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The Contribution of the Participatory Guarantee System in the Revival of Agroecological Principles in Southern Minas Gerais, Brazil

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Abstract: Market pressures generated by the demand for organic food have pushed farmers to turn away from agroecological principles, which leads to actions focused directly on the agricultural practices for production. The objective of this study was to analyze whether the methodology used by the Participatory Guarantee Systems (PGS) contributes to farmers' appropriation of agroecological principles, understood here in their environmental, sociocultural, economic, and political dimensions. We analyzed the PGS-Sul de Minas, which was the first PGS founded in the state of Minas Gerais, Brazil and includes 14 organizations and more than 200 families. Documentary analysis and participant observation were prioritized in data collection. The main results are the correlation between the practices used by the farmers in these organizations with the principles of agroecology. This is evident in aspects such as the encouragement of productive diversification, the construction of new marketing alternatives, the revival and use of heirloom seeds, the stimulation of women's leadership, and places and policies that support and strengthen agroecology. The study found that the procedures adopted by the PGSs help strengthen agroecology and bring direct benefits to the farmers through revival and encouragement of agroecological principles.

Keywords: participatory certification; PGS; agroecology; organic agriculture; southern Minas Gerais

1. Introduction

Consumers' concern about the quality and the origin of food has increased the demand for organic products, causing many farmers to pursue certification of organic production to serve this market. However, the focus on certification of food only to meet market demand is not always well regarded by scholars. For these scholars, the preoccupation with a market demand can distance farmers from agroecological principles, which are ecological and sociocultural principles of agriculture, and lead them to practice industrial agriculture, which focuses on productivity and marked dependence on external inputs [1–4].

Participatory certification, as the process to evaluate organic compliance carried out by Participatory Guarantee Systems (PGSs) in Brazil, aims to go beyond meeting market demands, seeking, through participatory methodologies, to strengthen farmer's organizations, enabling them to find solutions to achieve sustainable production systems.

With the publication of law 10.831/2003 [5], Brazil became a pioneer in the recognition of Participatory Guarantee Systems as a mechanism to assess organic compliance, recognizing them at the same level as third-party certification.

To proceed to participatory certification, a PGS must have a Participatory Conformity Assessment Body (OPAC-*Organismo Participativo de Avaliação da Conformidade*) in its structure, which acts as a certification department within the PGS [6]. An OPAC is accredited by the Brazilian Ministry of Agriculture with an audit of its capacity to evaluate the organic compliance of units that are part of the PGS. Once the OPAC of a PGS is accredited, it begins collective actions, such as visits to properties, farmers' markets, courses, and other events, to assure the consumer that the food produced follows organic legislation.

Participation in the organic market can be considered an important achievement for many farmers and provides consumers more access to better quality food. However, considering PGSs as a simple certification tool for market access may be misleading. The participatory certification uses a set of mechanisms that, in addition to the organic compliance assessment, provides greater knowledge to its members through a highly interactive system, adding practical and technical information, arousing curiosity, and stimulating agroecological principles [7]. Few empirical studies have examined the benefits provided by PGSs beyond certification, especially those that demonstrate the influence of PGSs on management practices in the production system and the revival of agroecological principles. Hence, the objective of this study was to analyze if PGSs help in economic, environmental, social, and political aspects to revive and stimulate agroecology principles among farmers.

2. Methodological Procedures

For in-depth and detailed analysis, case study methodology was used. We analyzed the Participatory Guarantee System of the Sul de Minas (PGS-Sul de Minas), an agroecological network based in Inconfidentes, MG, Brazil. The PGS-Sul de Minas was established in 2012 by combining several organic farmer associations in the region together with their collaborating members with the objective of allowing organic certification. Currently, fourteen farmers' organizations participate in the PGS-Sul de Minas, involving about two hundred families. The organization encompasses about 50 municipalities throughout the region with a higher concentration in extreme southern Minas Gerais state (Figure 1).

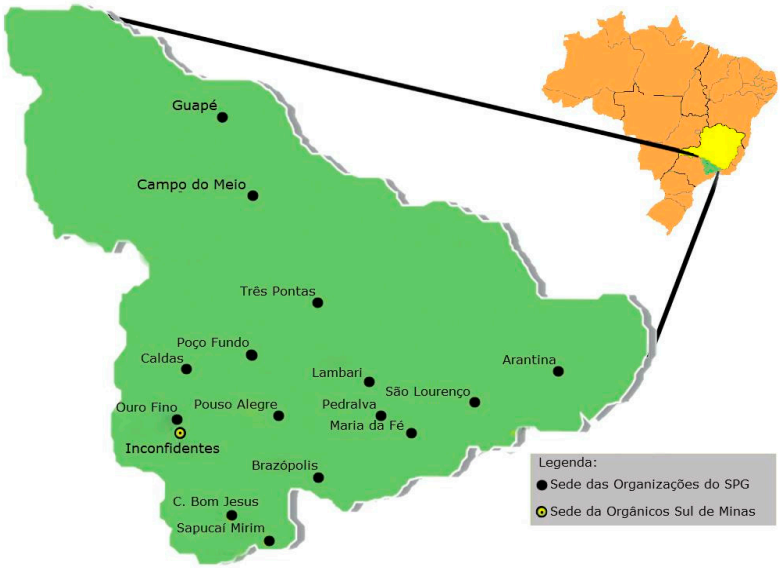

Figure 1. Map showing the location of the region of the Participative Guarantee System of the Sul de Minas (PGS-Sul de Minas), noting municipalities that host the organizations (black dots) and the headquarters (yellow dot) of the PGS-Sul de Minas in relation to the State of Minas Gerais and Brazil [8].

To discover if the methodology used to evaluate organic compliance has promoted the revival of agroecological principles, studies by the CIDSE (*Coopération Internationale pour le Développement et la Solidarité*) were used as a reference to define four dimensions: environmental, sociocultural,

economic, and political. To analyze the environmental dimension, four aspects were taken into account: diversification and integration of farms; promotion of soil biodiversity; elimination of use and dependence on agrochemicals; and resilience and adaptation to climate change. The sociocultural dimensionincludes promoting knowledge transfer between farmers; strengthening producers, local communities, culture, knowledge, and spirituality; promoting healthy diets and lifestyles; encouraging population diversity and solidarity; and empowering women and youth. The economic dimension involves promoting short and fair distribution networks; cooperation between producers and consumers; greater resilience by diversifying farm incomes and strengthening community autonomy; and increased power of local markets based on a vision of social economy and solidarity. Finally, for the political dimension, we analyzed if the PGS-Sul de Minas encouraged new forms of decentralized, collective, and participatory management of food systems; prioritized the needs and the interests of small food producers; advocated for investment and support policies; and pursued control of seeds, land, and territories for the population.

Using this reference and considering the data collected, contributions of the PGS-Sul de Minas were identified. To evaluate these contributions, the following quantitative indicators were assessed for the environmental dimension: the number of productive units with diversified production (more than 20 varieties); the types of practices by farmers that promote biodiversity; percentage of production units in relation to dependence of external inputs;the number of agroforestry systems installed after the SPG; and number of properties with fencedwater sources. For the economic dimension, the indicators included the number of farmers' markets started in the region after the constitution of the PGS-Sul de Minas and the number of consumer groups formed.

Data collection was done through documentary analysis, participant observation, and field notes. The documents analyzed were:

(1) **Internal Rules and Procedure Manual of the OPAC** to establish the types of documents, records, and mechanisms of social control that govern the operation of the OPAC [9].
(2) **Organic management plans**—this document is required by the legislation and includes a sketch of the production unit, marking areas, plots, and respective crops; expectations regarding the establishing of each plant or animal species; description of the production system involving soil preparation; control of invasive plants, insects, and diseases; inputs and seeds used and their origin; origin and quality of the water used; aspects related to environmental protection; how barriers are made, where applicable; post-harvest processes and processing plan, when applicable [9]. The management plans of the 38 properties visited were analyzed.
(3) **Property visit reports** are documents generated after visits to production units.Their primary objective is to evaluate the organic compliance of the production unit. The reports analyzed were those generated from the verification visits and from the peers that participated in the research.

The documentary analysis involved researching farmer's profiles, the forms of marketing described in the organic management plan, the evolution of the management practices used by the farmers, and the crop and management changes evidenced in the documents over the years.

The participant observation complemented the information obtained in the documentary analysis, especially in relation to the influence of the participatory certification on the production units certified by Participatory Conformity Assessment Body-Sul de Minas (OPAC-Sul de Minas). From 2014 to 2018, observation occurred during the conformity assessment visits to 38 properties, as well as at 10 field days, five seed-related events, and 12 meetings of the OPAC coordinators to understand the exchange of knowledge and construction of agroecological knowledge. All the impressions and information obtained were recorded in field notes for later comparison with the information obtained from documentary analysis.

The information collected during this period was organized and analyzed according to each aspect of agroecology (environmental, sociocultural, economic, and political). After this systematization, the data were interpreted using parameters from the literature.

3. Results and Discussion

The results indicate that the methodologies used by the PGS-Sul de Minas to assess organic compliance have contributed to the revival of agroecological principles among farmers and strengthened agroecology in the region.

3.1. Environmental Dimension

To certify organic production units, positive characteristics are normally attributed, aspiring for crop diversity, promotion of biodiversity (such as the use of mulch and green fertilizer), the preservation of water sources, soil stability and quality, adequate and natural management of insects, forest preservation, water protection, seeds, etc. (Table 1). However, what is designed as an ideal may be far from the reality on many properties, especially for farmers who are beginning the transition to agroecological. In situations such as those described, the role of the PGS-Sul de Minas in the search for solutions for the production units was notable (Table 1).

Table 1. The results found in the PGS-Sul de Minas for the environmental dimension of Agroecological Principles.

Environmental Dimension	
Agroecological Principles	Perceived situation in the PGS-Sul de Minas related to the environmental dimension of the agro-ecological principles
Diversify and integrate the farms.	Of the 38 production units surveyed • 28 productive units were considered very diversified, with more than 20 cultivated varieties. • 10 diversified productive units promoted integration between animal and vegetal production.
Promote soil biodiversity.	Management practices that promote soil biodiversity observed on the properties of the PGS-Sul de Minas: • Use of mulch; • Green fertilizer; • Polyculture with other agricultural crops; • Level cultivation; • Application of organic compounds.
Eliminate the use and dependence on inputs.	The dependence on external inputs was different across the production units certified by *Organismo Participativo de Avaliação da Conformidade* (OPAC)-Sul de Minas • Strawberry and potato producers (8%) generally did not practice this principle. Their high dependence may be due to the lack of information about agroecological practices for these crops, which are considered difficult to manage organically. • In coffee-growing (20%), dependence was considered high, but farmers have recognized the need for change.Gradually, through incentives from the PGS, the production of bokashi and biofertilizers has been adopted to reduce the use of external inputs. • Horticulture (50%) had low dependence on external inputs, and the production of inputs was a common practice in this activity. • The banana growers (22%) had almost no dependence on external inputs.
Resilience and adaptation to climate change.	• Four agroforestry systems (AFS) were installed because farmers understand AFSs are the most appropriate production systems for agroecological cultivation. • Preservation of water sources through fencing and transplanting of tree seedlings on20 monitored production units.

Source: Adaptation of the content presented by CIDSE, *Coopération Internationale pour le Développement et la Solidarité*. The Principles of Agroecology: towards fair, resilient, and sustainable food systems. Available at <https://agroecologyprinciple.atavist.com>, accessed 13 January 2019.

In terms of diversification, we found that some farmers advanced while others experienced some difficulties, because a variety of different situations existed on farms in the PGS-Sul de Minas. Several farms were a monoculture, growing a single commercial crop, especially banana, coffee, strawberry, or potato. Another group of farms had little diversification, cultivating a limited variety of plants with limited commercial objectives and usually restricted to the cultivations of medicinal and aromatic herbs along with small home gardens. However, more than 70% of the properties visited were diversified, growing more than 20 varieties of commercial crops.

Most areas with monoculture had a strong link between production and local history, along with an adaptation of crops to the climate and the soils. In one of the groups surveyed, banana cultivation has been part of farmers' lives for decades, with reports of banana plantations dating back more than 90 years in the area. Forthe coffee monoculture, the history of many families has been strongly linked to coffee production. On some properties, this monoculture is only in areas used for commercial production. Near the house, the farms have a great diversity of fruit and vegetable crops, as well as chickens and a few cows (sometimes only one) to produce milk for sustenance. The farmers believe that these products have no commercial value, thusthey are never declared in the certification even though they are produced with the organic system.

During the visits (of peers and for verification), diversity is always discussed. Many farmers argue that the function of land is family sustenance (food); thus, an agricultural property must diversify its production. In peer visits by the OPAC-Sul de Minas, discussions are initiated by asking questions such as, "Do you consume the products that you grow? How much of what you produce do you consume?" On some properties, production is diversified to feed the family and then the rest is sold; on others, all certified production is destined for commercialization, while the family eats conventional products bought at supermarkets. This analysis prompted many farms to begin diversifying or discussing the possibilities of production diversification in their units, including native (non-conventional) plant species. Diversification of species on a productive unit is important, with winter cover crops, native trees kept in the environment, roosting sites and shelter for predators (natural enemies), as well as grass and perennial plants to restore degraded landscape [10].Thus, the methodology used to evaluate organic compliance favored dialogue and reflection on agroecological diversification and practices that go beyond the requirement of certification to help advance agroecology in the region.

Another contribution of the PGS-Sul de Minas is the protection of natural resources. The socialization of themes such as the conservation of permanent preservation areas (PPAs) and legal reserves (according to Brazilian Legislation, a permanent preservation area is a protected area, covered or not by native vegetation, with the environmental function of preserving water resources, landscape, geological stability, and biodiversity; facilitating the genetic flow of fauna and flora; protecting the soil; and ensuring the well-being of human populations. A legal reserve is an area located within a property or rural possession, marked with the function of ensuring the sustainable use of the natural resources of the rural property, assisting the conservation and the rehabilitation of ecological processes, and promoting the conservation of biodiversity as well as the shelter and the protection of wildlife and native flora), and the protection of soil and water are common among farmers, who have gradually come to understand importance of these actions. Among farmers, environmental themes are constantly presented and discussed, and solutions have been found to many of the problems or difficulties pointed out on a property. Usually, the proposed practices range from simple suggestions (such as pruning) to more complex management, such as the implementation of agroforestry systems.

Agroecological procedures are always defined through environmental protection, thus the correct management of the soil on an agricultural property maintains and even elevates the content of organic matter, improving its quality [11]. Thus, the requirement for correct practices to obtain the certificate provides farmers knowledge about the importance of adopting conservation practices for the management of their units, such as protection of springs (recovery and enclosure), preservation of riparian forest, agroforestry systems, polyculture, and level cultivation. The use of these practices—which have been discussed and collected in the different integration spaces, including during

visits—is important to improve production units, relevant in aspects related to the agroecological dimensions, and central to strengthen agroecology in the region.

When agroecosystem management is carried out at the landscape level, the natural ecosystems can become resources for agroecosystems, which also contribute to the maintenance of the natural ecosystem [12].

3.2. Sociocultural Dimension

Social control, as a basic feature of PGSs that use collective site visits (known as peer visits and verification visits), is expected to contribute to the construction of agroecological knowledge through exchange of experiences and valorization of knowledge in addition to specialized technical assistance needs, which is not always available to farmers (Table 2). For agroecology, the valorization of knowledge and/or the recognition of the traditional knowledge held by farmers and their families is as important as scientific knowledge, because this interaction of knowledgeable people results in new knowledge, which can help develop the agricultural potential of each agroecosystem and the potential for sustainable development in each community. Agroecology articulates three dimensions: science, practice, and movement [13].

Table 2. The results found in the PGS-Sul de Minas for the sociocultural dimension of Agroecological Principles.

Sociocultural Dimension	
Agroecological principles	Perceived situation in the PGS-sul de minas related to the sociocultural dimension of the agro-ecological principles
Promote knowledge transfer between farmers.	The methodology of PGSs to evaluate organic compliance consists in the group visits to the productive units. This strategy is both for social control of organic production and a way to exchange experiences and aggregate knowledge among farmers. • In the PGS-Sul de Minas, each farmer receives at least two visits per year. Each farmer must also visit other farms, ranging from 5 to 10 productive units for each farmer per year. • Implementation of the Circuito Sul Mineiro de Agroecologia, with 14 field days held, involving about 40 farmers in each event.
Strengthen producers, local communities, culture, knowledge, and spirituality.	The main action to strengthen traditional knowledge in the PGS-Sul de Minas has been related to knowledge about the preservation of seeds by the farmers. • The PGS has motivated the rescue of heirloom seeds through exchange fairs that occur during field days. • Festa das Sementes is held annually (2011 to 2018). This action has involved an increasing number of people interested in traditional knowledge about seed preservation. • Creation of the "Mãe Terra" Seed House, which aims to preserve and strengthen seed exchanges between farmers. • The PGSalso seeks, in its meetings, to create cultural spaces with mystics, music, and rural culture.
Promote healthy diets and lifestyles.	• Creation of spaces to reflect and discuss the food security of farm families: • Includes issues related to household food security during visits; • Discusses healthy eating in courses and meetings; • At least 20 production units diversified production to meet household consumption.

Table 2. *Cont.*

Sociocultural Dimension	
Encourage diversity and solidarity among the population, as well as empower women and youth.	Diversity of organizations that make up the PGS-Sul de Minas. • Currently, 14 different farmers' organizations with different identities are involved: agrarian reform settlers, family farmers, non-family farmers, processors, and technicians. • Leadership positions (presidency and general coordination of OPAC) were held by women. • Women held 20% of the organic certificates in their the name, with at least 10% being shared with the husband. • Held of meetings and roundtables to address topics such as participation, gender, and certification.

Source: Adaptation of the content presented by CIDSE, *Coopération Internationale pour le Développement et la Solidarité*. The Principles of Agroecology: towards fair, resilient, and sustainable food systems. Available at <https://agroecologyprinciple.atavist.com>, accessed 13 January 2019.

In addition to the visits, which promote the valorization and the exchange of knowledge, the PGS-Sul de Minas holds field days, such as the *Circuito Sul Mineiro de Agroecologia*. The main theme of this event revolves around the successful practices and experiences of organic farmers, values traditional knowledge, and makes farmers the leaders with the adoption of peasant to peasant methodology.

Social organization and the existence of methodological procedures for social interaction stimulate agroecology and contribute to its growth [14]. Farmers who are members of organizations exchange experience better, which provides greater dissemination of information and facilitates growth of agroecological experiences.

In Southern Minas Gerais, in addition to knowledge exchanged about production techniques, the PGS-Sul de Minas has provided spaces for the exchange of heirloom seeds and has motivated farmers to preserve their seeds. The specific actions carried out by the PGS-Sul de Minas include seed exchange fairs during the *Circuito Sul Mineiro de Agroecologia*, the *Festa das Sementes*, and the *Mãe Terra* Seed House. The agroecology circuit is an itinerant activity, which is held on farmer's property for socialization, and farmers are invited to bring their seeds for exchanges. The farmers also organize the festival of organic and biodynamic seeds.The festival is an annual event hosted by a group of farmers linked to the PGS. In these events, the seeds available for exchange are also cataloged, plus a sample is collected and stored in the seed house to perform germination tests and seed multiplication in the field.

To reduce gender inequality in rural areas, the agroecological movement in Brazil coined the phrase, "Without Feminism there is no Agroecology." The first meeting of women representatives of PGSs was held in 2016 in the city of Torres, RS, under the motto, "Building Processes, ensuring participation, and advocacy". In the following year, the PGS-Sul de Minas provided a new space to discuss this theme in Inconfidentes, MG and expand on the participation of women in PGSs, seeking ways to increase the participation of women in decision making. The continuation of these meetings demonstrates that SPGs can build important spaces to expose the gender inequalities very present in rural areas as well as seek, through the forming a collective conscience, ways to minimize these inequalities.

Although rural women play a leading role in the Brazilian economy, the sexual division of labor is considered one of the main causes for the devaluation and invisibility of rural women's labor. Women are still assigned the reproductive work (producing of food for self-consumption and taking care of the family and the household), and men are assigned the productive (economically valued) work [15].

An alternative found in these meeting spaces is to make women's work visible through issuing certificates of organic production. Specifically, in the PGS-Sul de Minas, even when the production unit is in the husband's name, women involved in production also receive certificates of organic production in their names. This aims to make the presence and the work of women visible on the farm. Other

small actions such as meetings and roundtables have been held to discuss greater participation and appreciation of women's work and to reflect on the fair division of domestic work, such as care for children during meeting and the refreshments during visits, so that women are not relegated to food service at such times. However, little progress has been made in the division of domestic work. Few men volunteer to take care of the children or even to serve refreshments, whereas 80% of the food is served by women. Although these actions alone are not sufficient to mitigate inequalities between rural men and women, we consider that they contribute to a collective awareness, providing spaces for discussion and reflection on alternatives for small and significant advances.

The agroecology and the feminist perspective need to come together so that women's invisibility and lack of power can be overcome [16]. Areas for reflection, such as those promoted by the PGS, help strengthen different women's movements linked to the rural environment.

3.3. Economic Dimension

Participation in PGSs can simplify some bureaucratic procedures to reduce farmers' costs, since this system does not involve an international body for certification [17].

Most of the time, the primary motivation of farmers to participate in a PGS is related to obtaining a certificate that allows them access to markets, especially distant markets, where the seal is the only way to guarantee the traits of an organic product. However, agroecological principles seek to create a local market with the aim of providing greater relationships between producers and consumers, creating relationships of trust and solidarity, and guaranteeing fair prices to consumers and producers (Table 3).

From the point of view of consumers, the third-party certification system shifts the responsibility to guarantee organic products from producers to the certifiers. Nevertheless, in many cases, consumers are skeptical if such a system is really effective. Thus, participatory certification can help reduce mistrust through involvement, information sharing, and greater stakeholder participation [17].

To make the certification process more transparent, the PGS-Sul de Minas encourages the participation of consumers in conformity assessment visits, resultingin a somewhat closer relationship between consumers and farmers. The closeness between farmers and consumers transforms the organization of the food system into a social network, meeting the demands of producers and thus characterizing an important social innovation [18].

In Southern Brazil, the development of market strategies by the PGS-Rede Ecovida was organized to combine the social and the environmental objectives of the farmers with their economic objectives, starting with the strengthening of local markets such as farmers' markets. Even if these represent small volumes, they promote closeness with consumers and strengthen the system [18]. Our research verified that the PGS-Sul de Minas also has similar initiatives, which include farmers' markets and home deliveries.

With the accreditation of OPAC-Sul de Minas and with the work of evaluating organic compliance, farmers began to produce in greater quantities and to demand new marketing strategies. Organic farmers' markets were established to encourage marketing in the region with the aim of strengthening relations between organizations, prioritizing the local market (since almost everything had been sold in other states), and becoming a space to exchange products (for self-consumption or to be marketed in other farmers' markets that producers participate in). The farmers' markets are held in central municipalities and involve farmers from different organizations that are part of the PGS-Sul de Minas. At least five exclusive organic farmers' markets have been opened in recent years and, despite serving a small group of consumers, have helped to disseminate agroecology in the region, generating income for farmers and especially strengthening trust between producers and consumers. A successful farmer's market must have diversification, quality product, regularity, and commitment. Participation in the PGS enables farmers to learn about the strategies and the functioning of the farmers' markets held by peers, recognizing the potential markets.

Table 3. The results found in the PGS-Sul de Minas for the economic dimension of Agroecological Principles.

Economic Dimension	
Agroecological Principles	Perceived situation in the PGS-Sul de Minas related to the economic dimension of the agro-ecological principles
Promote short and fair distribution networks with producers and consumers working together.	Expand the short circuits for commercialization: • Opened 5 new farmers' markets in cities of the region (Pouso Alegre, Itajubá, Pedralva, Brazópolis, and Poço Fundo); • Organized at least 3 new consumer groups that receive delivered baskets at homes and access to institutional markets.
Encourage increased resilience by diversifying agricultural incomes and strengthening community autonomy.	Diversification of agricultural incomes through: • New forms of commercialization (baskets and institutional markets); • Diversify production.
Promote increased power of local marketsbased on a vision of social and solidarity economy.	• Commercialization in 5 new farmers' markets formalized after the constitution of the PGS-Sul de Minas; • Marketing between farmers to supply farmers' markets and baskets.

Source: Adaptation of the content presented by CIDSE, *Coopération Internationale pour le Développement et la Solidarité*. The Principles of Agroecology: towards fair, resilient, and sustainable food systems. Available at <https://agroecologyprinciple.atavist.com>, accessed 13 January 2019.

With a focus on serving those who do not have the time to frequent the farmers' markets, sale of organic product baskets delivered to homes has obtained good results, and, according to farmers' reports, the volume of deliveries has surpassed direct sales at the farmers' markets on most days. In addition, it is an alternative to sustain some farmers' markets that are starting and still have little movement. Thus, the delivery of home food baskets is a satisfactory marketing method for both producers and consumers. For the producers, this way of marketing is interesting, because it guarantees that everything they harvest will be sold because sales happen in advance through groups who preorder using mobile apps. Unlike a farmers' markets, where the producers harvest but do not know if they will sell, in this case, they only harvest what is already sold. For consumers, especially those who are busy during the day and do not have time to attend the farmers' markets, home or workplace delivery is a pleasant convenience.

Analyzing experiences of alternative organic food networks in Brazil and France in the so-called short circuits of commercialization, researchers highlighted aspects such as avoiding the standardization of industrial agri-food systems [19]. The authors point out that these initiatives strengthen principles such as autonomy, solidarity, food security, social justice, and respect for local culture and tradition in consumer relations. The experiences in which networks are formed and the interaction between different actors (public policies, non-governmental organizations, farmers, and consumers) are more likely to succeed. Hence, the contribution of PGSs in establishing these networks has been observed.

However, despite these successful initiatives, the proximity of the Southern Minas Gerais to large consumer centers (especially São Paulo and Campinas) coupled with the high demand and the appreciation of these products in those cities means a large part of the organic production from Southern Minas Gerais is marketed to wholesalers, who take the production for commercialization in specialized stores or even farmers' markets. Some farmers participate directly in farmers' markets in the city of São Paulo or Campinas, which, despite being distant (around 200 to 300 km), are considered advantageous because of the volume of sales and the higher price. Nevertheless, the commercialization at farmers' markets, even in larger and more distant centers, builds the farmer/consumer relationship, strengthening ties and bringing the urban and the rural closer together, which we consider an accomplishment achieved through network participation, opening markets, and strengthening agroecology.

3.4. Political Dimension

From the perspective of the political dimension, the PGS-Sul de Minas has advancedparticipation and regional visibility by promoting meetings, events, and starting discussions in different spaces to encourage farmers to create decentralized and participatory food systems (Table 4). The recent political actions included the International Free Seeds' Networking Meeting held in Inconfidentes, MG in 2014, which highlighted the importance of preserving seeds, and the Regional Meeting on Agroecology (ERA, *Encontro Regional de Agroecologia*), organized in the municipality of Poço Fundo, MG in 2018, which discussed the need to strengthen agroecology in the region and the strategies to connect the rural and the urban population. The ERA constituted a preparatory stage for the National Meeting of Agroecology, also held in 2018.

The PGS-Sul de Minas made relevant contributions to the political dimension of agroecology in the regionto obtain recognition of the struggle. In this sense, PGSs help farmers to participate and interact with other groups and movements, removing their isolation and invisibility as well as providing access to new markets and public policies. Despite the progress already made in Southern Minas Gerais and the contribution of the PGS-Sul de Minas to stimulate and revive the principles of the political dimension, potential still exists for significant growth.

This study found that few farmers participate in commissions or councils in their municipalities, and the PGS-Sul de Minas is still finding its place in networks such as the Minus Organization for Agroecologia (AMA, *Articulação Mineira de Agroecologia*) and the National Organization of Agroecology (ANA, *Articulação Nacional de Agroecologia*). The PGS-Sul de Minas recently filled a seat on the Commission for Organic Production of Minas Gerais (CPOrg-MG, *Comissão de Produção Orgânica de Minas Gerais*). Through this representation, the PGS-Sul de Minas has been acting as a partner to strengthen and create other PGSs in the State of Minas Gerais, such as PGS-Jequitinhonha, Cooperative of Beekeepers and Family Farmers of Northern Minas Gerais (PGS-COOPEMAPI, *Cooperativa dos Apicultores e Agricultores Familiares do Norte de Minas*), PGS-Zona da Mata, and PGS-*Rede Metropolitana de Belo Horizonte* (Table 4).

Despite the challenges and the long road ahead to actually influence the way food is produced and consumed in its region, in its short existence, the PGS-Sul de Minas has developed important actions, such as providing family farmers access to the organic market, making healthy produce available in the region, and providing spaces for discussion and opportunities to promote agroecology. Hence, one of the main contributions of the PGS-Sul de Minas identified by this research is including family farmers in certification, encouraging their participation in the conformity assessment process, promoting interaction, exchanging experiences, engaging in solidarity actions, and developing greater autonomy and empowerment for farmers.

Another relevant participation of the PGS is related to their influence in the policies of municipalities and entities. In 2014, discussions in the town government of Pouso Alegre, MG on school feeding, which included the participation of at least one organization linked to the PGS-Sul de Minas, culminated in Law N° 7.084/2014, an ordinance that makes it obligatory to gradually increase the purchase of organic food by the municipal government to feed the students of municipal schools. Although this law was not completely enacted, it was created with the expectation that family farmers' organizations with certified organic production could comply with the legislation. However, with the change of city managers and the absence of collection to entities linked with the PGS-Sul de Minas, the theme was put aside, given the difficulty in meeting the particularities of this type of purchase. In the municipalities of Inconfidentes and Poço Fundo-MG, the issue discussed and approved by lawmakers was the prohibition against the use of glyphosate in urban environments. In these cases, PGS-Sul de Minas representatives participated in meetings and hearings, pressing lawmakers to approve the legislation in favor of organic production.In EMATER, MG, the actions and the involvement of the PGS-Sul de Minas were substantiated in creating an institutional program to support agroecology. In IFSULDEMINAS, PGS encouraged the opening of calls for proposals to support extension and research projects that meet the demands of farmers linked to the PGS and implement studies in agroecology.

Table 4. The results found in the PGS-Sul de Minas for the political dimension of Agroecological Principles.

Political Dimension	
Agroecological Principles	Perceived situation in the PGS-Sul de Minas related to the political dimension of the agro-ecological principles
Encourage new forms of decentralized, collective, and participatory management of food systems.	The functioning of the PGS is configured in a new form of social organization with decentralized management. Therefore, Sul de Minas Organics is configured as a center of associations that brings together: • 9 associations, 2 cooperatives, and 3 informal groups network together and through their actions to try to reach out to and involve farmers, maintaining the autonomous management of each entity; • 2 collective initiatives linked to the agroindustry; although older than thePGS, they have been strengthened by it; • Collective marketing initiatives at farmers' markets and through baskets;
Prioritize the needs and the interests of small food producers.	The PGS-Sul de Minas has 80% family farmers and tries to create spaces for their demands to be recognized, discussed, and met.
Advocate for policies of investment and support.	• The constitution of the PGS-Sul de Minas helped to strengthen the discussions about agroecology in the region. • Contributed to the creation of Laws prohibiting the use of glyphosate in the municipalities of Inconfidentes and Poço Fundo, MG and the creation of law No. 7084/2014, which obligates gradually increasing acquisition of organic food by the municipality of Pouso Alegre, MG to feed students at the municipal schools. • The constitution of the PGS-Sul de Minas was also decisive for IFSULDEMINAS to provide support for the development of research and extension projects in agroecology in the region; • Inspired EMATER, MG, to create the State program to support agroecology.
Advocate that control of seeds, land, and territories be in the hands of people.	The preservation and multiplication of heirloom seeds have become a fundamental theme for horticulturists, who have, over the years, come to use an increasing percentage of these seeds. • The PGS-Sul de Minas runs the "Mãe Terra" Seed House in partnership with the Instituto Federal do Sul de Minas-Inconfidentes campus, which seeks to support the discussions on the theme. • About 30% of the vegetable farmers had autonomy in the production of their seeds.

Source: Adaptation of the content presented by CIDSE, *Coopération Internationale pour le Développement et la Solidarité*. The Principles of Agroecology: towards fair, resilient, and sustainable food systems. Available at <https://agroecologyprinciple.atavist.com>, accessed 13 January 2019.

One of the key factors for further expansion of agroecology is the existence of favorable policies and political opportunities. Some cases of success involve examples of reformulation or reversal of policies that support the agroindustrial model to instead support agroecological principles [14]. In this sense, the PGS-Sul de Minas has contributed to discussions that have not only given farmers a greater say about existing policies but have given new policies and the reversal of situations counter to agroecology, such as prohibiting glyphosate.

Considering the political aspect involving the participation in academia, the PGS-Sul de Minas has facilitated works by students and employees of the Instituto Federal do Sul de Minas. In the IFSULDEMINAS-Campus Inconfidentes, for example, the Nucleus of Agroecology and Entomology

Studies "Root of the Field" (*NEA Raiz do Campo*) was created, which performs most of its activities to meet the demands of the PGS-Sul de Minas. The Universidade Federal de Lavras (UFLA) has extension and research projects in participatory breeding of heirloom seeds, holds events to open discussions with farmers, and conducts research activities through the Postgraduate Program in Sustainable Development and Extension. In relation to the academic work, PGS-Sul de Minas has facilitated research for undergraduate and postgraduate courses at several institutions [9,20–26]. The papers deal with diverse themessuch as techniques of cultivation, certification, soil quality, and heirloom seeds or are related to the social and the political issues of the farmers in the network.

Connections with technical assistance and rural extension service as well as educational institutions such as the Instituto Federal do Sul de Minas and the Universidade Federal de Lavras are one of the greatest gains of the PGS-Sul de Minas; nevertheless, some groups still do not have any links with these institutions. Technical assistance naturally influences the dynamics of the visits and the constant exchange of experiences for management of production units. These influences have lead farmers to adopta new technique, preserve previously degraded waterways, manage weeds more suitably, and even revive a variety with a seed or seedlings gained at some point in integration.

Only about 20% of Brazilian family farmers have access to technical assistance and rural extension [27]. Thus, the contribution of the PGS-Sul de Minas to the contact with research and extension institutions has facilitated learning and exchange of knowledge about agroecology, thusnow 100% of members have access to some kind of technical assistance and rural extension.

The concern with the preservation and the multiplication of the heirloom seeds was another contribution of the PGS-Sul de Minas to farmers evidenced during events, especially the Heirloom Seeds Festival in Southern Minas Gerais held for nine consecutive years by PGS-Sul de Minas farmers. During this event, farmers learn techniques of participatory improvement, visit seed production fields, discuss seeds, and exchange seeds with each other. Evidence regarding the use of their own seeds is the "Mãe Terra" Seed House. As a result of a project in partnership with teaching and extension institutions, the seed house stores and distributes the seeds of PGS farmers. It operates within an educational institution and is managed through a regulation by farmers with the support of the NEA Root of the Field. The work with the production and the preservation of seeds is reported by the farmers as one of the greatest contributions provided by the PGS-Sul de Minas, as exemplified by the report, "Much improved! With the seed exchanges we are planting corn that we have never planted ... Not for productivity, but for understanding the meaning of diversity." Thus, the PGS'actions have increased the percentage of farmers' own seed use in vegetable crops. Some farmers already achieve a 90% use of their own seeds. This percentage is growing every year, motivated by seed trade fairs, festivals, research, and training courses for participatory improvement.

The contributions provided by the PGS go beyond the organic production seal to the collective use of resources and shared structures, one of the examples being the seed banks [28]. We must pay attention to the "Food Empires" and to the fact that large corporations have appropriated an increasing share of food systems, controlling prices and squeezing out farmers who face difficulties to obtain income with the increased price of inputs and the decreased price of their products [29]. Thus, revival, multiplication, valorization, and access to heirloom seeds more adapted to the local conditions of the farm families represent important advances towards the autonomy.

For the control of land and territories, no action was undertaken by the PGS-Sul de Minas. However, the Cooperativa Camponesa, one of the organizations that is part of the PGS-Sul de Minas, is a part of the Landless Peasants Movement (*Movimento Sem Terra*). By strengthening itself through the production and the commercialization of certified organic foods, it generates income through the access to the organic markets and has gained credibility in society. This certified organic production was only possible through a PGS. Thus, the PGS is also a methodology that can strengthen the movements for the land and can serve as a methodological strategy to access technical assistance, production, and marketing of healthy foods.

4. Conclusions

The methodologies used by the PGS-Sul de Minas in the process of assessing organic compliance contribute to the revival of agroecological principles and directly benefit farmers by strengthening agroecology.

In the environmental dimension, the legal requirement for granting a certificate determines conservation measures, but the dynamics of exchanges and the holding of field days develop environmental awareness, which in turn causes farmers to preserve and to not only comply with a legal requirement but to also understand the sustainability of farming through taking care of the environment. The actions are developed to stimulate diversification, the use of mulch, green fertilization, polyculture, level cultivation, and application of organic compounds, and to create less dependence on external inputs. However, further progress is still needed in this regard, considering, for example, the low integration between animal and plant production activities as well as the recurrence of large external inputs, especially in the production of potatoes, strawberries, and coffee.These cases could be improved through the development of awareness activities, training courses on input production, and exchanges with other, more advanced groups, especially in animal and vegetal integration.

In the sociocultural dimension of agroecology, the PGS-Sul de Minas promotes the exchange of knowledge among farmers through visits and events. Their promotion of the appreciation of traditional knowledge is best exemplified by their work with heirloom seeds. The PGS-Sul de Minas also stimulates the participation and the empowerment of women. However, no specific actions were identified towards the participation and the valorization of youth.This reflects a limited perception or concern of the PGS about the problem of rural succession, one of the main problems of the Brazilian rural environment. The need to develop programs and actions to appreciate and include young people in PGS activities is urgent. It can provide both an alternative income for young people and greater dynamism and innovations in the productive sector.

In the economic dimension of agroecology, PGS-Sul de Minas favors the expansion of commercialization spaces such as farmers' markets, baskets, and institutional markets. It stimulates the diversification of agricultural incomes and the strengthening of local markets, although much of the commerce occurs in distant municipalities.This is an understandable and acceptable question due to the high production of some foods as well as the proximity to these centers and the inability to consume all the production in the small municipalities where the farmers reside.

The political dimension of agroecology allows the PGS to increase the participation of family farmers in decisionmaking spaces, influence discussions and creation of public policies, and encourage the preservation and multiplication of heirloom seeds. As a result, laws have been approved that benefit agroecology, and programs have been created that enabled the construction of a collective structure for seed conservation and other benefits. However, political aspects still need to be advanced, for example, by increasing participation of farmers in their municipal councils.

PGS-Sul de Minas has provided farmers with benefits beyond organic certification and the opening of new markets to farmers. For many of these farmers, participation in the PGS provides them the possibility to start production within the agroecological principles as well as exchange experiences, obtain technical support, and allow opportunities for market access.

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References

1. Feiden, A.; Almeida, D.L.; Vitoi, V.; Assis, R.L. Processo de conversão de sistemas de produção convencionais para sistemas de produção orgânicos. *Cad. Ciência Tecnol.* **2002**, *19*, 179–204.
2. Meirelles, L. *Produto ou Produto Ecológico?* Centro Ecológico de Assessoria e Formação em Agricultura Ecológica: Dom Pedro de Alcântara, Brazil, 2000; 9p, Available online: www.centroecologico.org.br/artigo_detalhe.php?id_artigo=20 (accessed on 10 February 2019).
3. Melão, I.B. *Desenvolvimento Rural Sustentável a Partir da Agroecologia e da Agricultura Orgânica*; Nota Técnica Ipardes: Curitiba, Brazil, 2010; 27p. Available online: www.ipardes.pr.gov.br/biblioteca/docs/NT_08_desenv_rural.pdf (accessed on 12 December 2018).
4. Primavesi, A.M. *Agroecologia: Ecosfera, Tecnosfera e Agricultura*; Nobel: São Paulo, Brazil, 1997; 199p.
5. Brasil, Lei N° 10.831, de 23 de dezembro de 2003. Dispõe Sobre a Agricultura Organic e dá Outras Providências. Casa Civil. 2003. Available online: http://www.planalto.gov.br/ccivil_03/leis/2003/l10.831.htm (accessed on 17 December 2018).
6. Brasil. Ministério da Agricultura, Pecuária e Abastecimento (MAPA). Instrução Normativa 019, 2009. Aprova os Mecanismos de Controle e Informação da Qualidade Orgânica. Available online: http://sistemasweb.agricultura.gov.br/sislegis/action/detalhaAto.do?method=consultarLegislacaoFederal (accessed on 28 January 2019).
7. Meirelles, L. *O desafio do Método*; Centro Ecológico de Assessoria e Formação em Agricultura Ecológica: Dom Pedro de Alcântara, Brazil, 2018; 2p, Available online: www.centroecologico.org.br/artigo_detalhe.php?id_artigo=20 (accessed on 10 August 2018).
8. Hirata, A.R.; Rocha, L.C.D.; Nery, J.A. *O sistema Participativo de Garantia do Sul de Minas*; Ifsuldeminas: Pouso Alegre, Brazil, 2018; 80p, ISBN 978-85-67952-15-4.
9. Hirata, A.R. A Constituição do Sistema Participativo de Garantia sul de Minas e sua Contribuição para a Agroecologia na Região. Master's Thesis, UFLA, Lavras, Brazil, 2016; 196p.
10. Franco, F.P. *Efeito Alelopático de Plantas Espontâneas Sobre a Germinação de Sementes e Desenvolvimento Inicial de Plântulas de Feijão*; Monografia (Graduação em Agronomia)—Instituto Federal de Educação, Ciência e Tecnologia do Sul de Minas Gerais—Campus Inconfidentes: Inconfidentes, Brazil, 2015; 29p.
11. Machado, L.C.P.; Machado Filho, L.C.P. *A Dialética da Agroecologia: Contribuições para um Mundo com Alimentos sem Veneno*; Expressão Popular: São Paulo, Brazil, 2014; 360p.
12. Gliessman, S.R. *Agroecologia: Processos Ecológicos em Agricultura Sustentável*, 2nd ed.; UFRGS: Porto Alegre, Brazil, 2001; 653p.
13. Toledo, V.M. La Agroecologia en latino america: Tres revoluciones, uma misma transformación. *Agroecología* **2012**, *6*, 37–46.
14. Myer, M.; Teran, G.C.; Giraldo, O.F.; Aldasoro, M.; Morales, H.; Ferguson, B.G.; Rosset, P.; Khadse, A.; Campos, C. Bringing agroecology to scale: Key drivers and emblematic cases. *Agroecol. Sustain. Food Syst.* **2018**, *42*, 637–665. [CrossRef]
15. Butto, A. Políticas para as mulheres rurais: Autonomia e cidadania. In *Autonomia e Cidadania: Políticas de Organização Produtiva para as Mulheres no Meio Rural*; Butto, A., Dantas, I., Eds.; Ministério do Desenvolvimento Agrário: Brasília, Brazil, 2011; pp. 11–34.
16. Moreira, S.L.S.; Ferreira, A.P.; Siliprandi, E. Memórias das mulheres na agroecologia do Brasil. In *Agroecologia en Femenino*; Sánchez, G.P.Z., Catacora-Vargas, G., Siliprandi, E., Eds.; Editora EIP/Socla: La Paz, Brazil, 2018; pp. 61–74.
17. Sacchi, G.; Caputo, V.; Nayga, R.M. Alternative Labeling Programs and Purchasing Behavior to ward Organic Foods: The Case of the Participatory Guarantee Systems in Brazil. *Sustainability* **2015**, *7*, 7397–7416. [CrossRef]
18. Rover, O.J.; Gennaro, B.C.; Roselli, L. Social Innovation and Sustainable Rural Development: The Case of a Brazilian Agroecology Network. *Sustainability* **2016**, *9*, 3. [CrossRef]
19. Darolt, R.M.; Lamine, C.; Brandenburg, A.; Alencar, M.D.C.F.; Abreu, L.S. Redes alimentares alternativas e novas relações produção-consumo na França e no Brasil. *Ambiente Soc.* **2016**, *19*, 1–22. [CrossRef]

20. Carvalho, L.A.H.B. *Análise da Percepção Ambiental de Produtores Orgânicos do Sul de Minas: Estudo de caso da Associação Agroecológica de Ouro Fino—AAOF*; Monografia (Graduação em Gestão Ambiental)—Instituto Federal de Educação, Ciência e Tecnologia do Sul de Minas Gerais—Campus Inconfidentes: Inconfidentes, Brazil, 2014; 44p.
21. Codonho, C.G. "Ser orgânico": Agricultura Ecológica e Novas Ruralidades no sul de Minas Gerais. Ph.D. Thesis, Universidade Estadual de Campinas, Campinas, Brazil, 2013; 291p.
22. Corsini, I. *A Casa de Sementes Mãe Terra: Desafios e Potencialidades*; Monografia (Graduação em Gestão Ambiental)—Instituto Federal de Educação, Ciência e Tecnologia do Sul de Minas Gerais—Campus Inconfidentes: Inconfidentes, Brazil, 2017; 59p.
23. Labigalini, I. *Levantamento da Diversidade de Sementes Crioulas e Orgânicas do sul de Minas Gerais*; Monografia (Graduação em Gestão Ambiental)—Instituto Federal de Educação, Ciência e Tecnologia do Sul de Minas Gerais—Campus Inconfidentes: Inconfidentes, Brazil, 2016; 62p.
24. Veiga, J.C. *A Contribuição do Organismo Participativo de Avaliação da Conformidade do sul de Minas para os Agricultores Certificados*; Monografia. (Graduação em Agronomia)—Instituto Federal de Educação, Ciência e Tecnologia do Sul de Minas Gerais—Campus Inconfidentes: Inconfidentes, Brazil, 2015; 44p.
25. Xavier, J.B. Estado da arte em Agroecologia e suas Relações com Experiências no sul de Minas Gerais. Master's Thesis, Universidade Federal de Lavras, Lavras, Brazil, 2014; 232p.
26. Guerrero, A.R. *Caracterização Física do solo em Estágio Inicial de Cultivo Orgânico*; Monografia (Graduação em Gestão Ambiental)—Instituto Federal de Educação, Ciência e Tecnologia do Sul de Minas Gerais—Campus Inconfidentes: Inconfidentes, Brazil, 2014; 46p.
27. Guanziroli, C.E.; Buainain, A.M.; DiSabbato, A. Dez anos de evolução da agricultura familiar no Brasil: (1996 e2006). *Rev. Econ. Soc. Rural* **2012**, *50*, 351–370. [CrossRef]
28. Home, R.; Bouagnimbeck, H.; Ugas, R.; Arbenz, M.; Stolze, M. Participatory guarantee systems: Organic certification to empower farmers and streng then communities. *Agroecol. Sustain. Food Syst.* **2017**, *41*, 526–545. [CrossRef]
29. Ploeg, J.V.D. *Camponeses e Impérios Alimentares: Lutas por Autonomia e Sustentabilidade na era da Globalização*; Editora da UFRGS: Porto Alegre, Brazil, 2008.