

1 **Certifications in short food supply chains in the region of Madrid. Part**  
2 **of the alternative?**

3 *Mario González-Azcárate*<sup>a,b,\*</sup>, *José Luis Cruz-Maceín*<sup>a</sup>, *Isabel Bardají*<sup>b</sup>

4 <sup>a</sup> Instituto Madrileño de Investigación y Desarrollo Rural Agrario y Alimentario (IMIDRA). Finca Experimental "El Encín", Autovía del  
5 Noreste A-2 Km 38 2, 28805 Alcalá de Henares (Madrid), Spain.

6 <sup>b</sup> Centro de Estudios e Investigación para la Gestión de Riesgos Agrarios y Medioambientales (CEIGRAM), Universidad Politécnica De  
7 Madrid. C/ Senda del Rey 13, Campus Sur de prácticas E.T.S. de Ingeniería Agronómica, Alimentaria y de Biosistemas, 28040 Madrid,  
8 Spain.

9 \* Corresponding author. E-mail address: [mario.gonzalez@madrid.org](mailto:mario.gonzalez@madrid.org) (Mario González-Azcárate). ORCID: 0000-0001-9599-2564

10

11

## 1 Abstract

2 Third party certified food labelling schemes can be used to reduce asymmetric information in  
3 anonymous markets. However, in short food supply chains (SFSCs) trust linkages can be also built  
4 through direct contact between consumers and producers. This paper analyzes which type of local  
5 producers are interested in these officially recognized certifications, inferring the role that third  
6 party certified labelling schemes can play for SFSCs in the Region of Madrid (RofM). For this purpose,  
7 71 producers were surveyed in 2018. We studied their interest in third party certifications, what  
8 food attributes they offer to consumers and their perceptions about SFSCs.

9 Producers without interest in third party certifications not only offer direct product attributes but  
10 also inform about production methods and their characteristics as producers. Furthermore, these  
11 producers have more social and environmental ethical concerns for conventional chains,  
12 recognizing SFSCs as solutions with social, economic and environmental benefits. The findings of our  
13 study suggest that policies that promote or require existing officially recognized certifications in  
14 SFSCs may limit the participation of these committed producers. Therefore, third party certifications  
15 may not be the best strategy to support these producers in fostering a transition towards a more  
16 sustainable local food system in the RofM.

## 17 Keywords

18 short food supply chain; food certification; local food producer; third-party certification; participatory  
19 guarantee systems; Madrid.

20

## 1      1. Introduction

2      Short food supply chains (hereinafter SFSCs) have become a topic of interest for producers and  
3      consumers due to the expansion of the conventional food chain and the disconnection between  
4      consumers and production. Such disconnection implies that consumers know less about how food  
5      is produced and therefore, they have less attachment to it. Alternatively, SFSCs allow consumers to  
6      know the true value of a food product (Kneafsey et al. 2013), being a well-known strategy to re-  
7      localize food systems (Bellante 2017). Furthermore, SFSCs can benefit local communities by  
8      fostering rural development (DuPuis and Goodman 2005; Conner et al. 2010; Mancini and Arfini  
9      2018) or being an entry point for youth to engage in agri-food systems (HLPE 2021). Although short  
10     chains do not necessarily imply more sustainability with regards of global chains (Schmitt et al. 2017;  
11     Malak-Rawlikowska et al. 2019), both models and their benefits can be complementary.

12     Through the Common Agricultural Policy, the European Union has highlighted the importance of  
13     strengthening local food systems and SFSCs to enhance the farmers' position in value chains  
14     (Legowski et al. 2019). SFSCs could be defined by their organizational proximity (number of  
15     intermediates), physical distance between production and consumption, or sociological implications  
16     of the chain. In this regard, Marsden et al. (2000) have given more importance to the fact that SFSCs  
17     have to provide consumers with enough valuable information, allowing them to connect with  
18     production areas and their actors.

19     Information regarding food products is a crucial point, as it is closely related to consumer trust  
20     generation (Callejo 2009; Rittenhofer and Povlsen 2015). Nowadays, the high level of complexity in  
21     conventional agri-food systems hampers the access to food information (Yu and Nagurney 2013).  
22     For this reason, food labels have traditionally been used to convey information about production  
23     methods, product identity and composition. Voluntary food labeling schemes help to deliver this

1 information to consumers in a standardized manner. These labelling schemes entail a self-  
2 declaration scheme or a certification process, which can rely on private third-party attestation from  
3 a certification company or a public body (Grolleau and Caswell 2006; Ipsos 2013). In the report of  
4 Ipsos and London Economics Consortium (2013) 901 voluntary food labelling schemes operating in  
5 Europe were identified, 78% of them were based on certifications. In addition, Spain was found to  
6 be the country with the highest number of certifications in Europe. The most prevalent areas of  
7 these certifications were origin, followed by organic farming and traceability.

8 Although voluntary certified labeling is often seen as a counterweight to neoliberalism, they also  
9 reproduce many of its ideology and market mechanisms, attaching economic values to ethical  
10 behaviors, as it “doing good” is one more thing to be bought and sold (Guthman et al. 2007; Brown  
11 and Getz 2008). In addition, although certifications can pursue environmental or social  
12 enhancement, most of them need to have economic rationale for producers to get involved (Ilbery  
13 et al. 2005; Guthman et al. 2007; Smith 2008). In addition, Guthman et al. (2007) argued that  
14 all protection offered to certain producers by these voluntary certified labeling schemes is in  
15 exchange of creating a scarcity in others. They generate a certain social or environmental protection  
16 through the set of a private property right that would be only accessible to certain producers, who  
17 are not necessarily the most economically or socially vulnerable (Guthman et al. 2007). In this  
18 regard, Nelson et al. (2010) stated how mainstream certifications can lead to a process of  
19 conventionalization, as globalized standards displace more comprehensive network-based and local  
20 standards. In addition, certification also implies extra time and effort from producers and, in most  
21 of the cases, they must pay for it (Grolleau and Caswell 2006; Guthman et al. 2007; Higgins et al.  
22 2008; Dabbert et al. 2014; Starobin 2021). For instance, organic third-party certification  
23 requirements clearly favor large-scale producers being a barrier for smallholder producers, and this  
24 reproduces socio-spatial inequalities (Bellante 2017; Home et al. 2017). This explains why many

1 small producers recognize themselves as being organic, although they are not certified as “organic”  
2 or registered (López 2011; Kneafsey et al. 2013; Dabbert et al. 2014; Starobin 2021).

3 Many critics to the suitability of these third party certifications for small-scale producers have  
4 favored the emergence of other guarantee systems called Participatory Guarantee Systems (PGSs),  
5 which can generate numerous positive impacts in the territories related to local producers’  
6 empowerment (Nelson et al. 2010; Bellante 2017; Cuéllar-Padilla and Ganuza-Fernandez 2018). As  
7 opposed to third party certifications, PGSs offer a cheaper procedure, being more accessible for  
8 small producers (Nelson et al. 2010; Cuéllar-Padilla and Ganuza-Fernandez 2018; Niederle et al.  
9 2021). Besides, PGSs are based on horizontally governance, in which criteria is defined and checked  
10 by local stakeholders (Cuéllar-Padilla and Ganuza-Fernandez 2018; Niederle et al. 2021). In addition,  
11 bureaucracy in PGSs is more flexible and information is universally accessible, being more  
12 transparent than third party certifications (Cuéllar-Padilla and Ganuza-Fernandez 2018). Lastly,  
13 instead of individual tests, PGSs entail a collective learning process, enhancing the sharing of  
14 knowledge between local and small producers (Cuéllar-Padilla and Ganuza-Fernandez 2018).  
15 Indeed, PGSs are valuable certification options for small-scale producers that market their produce  
16 in the local markets, being alternative and complementary to the third party certifications (Nelson  
17 et al. 2010; Bouagnimbeck 2014; Bellante 2017; Home 2017).

18 In SFSCs, face-to-face direct encounters and relating products to their regional or local  
19 characteristics reduce asymmetric information and build consumers’ trust (Smith 2008; Scalco et al.  
20 2020; Starobin 2021; Cruz et al. 2021). Consequently, local marketing and direct sales decreases the  
21 need for farmers to be certified (Ward et al. 2004; Veldstra et al. 2014;). In this sense, to not be  
22 certified is also an opportunity for SFSCs, as it can lead to a higher differentiation of food products  
23 traded in these chains (Krzywoszynska, 2015). However, Higgins et al. (2008) have stated that even  
24 in direct selling, private market-standards could increase consumer trust. In fact, dishonest practices

1 could also happen in face-to-face encounters if consumers do not engage with the production  
2 process or in trust-based relationship with the producers (Home et al. 2017). In addition to this,  
3 depending on the profile of SFSC consumers, they may like to have further guarantees on the quality  
4 of food products, even when direct contact takes place (Cruz et al. 2021). In Europe, whether  
5 voluntary labelling schemes for local food and SFSCs would assist producers to market their  
6 production locally is a controversial topic. On one hand, specific labels can aid consumers to identify  
7 certain products. On the other hand, an extra layer of labelling over the many existing labels can  
8 also confuse consumers (Ministerio de Agricultura, Alimentación y Medio Ambiente [MAGRAMA]  
9 2013; Kneafsey et al. 2013).

10 In Spain, although SFSCs are less developed than in other European countries, such as Germany or  
11 UK, these chains are expected to grow in the forthcoming years (MAGRAMA 2013). The RofM is an  
12 interesting case, being a small region of mainland Spain (8.030 km<sup>2</sup>) with the highest density of  
13 population, an extensive road network and where the primary sector has a low impact on the whole  
14 of the regional economy. According to the National Statistics Institute (INE), only 0.26% of the  
15 working population in the RofM were employed in the primary sector in 2018. However, the  
16 proximity to such a large market has promoted the development of local SFSC initiatives (Ochoa et  
17 al. 2019) and there is margin for SFSCs to grow in the RofM (González-Azcárate et al. 2021). The role  
18 that voluntary certified labelling could play within SFSCs in this particular region is far from clear.  
19 Many of the local small farmers of the RofM are driven by ethical concerns and seek the goal of  
20 building alternatives to the global food system and have sustainable ways of life (Simon-Rojo and  
21 Duží 2017; Mancha Cáceres and Ramírez García 2018). Likewise, some authors have stated that for  
22 many producers and consumers, SFSCs are an expression of distrust towards public and private  
23 certifications (Padilla and Torremocha 2009) and the conventionalization of agriculture (López  
24 2011). Although, PGSs may be an alternative to third party certifications in the future, the reality is

1 that at present PGSs do not have legislative recognition in the RofM and their dissemination is highly  
2 limited (Cifuentes et al. 2018).

3 Nowadays, there are eight important officially recognized labelling schemes for producers in this  
4 region, all of them based on external accreditation. First, the European organic logo and four  
5 European designations of geographical origin (PDO, PGI, and GI). In addition, there are three  
6 regional quality labels, one for certain varieties of olives and another one for olive oil produced in  
7 the RofM. Lastly, the “M Producto Certificado” which is granted to food produced in the RofM that  
8 has one of the previous certifications or has a differentiated superior quality. With regards of SFSCs,  
9 these types of certifications can be a useful option for alternative food networks that want to  
10 expand beyond direct marketing as it is the case of extended SFSCs (Renting et al. 2003; Higgins et  
11 al. 2008). However, in this small region whose demand is much greater than local production and  
12 which has many opportunities to resort to more direct local marketing channels, are these  
13 certifications useful for SFSCs?

14 To summarize, the proliferation of third party certifications within SFSCs could foster the entry of  
15 more professional producers and big enterprises. Eventually, these certifications may lead to a  
16 deeper conventionalization of SFSCs, which may mainly be approached from economic aspects,  
17 limiting their capacity to build alternatives to conventional agri-food systems and excluding  
18 committed producers that comprehend SFSCs not only as an economic alternative to conventional  
19 chains, but also as social and environmental alternatives.

20 During the last few years, SFSCs have gained increasing attention within the research community,  
21 being an emergent research field (Kumar et al. 2019). To our knowledge, there has been a call for  
22 more research about the role that different certifications can play in SFSCs (Higgins et al. 2008;  
23 Kneafsey et al. 2013; Eugenio et al. 2017). This manuscript analyzes producers’ perceptions about

1 these third party certifications, what short chains they prefer and their motivations to participate in  
2 SFSCs, casting light on the fact that third party certifications may fall short of these committed  
3 producers' values and/or intentions. The purpose of this paper is to study the producers' profiles  
4 depending on their interest in the third party certifications of the RofM, so that appropriateness of  
5 policies that promote these certified labelling schemes in SFSCs can be inferred. Thus, on this  
6 background we hypothesized the following:

7 H1) Third party certifications are not a matter of interest for producers that are more interested in  
8 interacting directly with consumers.

9 H2) Producers that have no interest in third party certifications have a more holistic approach to  
10 SFSCs, valuing their economic, social and environmental benefits.

11 This paper is structured as follows: the introduction here above, including some key features about  
12 SFSCs, certifications and the context of local agricultural production in the RofM. Then the material  
13 and methods used, firstly describing the survey, then the sample characteristics, and finally  
14 explaining the procedure carried out in the article. This is followed by the results and discussion,  
15 both combined in a single section, where key results are discussed and policy implications inferred.  
16 Finally, based on the results, there is a short conclusion section providing a statement about the  
17 role that the current official certifications can play for SFSCs in the RofM.

## 18 2. Materials and Methods

19 In order to achieve the paper purpose and test the research hypotheses, we analyze the differences  
20 among local producers, in terms of their interest in selling in different SFSCs and their perceptions  
21 of SFSCs, depending on their interest in being certified and what food information they offer to  
22 consumers.

## 1        2.1 Survey design

2        An online survey was carried out in 2018 with a sample of producers from the RofM. The survey,  
3        which was conducted in Spanish, included questions about the sample characteristics (type of food  
4        produced, main marketing channel and organic or agro-ecological production), information  
5        processes, certifications, and SFSCs. Participants responded to each item using a numerical ten-  
6        point scale. The content of the survey translated into English is provided in the Appendix I. To better  
7        define the items of the survey, several informal qualitative interviews about information processes,  
8        certifications, and SFSCs were previously conducted with local producers from the same sample  
9        frame.

10       The initial section, “information processes”, was related to what attributes are transmitted by  
11       producers. The items associated with informing consumers about different attributes were sorted  
12       by the following categories: product, producer and production methods (see Renting et al. 2003;  
13       Ilbery et al. 2005; King et al. 2010; Romero-López and Ramos 2017).

14       Concerning the certification section, the interest of producers in officially recognized certifications  
15       was measured. The interest in being officially certified was analyzed as one whole, without focusing  
16       on any specific third party certification available on the RofM. This approach allows to have an  
17       overall picture of producers’ perceptions about third party certifications regardless the type of food  
18       they produce or their feasibility to access to a specific labelling scheme. There were four items  
19       representing the interest of producers in certifications. Certification response options were based  
20       on responses given by local producers of the RofM in qualitative interviews and literature research  
21       (del Valle and López-García 2014; Germinando 2019).

22       As regards SFSCs, this section contained items asking about the interest in participating in different  
23       SFSCs. In addition, the survey asked producers about their perceptions of SFSCs through their degree

1 of agreement with different advantages and drawbacks of SFSCs. The SFSCs list was obtained from  
2 an academic literature analysis (López 2011; MAGRAMA 2013; Méndez and Monteserín Abella 2017;  
3 Ochoa et al. 2019; Germinando 2019) and information derived from the previous interviews.

4 The interest in a SFSC does not only refer to an activity in that particular channel, but also a  
5 willingness to participate in it. This approach allows to have an overall picture of producers' interest  
6 in different SFSCs, regardless the type of food they produce or their current feasibility to access to  
7 a channel. It has to be noted that SFSCs in the RofM are in an evolutionary stage and they have room  
8 for growth. That is why many SFSCs may not be available or easily accessible to all kind of producers  
9 throughout the year (Méndez and Monteserín Abella 2017; Simon-Rojo and Duží 2017; Michelini et  
10 al. 2017; Ochoa et al. 2019). The analysis of the interest provides valuable insights for the coming  
11 years, when the different SFSCs will be presumably more extended and consolidated.

12 The advantages questions were based on interest of producers in economic, social or environmental  
13 benefits of SFSCs. These three aspects shape the sustainability framework, being key indicators for  
14 measuring SFSCs sustainability (Kumar et al. 2019). Drawbacks were dependent on time, logistical  
15 and market constraints. The advantages and drawbacks in this paper were obtained from literature  
16 research (DuPuis and Goodman 2005; Conner et al. 2010; Kneafsey et al. 2013; Méndez and  
17 Monteserín Abella 2017; Schmitt et al. 2017; Mancini and Arfini 2018; Todorovic et al. 2018; Malak-  
18 Rawlikowska et al. 2019; Ochoa et al. 2019; Rucabado-Palomar and Cuéllar-Padilla 2020) and  
19 information derived from the interviews.

## 20 2.2 Participants

21 The survey was sent out via email through different networks that physically distributed the survey  
22 among their members. In total, 71 producers filled out the survey. Forty-six producers were part of  
23 the network of the Chamber of Agriculture in the RofM (*La Cámara Agraria de la Comunidad de*

1 *Madrid*), which is a corporation governed by public law. This corporation assembles 198 producers  
2 from the RofM, who are more or less professionalized but that make their living from their food  
3 production. The remaining 25 were contacted through the networks of the Local Action Groups,  
4 which are non-profit associations formed by representatives of the public and private sector. These  
5 groups are responsible for the development and application of the Local Development Strategies in  
6 their territory. The typology of the producers that participate in these networks varies depending  
7 on each Local Action Group, converging different local producers with regards of the type of food  
8 produced, size or their marketing channels.

9 In table 1, the sample is described according to the type of food produced, main marketing channel  
10 and production methods. It is noticeable that the cumulative frequency of the type of food produced  
11 was greater than the sample size, meaning that several producers produced more than one type of  
12 food. In addition, the main marketing channel was direct selling to consumers and only one in nine  
13 stated that their main marketing channel was supermarkets. This reflected the local and small-size  
14 nature of producers in the sample. Lastly, around one-third of the sample produced organic or  
15 according to agro-ecological principles.

16 The sample was comparable in terms of the types of food produced with a recent report of local  
17 food producers from the RofM. The report analyzed a sample of 200 producers that have common  
18 features such as sales in SFSCs, have a small size, etc. (Germinando 2019). The only exception was a  
19 reasonably lower number of fruits and vegetables producers. This is probably linked with the fact  
20 that the survey was conducted in winter, when fruit and vegetable producers are less active due to  
21 the seasonality of their crops, having little agricultural activity during these months.

	Frequency	Percentage
<b>Type of food produced (n=104)</b>		
Cheese	18	17,3%
Olive oil	17	16,3%
Wine	16	15,4%
Honey	10	9,6%
Beans	6	5,8%
Fruits and vegetables	6	5,8%
Meat	6	5,8%
Beer	4	3,8%
Jam	3	2,9%
Others	18	17,3%
<b>Main marketing channel (n=69)</b>		
Direct selling to consumers	34	47,9%
Specialty shops	17	23,9%
Supermarkets	9	12,7%
Non-specialty small shops	9	12,7%
<b>Organic or Agro-ecological production (n=70)</b>		
Yes	25	35,7%
No	45	64,3%

Table 1 - Characteristics of the survey sample (N=71).

1

## 2 2.3 Procedure and statistical analyses

3 Firstly, a general outline of the sample characteristics was carried out. Secondly, based on the  
4 variables about the importance of communicating different attributes to consumers, three different  
5 scales were created. The first scale reflected the information provided about characteristics of food.  
6 The second one integrated the information referring to production methods. Lastly, the third one  
7 condensed the information offered about the producer. The three scales were created based on the

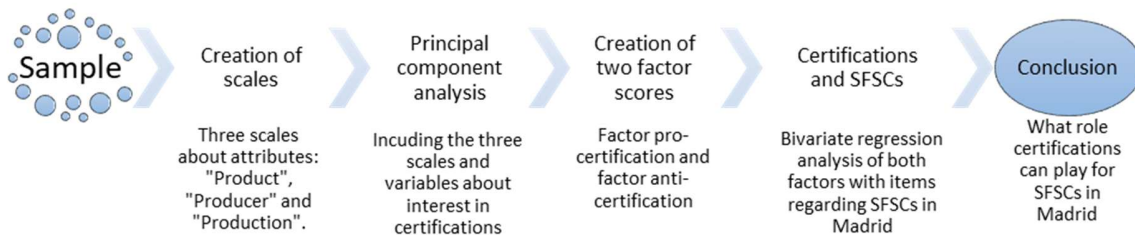
1 simple sum of their variables values. Reliability of the three scales was validated through Cronbach's  
2 Alpha ( $\alpha$ ) score.

3 Afterwards, the four questions about the interest of producers in third party certifications and the  
4 three scales were run together in a Factor Analysis, which was based on Principal Component  
5 Analysis (PCA). The PCA is a multivariate technique used to simplify the numerous and complex  
6 relations that can be found in a set of quantitative observed variables. The objective of the analysis  
7 was to group the variables according to the importance of transmitting different attributes and the  
8 interest in certifications. A Varimax rotation was applied to force the factors to be orthogonal. With  
9 the rotation, each factor will tend to have either small or large loadings of each variable. The  
10 criterion used to extract these factors was when autovalues were greater than unity, i.e. factors that  
11 explain more variance than any original variable. Once the final factorial solution is reached, the  
12 factors are named, and this is subjective, requiring a combination of intuition and knowledge of the  
13 variables. The statistical contrasts used to evaluate the goodness of the fit of the factorial models  
14 formulated were: the mean of the KMO (Kaiser-Meyer-Olkin) measure and Bartlett's test of  
15 sphericity.

16 Afterwards, factor scores were created by regression through a weighted sum of PCA. Under this  
17 process, the computed factor scores are standardized to a mean of zero; whereas, the standard  
18 deviation of the distribution of factor scores (by factor) is one. Finally, the factor scores were crossed  
19 by bivariate regression with the items regarding interest in participating in different SFSCs, as well  
20 as main perceived advantages and disadvantages of SFSCs. For the regressions, a two-level  
21 significance was set at 5% ( $p < 0.05$ ) and at 1% ( $p < 0.01$ ).

22 In Figure 1, the steps followed are shown. The statistical analyses provided information that allowed  
23 us to identify which type of producers would benefit from a higher use of third party certifications

1 within SFSCs. As a result, certain implications of policies that promote certified labelling schemes to  
 2 foster SFSCs were deduced.



3

4

*Fig. 1 Steps of the procedure followed in the article*

5

## 6 3. Results and discussion

### 7 3.1 Product, producer and production methods attributes

8 Table 2 shows the frequency (n), mean and standard deviations (SD) of variables regarding  
 9 information attributes. It is remarkable that most of the standard deviations were considerably high,  
 10 meaning that there was a great variability in the sample. In the scale about the characteristics of the  
 11 product, quality was not included. Despite that quality is a main product attribute, it was removed  
 12 due to its limited variability ( $SD < 1$ ) and its high mean (9,51). In other words, quality is an overarching  
 13 attribute to be communicated to consumers. In fact, the median score of the variable was ten and  
 14 its minimum score was seven. The importance of highlighting the quality of food happens  
 15 independently from communicating other product attributes.

16 The internal reliability of the three multi-item scale was verified, since their Cronbach's alphas were  
 17 over 0.7 threshold suggested by Nunnally (1978).

	n	Mean	SD
<b>Product characteristics scale</b> Cronbach's alpha =0.701			
Quality <sup>a</sup>	71	9,51	0,97
Health benefits	71	7,87	2,64
Allergens	69	6,41	3,54
Ingredients	71	8,10	2,60
Variety (of milk, of tomato, of....)	67	7,61	2,94
<b>Producer characteristics scale</b> Cronbach's alpha =0.793			
Experience gained	71	7,07	2,89
Training acquired	69	5,70	3,02
Family tradition	71	6,20	3,80
Values, principles and priorities in my work.	70	7,27	3,38
<b>Production methods scale</b> Cronbach's alpha =0.919			
Production season	69	7,00	2,74
Tasks and treatments done	71	7,06	2,78
Time of harvest, elaboration, slaughtering, ripening...	71	6,86	3,15
The production method (extensive or intensive)	69	6,00	3,34
Farm characteristics: natural surroundings, quality of irrigation water ...	69	6,14	3,55
The production has been environmentally friendly	70	7,40	2,83

<sup>a</sup> Quality has not been included in the scale "Characteristics of the product"

Table 2 - Characteristics (descriptive data, items and reliability tests) of the three constructs: "Product characteristics scale", "Producer characteristics scale" and "Production methods scale".

### 3.2 Interest in certifications and transmitted attributes

Table 3 displays the results of the PCA, along with the frequency, mean and standard deviation of the attributes scales and variables about interest of producers in official recognized certifications.

Means of the three scales are expressed on a scale range zero to ten to facilitate interpretation.

A Kaiser-Meyer-Olkin (KMO) value of 0,56 and the result of Bartlett's test of sphericity (Approx.  $\chi^2 = 151,310$ ;  $p=0,0000$ ) indicated that the data was suitable for PCA (Kaiser 1974). This reliability was

1 confirmed despite the relatively statistical small sample of 71 participants (see Barrett and Kline  
 2 1981; de Winter et al. 2009). The two-factor solution accounted for 60,5% of the variance in the  
 3 study data, which can be considered as a satisfactory solution in social sciences (Hair et al. 2014).  
 4 One factor accounted for 36,0% and the other factor explained 24,5% of the variance.

	n	Mean	SD	Factor Loadings	
				FACTOR 1	FACTOR 2
Product characteristics scale <sup>a</sup>	66	7,48	2,13	<b><u>,481</u></b>	<b><u>,625</u></b>
Producer characteristics scale <sup>a</sup>	69	6,54	2,59	<b><u>,901</u></b>	,128
Production methods scale <sup>a</sup>	68	6,70	2,62	<b><u>,759</u></b>	,132
The officially recognized certifications (organic, M producto certificado, PDO, PGI, GI, regional quality labels) open many doors.	70	6,56	2,70	,128	<b><u>,830</u></b>
Official certifications are essential to build consumer trust	70	6,66	2,80	,001	<b><u>,880</u></b>
Work well done is the best source of trust for the consumer	70	9,10	1,29	<b><u>,583</u></b>	-,065
Official certifications are not worth it, too much paperwork and little sales	70	5,40	3,00	<b><u>,379</u></b>	<b><u>-,472</u></b>

5 <sup>a</sup> Means of the scales are expressed on a scale range 0-10.

6 *Table 3 - Principal components analysis (PCA) and descriptive data of the three scales and the questions regarding*  
 7 *interest of producers in certifications.*

8 The factor one was tagged as “anti-certification”. This factor symbolizes producers that have no  
 9 interest in available third party certifications, because they do not need them, or because they think  
 10 their benefits do not outweigh their costs. The “anti-certification” factor is associated with informing  
 11 consumers about the attributes of product features, producer characteristics and production  
 12 methods.

13 The second factor was named as “pro-certification”. This factor characterizes the part of the sample  
 14 that has a high interest in these certifications. The “pro-certification” factor is associated with  
 15 informing consumers mainly about the characteristics of the product, while producer and  
 16 production methods attributes remain in a second level. This lack of correlation is remarkable since

1 main certifications, such as the organic EU label, are supposed to be designed for verifying  
2 production methods (Dabbert et al. 2014; Janssen and Hamm 2014).

3 In practice, producers with no interest in third party certifications inform more holistically (about  
4 product, producer and production methods) than producers interested in these certifications, who  
5 only focus on product attributes. With the two factors defined, two factor scores were created  
6 through the weighted sum scores of their variables.

### 7 [3.3 Short food supply chains: interest and perceptions](#)

8 In Table 4, the two factor scores are crossed by regression analyses with the questions regarding  
9 SFSCs. The upper part of Table 4 contains items about the interest of producers in the main types of  
10 SFSCs in the RofM. The lower part of table 4 displays items about what advantages and  
11 disadvantages producers observe in SFSCs.

12

	n	Mean	SD	Anti-certification (F1)		Pro-certification (F2)	
				r	p	r	p
<b><u>Interest in different SFSCs</u></b>							
Internet	71	6,79	3,00	<b>,298*</b>	,017	,063	,621
Farmers' markets	70	6,80	3,61	<b>,532**</b>	,000	,128	,312
Specialty shops (organic, local, gourmet...)	71	8,04	2,49	,148	,242	<b>,353**</b>	,004
Directly at your farm/garden	70	6,86	3,51	<b>,470**</b>	,000	,181	,155
Directly to the consumer agreeing in advance what is going to be grown. "Producer-consumer contract".	68	4,09	4,25	<b>,296*</b>	,021	,225	,081
Food consumer groups in neighborhoods	69	5,49	3,74	<b>,471**</b>	,000	<b>,259*</b>	,040
Food consumer groups in companies	68	5,04	3,90	<b>,369**</b>	,003	,114	,375
<b><u>Advantages of SFSCs</u></b>							
Possibility of offering a higher quality product	70	7,89	2,68	<b>,398**</b>	,001	<b>,282*</b>	,024
Direct contact with the consumer	71	9,20	1,34	<b>,528**</b>	,000	-,001	,995
Lower environmental impact	71	7,25	2,33	<b>,381**</b>	,002	,211	,095
It allows more benefit margin to producers	70	8,00	2,18	<b>,419**</b>	,001	<b>,257*</b>	,040
A better price can be offered to the consumer	71	8,07	2,17	<b>,427**</b>	,000	<b>,340**</b>	,006
Higher support to rural development	71	7,21	2,86	<b>,620**</b>	,000	,109	,391
It has higher consumer loyalty	71	8,51	1,69	<b>,493**</b>	,000	,211	,095
It is easier to plan the production	69	5,77	3,22	<b>,495**</b>	,000	,213	,094
<b><u>Drawbacks of SFSCs</u></b>							
There is no time to produce and, in addition, attend to consumers	70	5,11	2,91	,160	,206	,008	,952
The difficulty to establish a stable clientele	70	4,96	2,76	,188	,137	-,045	,721
There is a limited variety of products offered	70	3,84	3,02	-,026	,841	-,028	,824
It is more convenient to go to a single wholesaler	69	5,20	3,08	-,012	,924	-,156	,225
High distribution costs	71	5,72	3,06	,208	,099	-,177	,161
Consumers are used to having all kind of products all year round	70	7,39	2,58	-,080	,527	-,017	,892

1 *i* A two-level significance  $p < 0.01$  (\*\*) and  $p < 0.05$  (\*) was established.

2 Table 4 - Regression analyses between the two certifications factor scores and questions regarding SFSCs.

1 The significance of the statistical results proved a marked tendency between the factors and many  
2 SFSC variables. Firstly, the anti-certification factor had significant positive correlations with almost  
3 every short chain, the only exception was specialty shops. In general, specialty shops require  
4 certifications from their producers as a guarantee (del Valle and López-García 2014). Apart from the  
5 internet, all the chains imply direct contact between producers and consumers. Remarkably, the  
6 internet had also significance with the factor anti-certification. In fact, depending on its format the  
7 internet can be a channel that allows direct communication between producers and consumers. In  
8 addition, once first contact between producer and consumer has taken place and trust has been  
9 built, the internet can be used as a channel for consequent purchases.

10 Direct selling implies a connection between consumers and food production, where trust-based  
11 relationships are created through the information provided in encounters. Therefore, our first  
12 hypothesis (H1) was confirmed, because the lack of interest in being third party certified is  
13 associated with the interest in those SFSCs that imply a direct contact between producers and  
14 consumers, being a direct way to offer comprehensive food information to consumers. In addition,  
15 this hypothesis is reinforced by the fact that a more direct contact in the channel also reflected a  
16 higher correlation, which is the case for farmers' markets, on-farm sales and food consumer groups  
17 in neighborhoods. The exception to this is the producer-consumer contract, which also implies an  
18 intense direct contact between producers and consumers. However, this SFSC was the worst rated  
19 one and probably many producers ignore its dynamics.

20 Secondly, the pro-certification factor score had only a significant correlation with specialty shops  
21 and with food consumer groups in neighborhoods. As mentioned above, specialty shops are an  
22 intermediary with some requisites from the conventional channel, where there is not direct contact  
23 between producer and consumer. Interestingly, the pro-certification factor correlated also with  
24 consumer groups, which is a channel with presumably direct contact between producers and

1 consumers. Consumer groups are people who come together to buy from producers or small  
2 retailers. It has to be taken into the account that the nature of consumer groups is very different  
3 depending on the grade of organization and consumers' profile. On one hand, there are groups  
4 characterized by a strong commitment and political activity. On the other hand, there are groups  
5 with less commitment, based on on-line platforms and a greater externalization of distributional  
6 functions (del Valle and López-García 2014; Sanz-Cañada et al. 2018). In their research, Sanz-Cañada  
7 et al. (2018) identified that consumer groups in Madrid are provided by both kinds of producers,  
8 with and without organic certification. Particularly, the farmers that are certified are those who also  
9 need to attend to other conventional marketing channels. Therefore, the pro-certification factor  
10 correlated with the interest consumer groups may be due to two reasons. First, because some  
11 consumer groups require official certification. Secondly, because some producers have hybrid  
12 strategies and although they may have an interest in consumer groups, they also sell in conventional  
13 channels, having for that reason an interest in these certifications.

14 Generally, producers valued more positively the advantages than the disadvantages of SFSCs,  
15 suggesting that they perceive SFSC as a beneficial option to sell their food products. As shown in  
16 Table 4, regardless of the interest in being certified, producers do not differ in their opinions about  
17 main drawbacks of SFSCs as there are not significant correlations between the drawbacks and the  
18 two factors scores. The most rated disadvantage was that consumers have to adapt their demand  
19 to the seasonality. This drawback has been already identified in previous research as a major  
20 limitation for SFSC growth (Conner et al. 2010; Ochoa et al. 2019).

21 On the other hand, noteworthy differences were found between the correlations of both factors  
22 and main advantages of SFSCs. The anti-certification factor was positively correlated with all the  
23 social, economic and environmental advantages. By contrast, the pro-certification factor correlated  
24 with less advantages. These advantages can be considered economic rather than social or

1 environmental benefits. The only exception is quality, which depending on the approach, could be  
2 an economic or a social advantage.

3 Thus, hypothesis 2 (H2) was confirmed. Third party certifications are not worthwhile for producers  
4 who communicate more holistically about their food products, and that approach SFSCs as an  
5 economic, social and environmental solution. These producers have social and environmental  
6 ethical concerns of conventional chains, comprehending SFSCs more as a way to build social,  
7 economic and environmental alternatives to global chains. Many of these producers have farms that  
8 could be certification worthy, in principle, but they remain either unwilling or not able to pay for it.

9 Based on Eugenio et al. (2017), the present paper could be the first study that straightly addresses  
10 the rationale of producers to get involved in SFSCs from a certification perspective. Even so, the  
11 present investigation contributes to past research within and out of this region. In the RofM, many  
12 small farmers are driven by ethical concerns (Simon-Rojo and Duží 2017; Mancha Cáceres and  
13 Ramírez García 2018), the present results suggest that these producers could also have a low  
14 interest in third party certifications. In addition, this study supports the idea that third party  
15 certifications may divide SFSCs into simple market segments (Eugenio et al. 2017; Parker et al. 2020),  
16 as producers that mainly have an economic rationale to get involved in SFSCs are also the most  
17 interested in certifications. In this regard, this also builds on the idea that economic rationale is the  
18 main driver for producers to get involved in certifications or labelling schemes (Ilbery et al. 2005;  
19 Guthman et al. 2007; Smith 2008). Also, Gallaud and Laperche (2016) stated that many producers  
20 using SFSCs have social economy objectives and that their main objective is not necessarily to reduce  
21 cost or maximize profit. According to the insights of this study, third party certifications may not be  
22 a matter of interest for the producers who have broader objectives in SFSCs. Lastly, this contributes  
23 to (Parker et al. 2020) in highlighting that certified labeling may feel short to inform and create

1 awareness in consumers, as the producers that are more interested in communicating holistically  
2 about food do not have an interest in certification.

### 3 3.4 Policy implications

4 Some policy implications can be derived from the obtained results. First, if third-party certifications  
5 are a requirement for producers to access to public SFSCs, such as farmers markets, food  
6 procurement programs or fairs, it could hinder some conscious local producers from participating  
7 in them. Many of these initiatives are now rising in the RofM and its municipalities and there is not  
8 a complex regulatory framework developed yet. When considering the different aspects to establish  
9 requirements for public SFSCs, it is important that policy makers take into consideration that these  
10 certifications can limit the participation of many producers. These producers can be important  
11 actors in shifting to sustainable local food systems, as they link SFSCs with advantages in economic,  
12 social and environmental areas. According to the FAO (2018), sustainable food systems deliver food  
13 security and nutrition while ensuring sustainability in its three pillars: economic, social and  
14 environmental, and SFSCs can contribute to local food system sustainability through these three  
15 pillars (Jarzębowski 2020). In this same respect, SFSCs can be a great entry point for youth to engage  
16 with their local agrifood system (HLPE 2021). However, requirements to use these labeling schemes  
17 in public SFSCs may exacerbate some of the barriers youth already face, such as the lack of access  
18 to land or to credit (Guthman 2007; HLPE 2021).

19 Secondly, the results showed how producers interested in third-party certifications focus to offer  
20 information about their final product. To raise awareness in consumers is an important step to  
21 facilitate their choices of sustainable food; and this can be done through the communication of food  
22 attributes. However, these attributes should not be limited to the product itself and its quality, but  
23 also to the producer and production method attributes, as they are also important attributes for

1 consumers to choose SFSCs (Renting et al. 2003; King et al. 2010; Romero-López and Ramos 2017).  
2 Therefore, as producers with interest in third party certifications focus to offer information about  
3 the product attributes, these certifications may not be the best option to raise food awareness in  
4 consumers.

5 Thirdly, policy-makers could develop a legislative recognition of alternative systems to third-party  
6 certification, such as PGSs (Participatory Guarantee Systems). PGSs could offer a complementary,  
7 low-cost, locally-based system of quality assurance to third party certifications. In addition, PGSs  
8 can foster producers collaboration and farmer-to-farmer learning, although it depends on the  
9 producers organization and willingness to participate in these collaborative processes (Bellante  
10 2017). Past research in Italy highlighted the importance of PGSs for SFSC actors as an alternative to  
11 the mainstream organic certification; for this reason, many informal groups and agro-food  
12 cooperatives have strongly advocated for an official recognition in their region (Sacchi 2018). In fact  
13 in Brazil, the official recognition of PGSs has allowed a higher number of small producers to be  
14 certified, contributing to a gradual agroecological transition of their food system (Niederle et al.  
15 2020). The institutional support of PGSs is indispensable in the success of these certifications  
16 (Nelson 2010; Bellante 2017; Home et al. 2017). Therefore, the institutionalization of PGSs would  
17 facilitate the spreading of these certification systems, allowing a higher number of producers  
18 involved in SFSCs to be certified. European countries and regions can take advantage of the new  
19 organic regulation of the European Union that will allow an internal control system for small  
20 producers, which can be similar to the PGS concept (Niederle et al. 2020). In this same line, other  
21 alternative formal systems could be also developed and totally funded by local governments. There  
22 are municipalities' initiatives in the region such as the quality label named "fresh product from Soto  
23 del Grillo Agroecological Park" that have been effective alternatives to third party certifications  
24 (Pinna 2015).

1 Fourthly, third-party certifications are a good mechanism for those producers who consider SFSCs  
2 mainly as a commercial strategy, as well as for SFSC consumers who do not prioritize to have direct  
3 contact but still want a quality certification of the products (Cruz et al. 2021). Therefore, these  
4 certifications are still good tools for fostering local consumption in some kinds of SFSCs and  
5 conventional channels. Nevertheless, holistic food policies that support a deeper change in the local  
6 food systems should be prioritized. In any case, as seen in the Brazilian case, the official recognition  
7 of different certification systems such as third party certifications, PGSs and other forms of social  
8 control can coexist (Niederle et al. 2020).

9 Fifthly, independently of their interest in certifications and the type of information they offer,  
10 producers perceived a list of SFSC drawbacks associated with time, convenience and logistics. Policy  
11 makers can support the consolidation of SFSC through policies that face these issues. Among others,  
12 these policies can be aimed to foster producers' cooperation (Sevilla Guzmán et al. 2012; Galli and  
13 Brunori 2013; Paciarotti and Torregiani 2020), the creation of food hubs (Paciarotti and Torregiani  
14 2020) or the transfer of infrastructure to facilitate food transformation and commercialization for  
15 small local producers (e.g. warehouses, slaughterhouses) (AGROECOLOGICAM 2020a;  
16 AGROECOLOGICAM 2020b).

17 It is considered that the present study has external validity as defined by Lucas (2003), but more  
18 cumulative knowledge on the topic in other contexts and regions will confirm this external validity.

19 It has to be noted that the analysis focused on voluntary labelling systems based on third party  
20 certifications as a whole, and there may be important differences regarding the kind of food  
21 produced and the specific labelling scheme. Future research could address the profile of certified  
22 producers selling in SFSCs more deeply, taking into consideration the food produced and the  
23 certification scheme. In addition, there is need to understand better the possibilities of

1 institutionalizing PGSs in the RoFM, which would cast some light on what model of SFSCs is driven  
2 by the different attestation systems.

### 3 4. Conclusions

4 Certifications can be a useful tool to build consumer trust and overcome information asymmetry in  
5 the global agrifood chains. However, in SFSCs, direct contact between producers and consumers  
6 seems to limit the necessity of certifications. In fact, the proliferation of third party certified labelling  
7 within SFSCs could lead to a deeper conventionalization of these chains, which predominantly  
8 focuses on the economic benefits and not on social and environmental aspects, hampering SFSC  
9 capacity to shift towards sustainable local food systems. In other words, these labeling schemes can  
10 turn alternative food marketing proposals offered in the context of the SFSCs into simple market  
11 niches.

12 Our results showed that local producers who want to communicate everything that goes into a food  
13 product, including production methods and producer characteristics, have no interest in third party  
14 certifications. These producers recognize the social, economic and environmental benefits of SFSCs  
15 and they are interested in SFSCs with direct contact between producers and consumers. On the  
16 contrary, official certifications were a matter of interest for the producers that understand SFSCs  
17 mostly as an economic strategy. These producers are particularly interested in SFSCs that involve  
18 intermediaries and that have a niche market interested in certifications.

19 The findings of our study suggested that policies intended to promote the use of voluntary certified  
20 labeling based on third party certification in SFSCs may hinder the capacity of these chains to raise  
21 the locality of food systems and to consolidate alternatives to conventional food channels. In order  
22 to make policies that support all producers in SFSCs, rather than promoting third party certified

1 labelling schemes, it may be more convenient to tackle common SFSCs disadvantages associated  
2 with time, convenience and logistics.

3

4

5

## 1 Acknowledgments

2 The database used in the present study was provided by the Instituto Madrileño de Investigación y  
3 Desarrollo Rural Agrario y Alimentario (IMIDRA). Mario González-Azcárate is a recipient of a PhD  
4 Fellowship awarded by IMIDRA (BDNS code 420371).

## 5 References

- 6 AGROECOLOGICAM. (2020a). Políticas públicas y agroecología en la Comunidad de Madrid.  
7 Transformación y artesanía alimentaria. Barreras y propuestas para su desarrollo (Informe 2).  
8 Retrieved February 24, 2021, from [http://agroecologicam.org/wp-](http://agroecologicam.org/wp-content/uploads/2020/08/I2-_Transformaci%C3%B3n-y-Artesan%C3%ADa-Alimentaria.pdf)  
9 [content/uploads/2020/08/I2-\\_Transformaci%C3%B3n-y-Artesan%C3%ADa-Alimentaria.pdf](http://agroecologicam.org/wp-content/uploads/2020/08/I2-_Transformaci%C3%B3n-y-Artesan%C3%ADa-Alimentaria.pdf)
- 10 AGROECOLOGICAM. (2020b). Políticas públicas y agroecología en la Comunidad de Madrid.  
11 Comercialización, desarrollo agrario, fomento de la producción ecológica y explotaciones  
12 prioritarias (Informe 3). [http://agroecologicam.org/wp-content/uploads/2020/08/I3-\\_CCC-](http://agroecologicam.org/wp-content/uploads/2020/08/I3-_CCC-D.Agrario-Prod.-Ecol%C3%B3gica-y-Exp.-Prioritarias.pdf)  
13 [D.Agrario-Prod.-Ecol%C3%B3gica-y-Exp.-Prioritarias.pdf](http://agroecologicam.org/wp-content/uploads/2020/08/I3-_CCC-D.Agrario-Prod.-Ecol%C3%B3gica-y-Exp.-Prioritarias.pdf). Accessed 24 June 2021.
- 14 Barrett, P. T., and Kline, P. (1981). The Observation to Variable Ratio in Factor Analysis. *Personality*  
15 *Study and Group Behavior*.
- 16 Bellante, L. (2017). Building the local food movement in Chiapas, Mexico: rationales, benefits, and  
17 limitations. *Agriculture and human values*, 34(1), 119-134. [https://doi.org/10.1007/s10460-](https://doi.org/10.1007/s10460-016-9700-9)  
18 [016-9700-9](https://doi.org/10.1007/s10460-016-9700-9)
- 19 Bouagnimbeck, H. (2014). Global comparative study on interactions between social processes and  
20 participatory guarantee systems. IFOAM commissioned report.
- 21 Brown, S., & Getz, C. (2008). Privatizing farm worker justice: Regulating labor through voluntary  
22 certification and labeling. *Geoforum*, 39(3), 1184-1196.  
23 <https://doi.org/10.1016/j.geoforum.2007.01.002>
- 24 Callejo, J. (2009). La reorganización del sistema de confianza tras la crisis: el proceso en el campo  
25 de la alimentación. *Revista Española de Sociología*, (12), 39-65.
- 26 Cifuentes, M. L., Vogl, C. R., & Padilla, M. C. (2018). Participatory Guarantee Systems in Spain:  
27 Motivations, achievements, challenges and opportunities for improvement based on three  
28 case studies. *Sustainability*, 10, 4081. <https://doi.org/10.3390/su10114081>
- 29 Conner, D., Colasanti, K., Ross, R. B., & Smalley, S. B. (2010). Locally grown foods and farmers  
30 markets: Consumer attitudes and behaviors. *Sustainability*, 2(3), 742-756.  
31 <https://doi.org/10.3390/su2030742>
- 32 Cuéllar-Padilla, M., and Ganuza-Fernandez, E. (2018). We don't want to be officially certified!  
33 Reasons and implications of the participatory guarantee systems. *Sustainability*, 10(4), 1142.  
34 <https://doi.org/10.3390/su10041142>
- 35 Cruz, J. L., Puigdueta, I., Sanz-Cobeña, A., & González-Azcárate, M. (2021). Short Food Supply  
36 Chains: rebuilding consumers' trust. *New Medit: Mediterranean Journal of Economics,*  
37 *Agriculture and Environment= Revue Méditerranéenne d'Economie Agriculture et*  
38 *Environment*, 20(4). <https://doi.org/10.30682/nm2104c>

- 1 Dabbert, S., Lippert, C., & Zorn, A. (2014). Introduction to the special section on organic  
2 certification systems: Policy issues and research topics. *Food Policy*, 49, 425-428.  
3 <https://doi.org/10.1016/j.foodpol.2014.05.009>
- 4 de Winter, J. C. F., Dodou, D., and Wieringa, P. A. (2009). Exploratory factor analysis with small  
5 sample sizes. *Multivariate Behavioral Research*, 44(2), 147-181.  
6 <https://doi.org/10.1080/00273170902794206>
- 7 del Valle, J., & López-Gacía, D. (2014). Dime quién eres y te diré cómo vendes: una estrategia de  
8 comercialización del sector hortofrutícola de la Comunidad de Madrid: Una visión desde la  
9 producción. I Congreso Estatal de Agricultura Ecológica Urbana y Periurbana, Utrera.  
10 Catarroja: SEAE.
- 11 DuPuis, E. M., & Goodman, D. (2005). Should we go “home” to eat?: toward a reflexive politics of  
12 localism. *Journal of rural studies*, 21(3), 359-371.  
13 <https://doi.org/10.1016/j.jrurstud.2005.05.011>
- 14 Eugenio, D., Anna, G., & Alberto, P. (2017). Farmers’ motivation and perceived effects of  
15 participating in short food supply chains: Evidence from a North Italian survey. *Agricultural  
16 Economics*, 63(5), 204-216. <https://doi.org/10.17221/323/2015-AGRICECON>
- 17 Food and Agriculture Organization of the United Nations FAO. (2018). Sustainable food systems.  
18 Concept and framework.
- 19 Gallaud, D., & Laperche, B. (2016). Circular economy, industrial ecology and short supply chain.  
20 John Wiley & Sons.
- 21 Galli, F., and Brunori, G. (2013). Short food supply chains as drivers of sustainable development.  
22 Evidence document.  
23 [http://www.foodlinkscommunity.net/fileadmin/documents\\_organicresearch/foodlinks/CoPs](http://www.foodlinkscommunity.net/fileadmin/documents_organicresearch/foodlinks/CoPs)  
24 [/evidence-document-sfsc-cop.pdf](http://www.foodlinkscommunity.net/fileadmin/documents_organicresearch/foodlinks/CoPs/evidence-document-sfsc-cop.pdf). Accessed 14 June 2021.
- 25 Germinando. (2019). La producción agroecológica en la Comunidad de Madrid. Radiografía del  
26 presente y una mirada hacia el futuro. [http://germinando.es/wp-content/uploads/La-  
27 produccion-agroecologica-en-la-Comunidad-de-Madrid\\_INFO\\_23ABR19.pdf](http://germinando.es/wp-content/uploads/La-produccion-agroecologica-en-la-Comunidad-de-Madrid_INFO_23ABR19.pdf). Accessed 10  
28 June 2021.
- 29 Guthman, J. (2007). The Polanyian way? Voluntary food labels as neoliberal governance. *Antipode*,  
30 39(3), 456-478. <https://doi.org/10.1111/j.1467-8330.2007.00535.x>
- 31 González-Azcárate, M., Cruz Maceín, J. L., and Bardají, I. (2021). Why buying directly from  
32 producers is a valuable choice? Expanding the scope of short food supply chains in Spain.  
33 *Sustainable Production and Consumption*, 26, 911-920.  
34 <https://doi.org/10.1016/j.spc.2021.01.003>
- 35 Grolleau, G., and Caswell, J. A. (2006). Interaction between food attributes in markets: The case of  
36 environmental labelling. *Journal of Agricultural and Resource Economics*, 31(3), 471-484.  
37 <https://doi.org/10.2139/ssrn.708483>
- 38 Higgins, V., Dibden, J., and Cocklin, C. (2008). Building alternative agri-food networks: Certification,  
39 embeddedness and agri-environmental governance. *Journal of Rural Studies*, 24(1), 15-27.  
40 <https://doi.org/10.1016/j.jrurstud.2007.06.002>

- 1 HLPE. 2021. Promoting youth engagement and employment in agriculture and food systems. A  
2 report by the High Level Panel of Experts on Food Security and Nutrition of the Committee on  
3 World Food Security, Rome.
- 4 Home, R., Bouagnimbeck, H., Ugas, R., Arbenz, M., & Stolze, M. (2017). Participatory guarantee  
5 systems: Organic certification to empower farmers and strengthen communities.  
6 *Agroecology and Sustainable Food Systems*, 41(5), 526-545.  
7 <https://doi.org/10.1080/21683565.2017.1279702>
- 8 Ilbery, B., Morris, C., Buller, H., Maye, D., and Kneafsey, M. (2005). Product, process and place: An  
9 examination of food marketing and labelling schemes in Europe and North America.  
10 *European Urban and Regional Studies*, 12(2), 116-132.  
11 <https://doi.org/10.1177/0969776405048499>
- 12 INE, Instituto Nacional de Estadística. Available at  
13 <https://www.ine.es/dyngs/INEbase/listaoperaciones.htm> Accessed 14th December 2020.
- 14 Ipsos and London Economics Consortium. (2013). Consumer market Study on the functioning of  
15 voluntary food labelling schemes for consumers in the European Union EAH. FWC/2012.  
16 [https://ec.europa.eu/info/sites/info/files/food-labelling-scheme-final-report\\_en.pdf](https://ec.europa.eu/info/sites/info/files/food-labelling-scheme-final-report_en.pdf).  
17 Accessed 5 June 2021.
- 18 Janssen, M., and Hamm, U. (2014). Governmental and private certification labels for organic food:  
19 Consumer attitudes and preferences in Germany. *Food Policy*, 49, 437-448.  
20 <https://doi.org/10.1016/j.foodpol.2014.05.011>
- 21 Jarzębowski, S., Bourlakis, M., & Bezat-Jarzębowska, A. (2020). Short food supply chains (SFSC) as  
22 local and sustainable systems. *Sustainability*, 12(11), 4715.  
23 <https://doi.org/10.3390/su12114715>
- 24 Kaiser, H. F. (1974). An index of factorial simplicity. *Psychometrika*, 39(1), 31-36.  
25 <https://doi.org/10.1007/BF02291575>
- 26 King, R. P., Gómez, M. I., and DiGiacomo, G. (2010). CAN LOCAL FOOD GO MAINSTREAM? Choices:  
27 The Magazine of Food, Farm and Resource Issues, 25(1), 1-5. Retrieved February 24, 2021,  
28 from <http://www.jstor.org/stable/choices.25.1.05>
- 29 Kneafsey, M., Venn, L., Schmutz, U., Balázs, B., Trenchard, L., Eyden-Wood, T., ... Blackett, M.  
30 (2013). Short Food Supply Chains and Local Food Systems in the EU . A State of Play of their  
31 Socio-Economic Characteristics. JRC Scientific and Policy Reports.  
32 <https://doi.org/10.2791/88784>
- 33 Krzywoszynska, A. (2015). Wine is not Coca-Cola: marketization and taste in alternative food  
34 networks. *Agriculture and human values*, 32(3), 491-503. [https://doi.org/10.1007/s10460-](https://doi.org/10.1007/s10460-014-9564-9)  
35 [014-9564-9](https://doi.org/10.1007/s10460-014-9564-9)
- 36 Kumar, V., Wang, M., Kumari, A., Akkarangoon, S., Garza-Reyes, J. A., Neutzling, D. M., and Tupa,  
37 J. (2019). Exploring short food supply chains from triple bottom line lens: A comprehensive  
38 systematic review. Proceedings of the International Conference on Industrial Engineering and  
39 Operations Management. Bangkok, Thailand, March 5-7, 2019.
- 40 Legowski, M., Brzezina, N., Ciaian, P., Lima, M., Mondelaers, K., Van De Pol, L., ... Stein, A. (n.d.).  
41 Agriculture and Rural Development CAP SPECIFIC OBJECTIVES ...explained-Brief No 3.

- 1        [https://www.mapa.gob.es/es/pac/post-2020/brief\\_oe3\\_tcm30-520583.pdf](https://www.mapa.gob.es/es/pac/post-2020/brief_oe3_tcm30-520583.pdf). Accessed 3 June  
2        2021.
- 3        López, D. (2011). Canales Cortos de Comercialización como elemento dinamizador de las  
4        agriculturas ecológicas urbana y periurbana. I Congreso Estatal de Agricultura Ecológica  
5        Urbana y Periurbana. Elx, 6 y 7 de mayo de 2011.
- 6        Lucas, J. W. (2003). Theory-Testing, Generalization, and the Problem of External Validity.  
7        *Sociological Theory*, 21(3), 236–253. <https://doi.org/10.1111/1467-9558.00187>
- 8        MAGRAMA, Ministerio de Agricultura, Alimentación y Medio Ambiente. (2013). Canales cortos de  
9        comercialización en el sector Agroalimentario.  
10        [https://www.mapa.gob.es/es/alimentacion/temas/desperdicio/Estudio\\_CCC%20con%20obs](https://www.mapa.gob.es/es/alimentacion/temas/desperdicio/Estudio_CCC%20con%20observaciones_tcm30-78860.pdf)  
11        [ervaciones\\_tcm30-78860.pdf](https://www.mapa.gob.es/es/alimentacion/temas/desperdicio/Estudio_CCC%20con%20observaciones_tcm30-78860.pdf). Accessed 3 June 2021.
- 12        Malak-Rawlikowska, A., Majewski, E., Wąs, A., Borgen, S. O., Csillag, P., Donati, M. et al. (2019).  
13        Measuring the Economic, Environmental, and Social Sustainability of Short Food Supply  
14        Chains. *Sustainability*, 11(15), 4004. <https://doi.org/10.3390/su11154004>
- 15        Mancha Cáceres, O. I., and Ramírez García, S. (2018). Nuevos actores e innovaciones sociales para  
16        el desarrollo rural : El caso de las zonas periurbanas de Madrid y Guadalajara ( España ).  
17        *AIBR: Revista de Antropología Iberoamericana*, 13(3), 431-456.  
18        <https://doi.org/10.11156/aibr.130307>
- 19        Mancini, M. C., & Arfini, F. (2018). Short supply chains and protected designations of origin: The  
20        case of Parmigiano Reggiano (Italy). *Ager: Revista de estudios sobre despoblación y*  
21        *desarrollo rural= Journal of depopulation and rural development studies*, 25, 43-64.  
22        <https://doi.org/10.4422/ager.2018.11>
- 23        Marsden, T., Banks, J., and Bristow, G. (2000). Food supply chain approaches: Exploring their role  
24        in rural development. *Sociologia Ruralis*, 40(4), 424-438. [https://doi.org/10.1111/1467-](https://doi.org/10.1111/1467-9523.00158)  
25        [9523.00158](https://doi.org/10.1111/1467-9523.00158)
- 26        Méndez, R., and Monteserín Abella, O. (2017). Redes alimentarias alternativas en grandes  
27        ciudades: los mercados de productores agrarios en Madrid. *Cuadernos Geográficos*, 56(1),  
28        193-216.
- 29        Michelini, J. J., Méndez, R., and Abad, L. (2017). Movilización social y redes alimentarias  
30        alternativas en alimentarias en áreas urbanas : el caso de grupos de consumo agroecológico  
31        en Madrid. *Ciudad y Territorio. Estudios Territoriales*, 194, 679-698.
- 32        Nelson, E., Tovar, L. G., Rindermann, R. S., & Cruz, M. Á. G. (2010). Participatory organic  
33        certification in Mexico: an alternative approach to maintaining the integrity of the organic  
34        label. *Agriculture and Human Values*, 27(2), 227-237. [https://doi.org/10.1007/s10460-009-](https://doi.org/10.1007/s10460-009-9205-x)  
35        [9205-x](https://doi.org/10.1007/s10460-009-9205-x)
- 36        Niederle, P., Loconto, A., Lemeilleur, S., and Dorville, C. (2020). Social movements and institutional  
37        change in organic food markets: Evidence from participatory guarantee systems in Brazil and  
38        France. *Journal of Rural Studies*, 78, 282-291. <https://doi.org/10.1016/j.jrurstud.2020.06.011>
- 39        Nunnally, J. C. (1978). *Psychometric Theory* (2nd ed.). New York: McGraw-Hill.
- 40        Ochoa, C. Y., Matarán, A., Olmo, R. M., López, J. M., and Fuentes-Guerra, R. (2019). The potential

- 1 role of short food supply chains in strengthening periurban agriculture in Spain: The cases of  
2 Madrid and Barcelona. *Sustainability*, 11(7), 2080. <https://doi.org/10.3390/su1102080>
- 3 Paciarotti, C., and Torregiani, F. (2020). The logistics of the short food supply chain: a literature  
4 review. *Sustainable Production and Consumption*, 26, 428-442.  
5 <https://doi.org/10.1016/j.spc.2020.10.002>
- 6 Padilla, M. C., and Torremocha, E. (2009). Proceso de construcción y regulación de un Sistema  
7 Participativo de Garantía para la producción ecológica en Andalucía. *Construyendo un rural*  
8 *agroecológico*, 189-204.
- 9 Parker, C., Carey, R., Haines, F., & Johnson, H. (2020). Can Labelling Create Transformative Food  
10 System Change for Human and Planetary Health? A Case Study of Meat.  
11 <https://doi.org/10.1007/s11077-020-09394-z>
- 12 Pinna, S. (2016). AGRICULTURAL LANDSCAPE PROTECTION AND ORGANIC FARMING ETHICS: THE  
13 ROLE OF ALTERNATIVE FOOD NETWORKS IN SPATIAL PLANNING. A CASE STUDY FROM SPAIN.  
14 In 7th international AESOP sustainable food planning conference: Localizing urban food  
15 strategies Farming cities and performing rurality (pp. 591-603). Politecnico di Torino.
- 16 Renting, H., Marsden, T. K., and Banks, J. (2003). Understanding alternative food networks:  
17 Exploring the role of short food supply chains in rural development. *Environment and*  
18 *Planning A*. <https://doi.org/10.1068/a3510>
- 19 Rittenhofer, I., and Povlsen, K. K. (2015). Organics, trust, and credibility: A management and media  
20 research perspective. *Ecology and Society*, 20(1). <https://doi.org/10.5751/ES-07169-200106>
- 21 Romero-López, A. R., and Ramos, F. M. (2017). Understanding the linkages between small-scale  
22 producers and consumers through the analysis of short food supply chains in a local market  
23 in Nopala de villagrán, Hidalgo, Mexico. *Cuadernos de Desarrollo Rural*, 14(79), 52-67.  
24 <https://doi.org/10.11144/Javeriana.cdr14-79.ulsp>
- 25 Rucabado-Palomar, T., and Cuéllar-Padilla, M. (2020). Short food supply chains for local food: a  
26 difficult path. *Renewable Agriculture and Food Systems*, 35(2), 182-191.  
27 <https://doi.org/10.1017/S174217051800039X>
- 28 Sacchi, G. (2018). The ethics and politics of food purchasing choices in Italian consumers' collective  
29 action. *Journal of Agricultural and Environmental Ethics*, 31(1), 73-91.  
30 <https://doi.org/10.1007/s10806-018-9710-2>
- 31 Sanz-Cañada, J., Belletti, G., and Lagoma, C. (2018). Politics and territorial governance of food  
32 consumer groups in the District of Lavapiés, Madrid. *Ager. Revista de estudios sobre*  
33 *despoblación y desarrollo rural= Journal of depopulation and rural development studies*, 25,  
34 65-97. <https://doi.org/10.4422/ager.2018.16>
- 35 Scalco, A. R., Ganga, G. M. D., De Oliveira, S. C., & Baker, G. (2020). Development and validation of  
36 a scale for identification of quality attributes of agri-food products in short chains. *Geoforum*,  
37 111, 165-175. <https://doi.org/10.1016/j.geoforum.2020.02.012>
- 38 Schmitt, E., Galli, F., Menozzi, D., Maye, D., Touzard, J. M., Marescotti, A., ... Brunori, G. (2017).  
39 Comparing the sustainability of local and global food products in Europe. *Journal of Cleaner*  
40 *Production*, 165, 346-359. <https://doi.org/10.1016/j.jclepro.2017.07.039>

- 1 Sevilla Guzmán, E., Soler Montiel, M., Gallar Hernández, D., Vara Sánchez, I., and Calle Collado, A.  
2 (2012). Canales cortos de comercialización alimentaria en Andalucía. Fundación Pública  
3 Andaluza. Centro de Estudios Andaluces. Consejería de Presidencia e Igualdad. Retrieved  
4 [https://www.centrodeestudiosandaluces.es/datos/factoriaideas/FI014\\_12\\_ok\\_ok.pdf](https://www.centrodeestudiosandaluces.es/datos/factoriaideas/FI014_12_ok_ok.pdf).  
5 Accessed 16 June 2021.
- 6 Simon-Rojo M., Duží B. (2017) Connecting Local Food and Organic Waste Management Systems:  
7 Closing Nutrient Loops in the City of Madrid. In: Fraňková E., Haas W., Singh S. (eds) Socio-  
8 Metabolic Perspectives on the Sustainability of Local Food Systems. Human-Environment  
9 Interactions, vol 7. Springer, Cham. [https://doi.org/10.1007/978-3-319-69236-4\\_11](https://doi.org/10.1007/978-3-319-69236-4_11)
- 10 Smith, B. G. (2008). Developing sustainable food supply chains. *Philosophical Transactions of the*  
11 *Royal Society B: Biological Sciences*, 363(1492), 849-861.  
12 <https://doi.org/10.1098/rstb.2007.2187>
- 13 Starobin, S. M. (2021). Credibility beyond compliance: Uncertified smallholders in sustainable food  
14 systems. *Ecological Economics*, 180, 106767.  
15 <https://doi.org/10.1016/j.ecolecon.2020.106767>
- 16 Todorovic, V., Maslaric, M., Bojic, S., Jokic, M., Mircetic, D., and Nikolicic, S. (2018). Solutions for  
17 more sustainable distribution in the short food supply chains. *Sustainability*, 10(10), 3481.  
18 <https://doi.org/10.3390/su10103481>
- 19 Veldstra, M. D., Alexander, C. E., & Marshall, M. I. (2014). To certify or not to certify? Separating  
20 the organic production and certification decisions. *Food Policy*, 49, 429-  
21 436. <https://doi.org/10.1016/j.foodpol.2014.05.010>
- 22 Ward, R. A., Hunnicutt, L., & Keith, J. E. (2004). If you can't trust the farmer, who can you trust?  
23 The effect of certification types on purchases of organic produce. *International Food and*  
24 *Agribusiness Management Review*, 7(1), 60-77. <https://doi.org/10.22004/ag.econ.8145>
- 25 Yu, M., and Nagurney, A. (2013). Competitive food supply chain networks with application to fresh  
26 produce. *European Journal of Operational Research*, 224(2), 273-282.  
27 <https://doi.org/10.1016/j.ejor.2012.07.033>
- 28
- 29