm, H., Sanders, J., Nieberg, H., Behrens, G., Kuhnert, H., Strohm, R., Hamm, U., 2013. Reversion from organic to conventional agriculture: a review. Renew. Agric. Food Syst. 28, 263–275. https://doi.org/10.1017/S1742170512000117.
Salvioni, C., Papadopoulou, E., Santos, M. Dos, 2014. Small farm survival in Greece, Italy and Portugal. EuroChoices 13, 52–57. https://doi.org/10.1111/1746-692X.12053.
Santacoloma, P., 2013. Voluntary standards for sustainable food systems: challenges and opportunities. In: Meybeck, A., Redfern, S. (Eds.), Voluntary Standards for Sustainable Food Systems: Challenges and Opportunities. FAO, Rome, pp. 11–23.
Serebrennikov, D., Thorne, F., Kallas, Z., McCarthy, S.N., 2020. Factors influencing adoption of sustainable farming practices in europe: a systemic review of empirical literature. Sustainability 12, 1–23. https://doi.org/10.3390/su12229719.
Seufert, V., Ramankutty, N., 2017. Many shades of gray—the context-dependent performance of organic agriculture. Sci. Adv. 3 https://doi.org/10.1126/sciadv.1602638.
Simatupang, T.M., Sridharan, R., 2004. Benchmarking supply chain collaboration: an empirical study. Benchmark. An Int. J. 11, 484–503. https://doi.org/10.1108/14635770410557717.
SINAB, 2020a. Bio in Cifre 2020.
SINAB, 2020b. "Organic figures 2020": the Italian organic farming data [WWW Document]. In: Bio Cifre 2020. URL. http://www.sinab.it/node/23495 (accessed 12.24.20).
Sinkovics, N., 2018. Pattern matching in qualitative analysis. In: Catherine Cassell, A.C., G.G (Eds.), The SAGE Handbook of Qualitative Business and Management Research Methods. SAGE, Thousand Oaks, pp. 468–485.
Smith, O.M., Cohen, A.L., Rieser, C.J., Davis, A.G., Taylor, J.M., Adesanya, A.W., Jones, M.S., Meier, A.R., Reganold, J.P., Orpet, R.J., Northfield, T.D., Crowder, D.W., 2019. Organic farming provides reliable environmental benefits but increases variability in crop yields: a global meta-analysis. Front. Sustain. Food Syst. 3, 1–10. https://doi.org/10.3389/fsufs.2019.00082.
Ssebunya, B.R., Morawetz, U.B., Schader, C., Stolze, M., Schmid, E., 2019. Group membership and certification effects on incomes of coffee farmers in Uganda. Eur. Rev. Agric. Econ. 46, 109–132. https://doi.org/10.1093/erae/jby022.
Stolze, M., Hartmann, M., Moschitz, H., 2012. Report on Total Costs of Three Organic Certification Systems in Six European Countries with Particular Focus on Organic Supply Chains. Research Institute of Organic Agriculture (FiBL).
Sturla, A., Viganò, E., Viganò, L., 2019. The organic districts in Italy. An interpretative hypothesis in the light of the common pool resources theory. Econ. Agro-Alimentare 21, 429–458. https://doi.org/10.3280/ECAG2019-002013.
Taufik, T., 2019. The effect of internal control system implementation in realizing good governance and its impact on fraud prevention. Int. J. Sci. Technol. Res. 8, 2159–2165.
Ton, G., 2008. Challenges for smallholder market access: a review of literature on institutional arrangements in collective marketing. Stewart Postharvest Rev. 4 https://doi.org/10.2212/spr.2008.5.1.
Valkila, J., Nygren, A., 2010. Impacts of fair trade certification on coffee farmers, cooperatives, and laborers in Nicaragua. Agric. Human Values 27, 321–333. https://doi.org/10.1007/s10460-009-9208-7.
Van Lange, P.A.M., Rusbult, C.E., 2012. Interdependence theory. Handb. Theor. Soc. Psychol. 251–272. https://doi.org/10.4135/9781446249222.n39.
Vogel, I., 2012. ESPA Guide to Working with Theory of Change for Research Projects. Ecosyst. Serv. Poverty Alleviation.
Wang, H.H., Wang, Y., Delgado, M.S., 2014. The transition to modern agriculture: contract farming in developing economies. Am. J. Agric. Econ. 96, 1257–1271. https://doi.org/10.1093/ajae/aau036.

Willer, H., Trávníček, J., Meier, C., Schlatter, B. (Eds.), 2021. The World of Organic Agriculture Statistics and Emerging Trends 2021.
Yin, R.K., 2018. Case Study Research and Applications: Design and Methods, Sixth Edition, 6th ed. SAGE, Los Angeles.
Zanoli, R., Gambelli, D., Solfanelli, F., 2010. Come sopravivere nel biologico: uno studio delle aziende agro-biologiche marchigiane mediante analisi di sopravvivenza. Econ. Agrar. 1, 63–82.
Zanoli, R., Gambelli, D., Solfanelli, F., 2014. Assessing risk factors in the organic control system: evidence from inspection data in Italy. Risk Anal. 34, 2174–2187. https://doi.org/10.1111/risa.12244.
Zezza, A., Demaria, F., Laureti, T., Secondi, L., 2020. Supervising third-party control bodies for certification: the case of organic farming in Italy. Agric. Food Econ. 8 https://doi.org/10.1186/s40100-020-00171-3.
Zorn, A., Lippert, C., Dabbert, S., 2013. An analysis of the risks of non-compliance with the European organic standard: a categorical analysis of farm data from a German control body. Food Control 30, 692–699. https://doi.org/10.1016/j.foodcont.2012.08.020.