

## Article

# A participatory analysis of the control and certification system in the Italian organic rice value chain

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**Abstract:** Italy is the leading European producer of rice. The transition to organic farming could represent a solution for environmental protection, as well as for the economic sustainability of farms, consumer safety and as a measure of climate mitigation, but it currently displays several weaknesses in the control and certification system. The objective of the current study is to propose advice for improving the control and certification scheme in the organic rice sector. To achieve this aim, we adopted a qualitative methodology based on participant observation at stakeholders' meetings, focus groups, community-led workshops and deep interviews with relevant local actors. Findings show that there are some solutions to mitigate the weakness of the Italian certification scheme. The study also produces managerial implications to improve the Italian organic rice system.

**Keywords:** Qualitative research, Regulations, Ethical issues, Sustainable production

## 1. Introduction

Rice is the first cereal at world for human consumption, the second one after corn for the quantity. In the world there are more than 140,000 varieties of rice and many typologies of cultivation. Rice is produced in many areas with different weather conditions from the rainiest areas in the world to the driest deserts [1]. According to the Research Institute of Organic Agriculture (FiBL) in 2018 world organic rice area is about 566 thousand hectares and it represents the 0.35% of the world rice surface (160 million hectares).

Most of the rice organic agricultural area is in Asia (87%) and 332,000 hectares (60% of the total organic rice area) are in China (Figure 1).

Thailand with 67,000 hectares (in ten years the organic rice area has moved from 17,000 to the current 67,000 hectares), Indonesia with 54,000 hectares and Pakistan with 31,000 hectares are the main producers in terms of area invested and Italy, with 17.8 thousand hectares, is the first not Asian country.

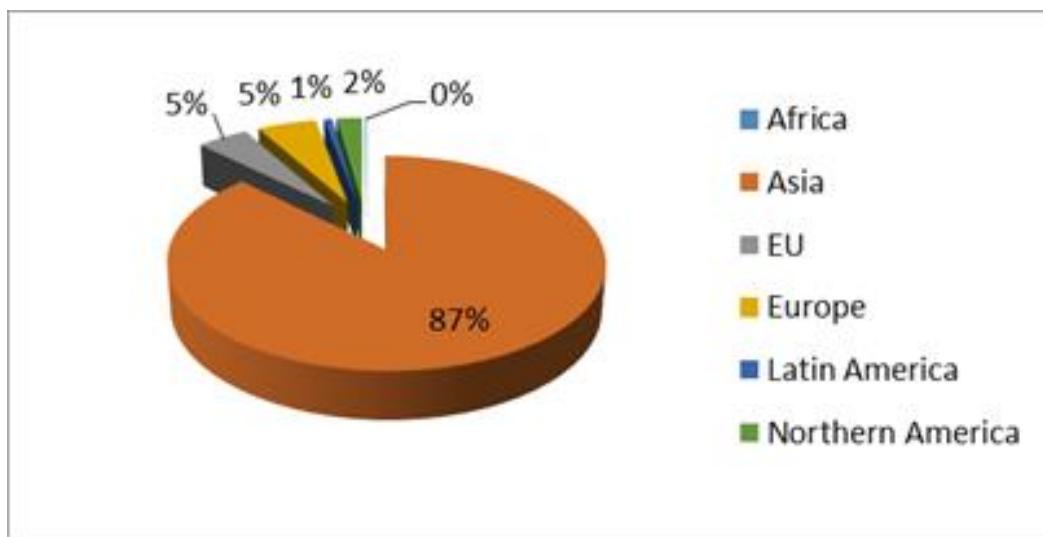


Figure 1. World organic rice area 2018: geographical distribution, our elaboration on FiBL data, 2020

Italy is the leading European producer, it is followed by France, Romania, Greece and Spain (Figure 2). In the last five years, as shown in Figure 2, the rice surface is increased rapidly (Ue28: +52%) with countries that have grown very considerably (France: +95% and Italy: +64%), following the positive trend that characterized the European organic sector [2]. This increase answers to the European consumers 'questions for high quality food production that respects the environment, animal welfare and the development of rural areas [3].

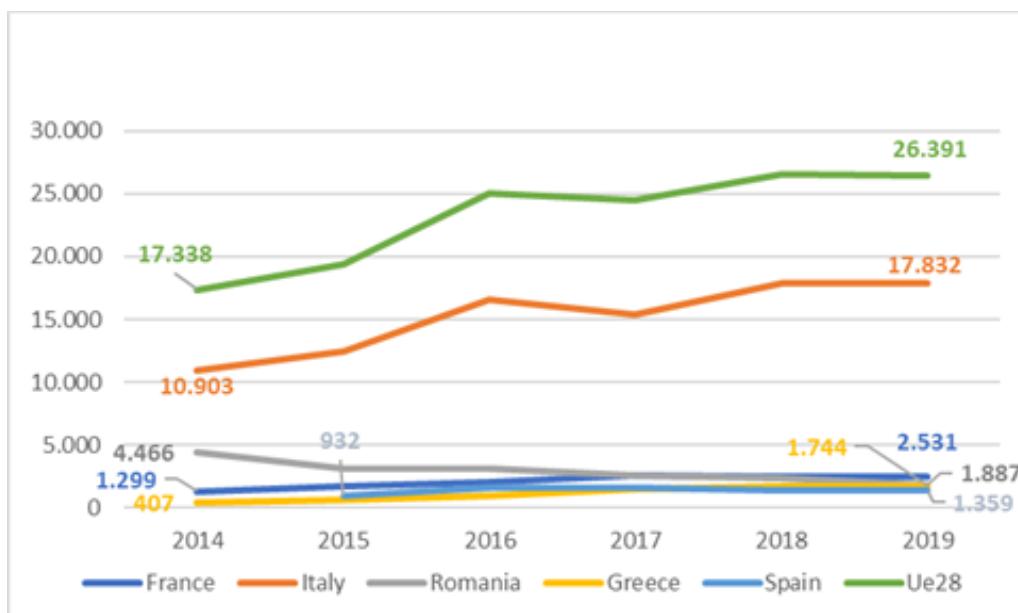


Figure 2. European organic rice surface: main Countries - years 2014-2019, hectares, our elaborations on EUROSTAT data, 2020

In 2019 the organic method is practiced in Italy by 80,643 operators and about 2 million hectares are involved. The organic rice is cultivated in about 20,000 hectares and in the last ten years the surface is doubled, that fact confirms the positive trend of the last years and the increasing is faster than the rest of all organic surface (Figure 3).

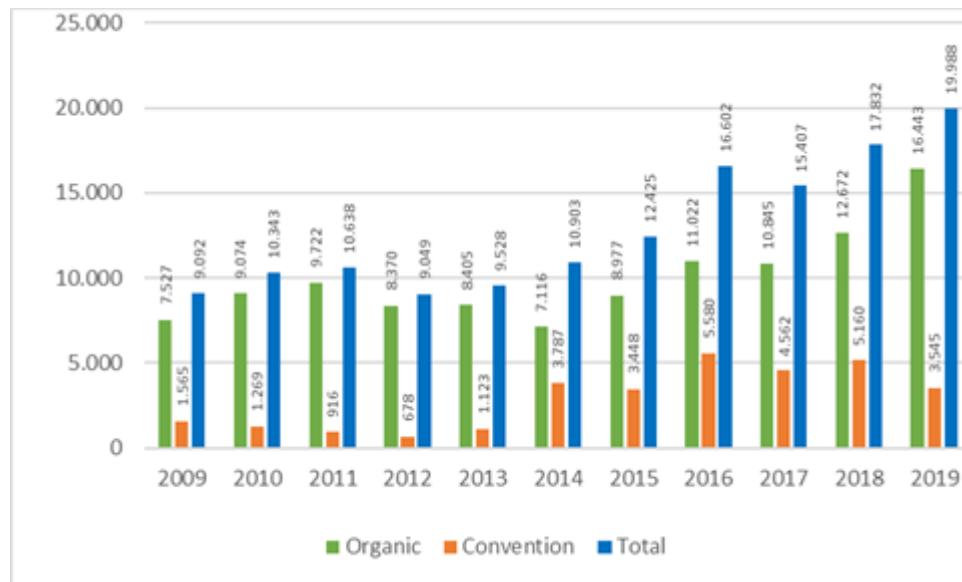


Figure 3. Evolution of the organic rice-cultivated area in Italy, years 2009-2019, hectares, our elaboration on Italian National Information System on Organic Farming (SINAB) data, 2020

The Italian rice production is localized in Northern Italy and precisely in two Regions - Lombardy and Piedmont - that concentrate 98% of the area invested in organic rice (18 thousand hectares). Organic rice is also cultivated in Lazio (1,5 thousand hectares), Veneto (375 ha) and Sardinia (55 ha) confirming that also in Italy this crop has adapted to different environmental conditions.

The Italian organic rice production has always been practiced by a niche of pioneer producers, due to the difficulties in cultivating rice without the use of chemicals, especially those for the containment of weeds, and the lack of specific dedicated research, experimentation and dissemination, have made the organic method quite difficult.

In the last few years, instead, organic rice has registered an increasing interest due to different factors. The prices of the conventional rice have been penalized by the competition of the rice imported at low price while the price of the organic rice has continuously increased due to a general lack of supply. This economic situation, combined with the absence of chemical residues on the final product, encouraged some farmers to produce organic rice while continuing to cultivate with chemical inputs. So, without fully respecting the restrictions imposed by the organic method, they managed to obtain the organic certification. Clearly this has been possible because the control and certification system (CCS) had flaws that prevented it from identifying fraudulent situations.

At the end of 2014, the phenomenon of so-called "fake organic" exploded causing a crisis, still ongoing, of the entire Italian sector, with tensions between rice farmers, accusations and suspects, speculation on lands, journalistic investigations and investigations by the competent authorities.

The control and certification system (CCS) have taken note of flaws, risks of devaluation of the entire sector for consumers and the need for radical changes that would guarantee the reliability, transparency and reliability of the supply chain.

With the emergence of the inefficiency of the CCS, it is clear that the problem of the integrity of the supply chain was not only a concern of the Control Bodies (CBs) or of the supervisory authorities, but also an ethical, cultural and educational that affects the whole supply chain. A radical change is required that involves a revision of the CCS, but also a cultural and ethical challenge.

In this critical context, our goal was to answer the following research questions: the duty of the regulatory system is to guarantee quality, but if there are flaws and the system is no longer efficient, the responsibility is to be attributed only to the certification system or should it be shared between all the players in the supply chain? How far does the inspection activity have to come and how much must the repressive action be exacerbated? Is it possible to imagine that, alongside a revision of the

legislation, a self-regulation process takes place between farmers and other stakeholders in the value chain?

These questions need to be considered in light of the movement that is taking place and that sees the establishment of a quality certification system parallel to the traditional one. Indeed, several studies show a growing interest in alternative organic food certification strategies based on trust and built on a stronger connection between farmers and consumers, and more generally between the actors of the supply chain and the local communities and the territories [4,5].

Markets based on direct relationships between producers and consumers (direct sales, farmers' market, Solidarity Purchasing Groups), where trust and not certification support the commercial relationship, are increasingly consolidated.

In addition, participatory organic certification schemes that are not considered an independent certification but are based on the widespread trust between producers and consumers (Participatory Guarantee Systems - PGS, recognized and supported by IFOAM – Organics International). The adoption of alternative quality assurance systems is based on the collective responsibility of the stakeholders (producers, consumers, distributors, technicians, etc.), on a common vision of seriousness, professional integrity and mutual trust [6]. The development of PGS reflects the growing "beyond organic" movement, which wants to go over the organic certification, and focuses on the reconstruction of a local food system, immersed in the social and ecological context from which it comes [7].

Therefore, this article reflects on the role of the certification and control system, but also on the role of the other stakeholders (SH) in improving the transparency and the seriousness of the supply chain. So, the present research on the critical issues and possible solutions of the control and certification system of organic rice cultivation is not only limited to the analysis of regulatory measures and to questioning the responsible parties, but it is extended to collect the point of view of farmers, their representatives in trade associations, industry experts, public officials and other relevant SHs. The analysis leads to the conclusion that the criticality heterogeneity of the certification system can find an answer in mandatory adjustments of the regulatory system, but also in spontaneous and voluntary actions by producers, taken in agreement with each other and with other actors in the value chain and aimed at restoring a condition of widespread trust.

The desk analysis examined the latest legal basis: the new European regulation on organic farming (Regulation (EU) 2018/848) and the new Italian control decree (Legislative Decree-law No. (20) of 2018).

The Italian legislative decree that repeals the previous one of 1995 updates the provisions on controls in organic farming, introducing for the first time an administrative sanction system (previously, minor offenses were not prosecuted). This decree reorganizes and simplifies in a single document the principles and rules that harmonise the control and the certification system of the production activities, processing, marketing and importing of products obtained according to the organic farming method.

The new legislation has maintained the following architecture of the control and supervision system (Figure 4):

- the Italian Ministry of Agricultural, Food and Forestry Policies (MiPAAF) is the supervisory authority. It periodically verifies the maintenance of the CBs requirements. This activity is carried out jointly with the Department of Central Inspectorate for Fraud Repression and Quality Protection of the Agri-Food Products and Foodstuffs (ICQRF), and by the Regions and Autonomous Provinces within the territory of their competence and, starting from 2017, by the *Carabinieri* - Forestry, Environmental and Food Command Unit (CUTFAA);
- the control activity is delegated to the CBs such as independent private bodies responsible for verifying the correct application of the regulations of the organic method. In Italy there are 19 authorized CBs. The CBs carries out the control on organic operators (farmers, processing firms, distributors) in the stages of production, preparation and import of products obtained according to organic farming methods;

- ACCREDIA is the national body authorized by the Italian Ministry of Economic Development to carry out CBs accreditation activities. It supervises and evaluates the technical skills and professional suitability of the operators responsible for assessing the conformity of the CBs.

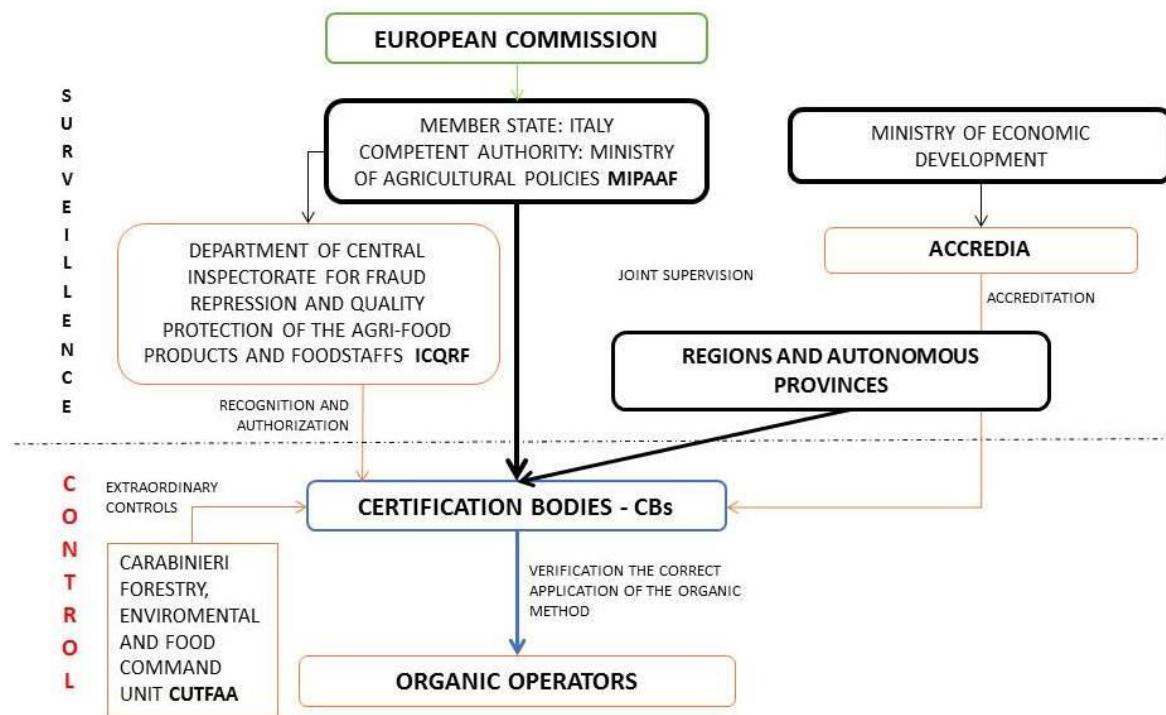


Figure 4 – The actors of the Italian organic certification, control and supervision system

The control decree has rationalized and made the supervisory and control activity more effective by improving coordination and collaboration between the subjects of the system. But also, a well-designed system can be fallacious if the necessary and timely information flow is not ensured. The decree therefore provides that the subjects of the supervisory and control system sign agreements and memoranda of understanding for the sharing of information of the administrative procedures required by European legislation, through the Organic Farming Information System (OFIS). This system centralizes information that was previously available at the level of 20 Regions and two Autonomous Provinces. The effectiveness of the control system is attributable to the connection of the information flow between the OFIS and the supervisory database (BDV) which represents the common and shared information base through which the data of the activity are collected and made available to the competent authorities supervision carried out by the CBs.

As already mentioned, the decree introduces for the first time in the organic farming sector an administrative sanction system with the provision of illegal offenses against both the CBs and the organic operators.

The decree provides penalties for false designation, presentation and labelling of organic products both for commercial purposes and for information to consumers at the expense of all operators in the supply chain.

Finally, the control decree adopts a measure to guarantee the constant improvement of the efficiency and effectiveness of the control and supervision activity by assigning 50% of the proceeds from the sanctions to this activity.

The control legislation also intervenes in strengthening the concept of separation of the relations between the CBs and the Operators by establishing, for example, the obligation to rotate the staff in charge of inspection visits and setting the limit of three consecutive visits by an surveyors to the same Operator. The decree strengthens the responsibility of the CBs in ensuring adequate training, updating and experience of its staff.

In 2018, the European Parliament definitively approved the new organic regulation on the production and labelling of organic products that is expected to enter into force on 1<sup>st</sup> January 2022. In terms of controls, the new regulation provides for simplification and strengthening, with the possibility of modulating the frequency of checks based on risk analysis.

New obligations are envisaged for Operators, i.e. preventive measures aimed at guaranteeing the conservation of biodiversity and the quality of the soil and precautionary measures aimed at avoiding contamination by products or substances not authorized for use in organic production and avoiding mixing of organic products with non-organic products.

In cases of accidental contamination risk, the law obliges the Operator, to adopt control tools throughout the production and measures to ensure product separation and its withdrawal from the market. In addition, in case of suspected contamination, the operator must promptly inform the competent authorities. National authorities are responsible for monitoring these measures and must report annually to the European Commission and other Member States cases of contamination involving organic products.

The European regulation authorizes the adoption of types of seeds in derogation of the seed legislation as well as the use of "heterogeneous organic material" to high level of genetic biodiversity, resistant to pests and diseases.

The regulation introduces group certification which will simplify adherence to the organic production method for small producers by reducing certification costs. Finally, the regulation includes a ban on the import, into the EU, of organic products obtained in third countries that haven't the same set of rules as those producing in EU.

The aim of this study is to propose advice for improving the control and certification scheme in the organic rice value chain.

The remainder of this paper unfolds as follows. Following this introduction, Section 2 describes the strategy and methodology adopted in the study. In Section 3, findings are shown and discussed. Section 4 concludes the work by providing implications and suggestions for future research.

## 2. Materials and Methods

This paper is based on reflection on the analysis of the data collected in a case study. The Italian control and certification system of organic rice cultivation was investigated with a qualitative approach, combining different techniques and tools.

On the base of legislation framework, the field analysis investigated the opinions of the various actors of CCS as well as those of the rice sector to obtain a reliable and detailed framework of critical issues and possible solutions for improving it.

The views of different stakeholders have been collected in the following ways: participant observations (POs) at stakeholders meetings; Community-Led Workshop (CLW), according to the indications of Lawrence [8]; Focus Group (FG), following the interpretation of Corrao [9], Zammuner [10] and Albanesi [11] and deep interviews (DIs) with key informants, according to Guala [12] and Bichi [13] (see Table 1 for details on fieldwork).

Table 1 - Details on fieldwork

| Research tool | When             | Where   | Participants   |
|---------------|------------------|---|--|
| POs           | May 24, 2016     | MiPAAF headquarter, Rome  | Permanent organic agriculture table established by MiPAAF  |
| POs           | June 16, 2016    | CREA - Research Centre for Cereals and Industrial Crops, Vercelli | Participants to the conference on the perspectives for the organic rice sector (organic and conventional farmers, public authorities, researchers, Farmers' Union) |
| POs           | October 12, 2016 | Lombardy Region headquarter, Milan                                | Organic rice working table (public authorities, researchers, organizations from the organic agriculture supply chain)  |

|     |                   |   |  |
|-----|-------------------|---|--|
| POs | December 12, 2016 | Piedmont Region headquarter, Turin  | Organic rice working table (public authorities, researchers, organizations from the organic agriculture supply chain)                      |
| CLW | January 25, 2018  | <i>Candia Lomellina</i> (Pavia), organic rice farm                        | Selected organic rice farmers, researchers and public officials involved in the multi-actor research network of the Risobiosystems project |
| FG  | February 15, 2018 | CREA - Italian Research Centre for Cereals and Industrial Crops, Vercelli | Control bodies (CBs) responsible for the certification of organic rice production and processing   |
| DIs | March 2018        | Stakeholders interviewed  | 21 key informants, see Table 2   |

The key informants (table 2) are defined as the people who, by their role and experience, can provide a representative point of view of the SH group to which they belong [14]. They have been identified thanks to the indications received by SHs during previous research activities, as suggested by Reed [15].

Interviews, FG, CLW and SH meetings have been recorded and transcribed. Reduced transcriptions were corrected in team, as suggested in Bertrand [16] and Krueger [17]. The analysis took place using an improved interactive reading grid during transcription analysis, as suggested by Dawson [18].

Table 2 - Stakeholders interviewed

| Key informants   | Identification code               |
|--|-----------------------------------|
| Conventional rice farmer from Piedmont Region                                      | KI1                               |
| Conventional rice farmer from Lombardy Region and representative of Farmers' Union | KI2                               |
| Conventional rice farmer from Lombardy Region and expert                           | KI3                               |
| Organic rice farmer from Lombardy, farm leader and expert                          | KI4                               |
| Organic rice farmer from Lombardy Region   | KI5 - KI6                         |
| Organic rice farmer from Piedmont Region   | KI5 - KI7                         |
| Public official of Lombardy Region   | KI8                               |
| Public official of Piedmont Region   | KI9                               |
| Public official of MiPAAF  | KI10 - KI11                       |
| Representative of Farmers' Union   | KI12 - KI13 - KI14                |
| Representative of CCB  | KI15                              |
| Researcher   | KI16 - KI17 - KI18 - KI19 - KI 20 |
| Entrepreneur of the agro-industry  | KI21                              |

During data collection and analysis, we applied various triangulation types to ensure objectivity [19–21]. Data triangulation was applied by using different sources, i.e., sector legislation and various stakeholders, while triangulation methods were achieved by using multiple qualitative methods to gather data. Investigator triangulation was ensured by the presence of several researchers collecting data, conducting the analysis and discussing results.

To face the organic rice crisis, during 2016, the SHs of the Italian rice sector were engaged in a series of public meetings, such as conferences and multi-stakeholder technical working groups, discussing the weaknesses of the organic rice production and the strategies to be adopted to improve the control and certification scheme and therefore the quality of organic rice for the consumers and the environment. National and local public authorities are interested in reducing risks and impacts on human health, the environment and biodiversity, prioritizing the sustainable use of pesticides, including alternative approaches and non-chemical methods such as organic. As we saw in the previous section, they are engaged in normative production oriented to provide guidance and guidelines.

To discuss the matter of the productivity of organic rice and to understand whether to use yields as a risk indicator ("alert") for the control and certification system, a CLW was organized with a group of organic rice farmers, researchers and public officials.

### 3. Results

From the analysis of data is emerged a convergence on the part of the SHs on the perception of a system weakened by the possibility of circumventing the rules of the current legislation and the risk that organic rice production loses credibility towards consumers.

According to a widespread viewpoint among stakeholders, problems concerning the quality of organic rice are attributable primarily to the production phase and only secondarily to the subsequent ones. It is at the level of rice farmers that, according to stakeholders, it is easier to circumvent the legislation on organic rice production.

In this sense, two factors are considered decisive to avoid frauds: the choice of rice varieties and the use of specific agronomic techniques that make possible to avoid the use of pesticides not allowed by organic production for the contrast of pathogens and weeds, typical of rice cultivation. About this, the SHs expressed the need for standardization and requested: i) a list of easily distinguishable varieties to be grown organically and conventionally; ii) the definition of agronomic techniques that are practicable and therefore justified in organic rice cultivation; and iii) an indication of the yields that are eligible in organic rice cultivation.

The issue of organic rice yields and the possibility of using average values as "alarm bells" for the control system are particularly discussed with contrasting points of view.

As one researcher clearly explained during an interview, in organic rice farming the yields are on average lower than those obtained in conventional rice farming because they are not supported by chemical inputs. However, the lower yields are offset by higher prices on the market, which balance the disadvantages of this production system in terms of technical means. In the current situation, however, many organic producers report yields equal to or even higher than conventional ones. This is obviously a fraudulent situation that the control and certification system is currently unable to stem.

Organic farmers and other SHs agreed that at the moment the average organic yields are lower than those obtained in conventional farming (from 20 to 30% less), but considered that productivity of organic rice has increased over the last few years thanks to the greater experience of farmers and the cooperation made with researchers. In the most disadvantaged areas where conventional rice has never made very high yields because chemical inputs are less effective, the distance with organic is reduced. In this sense, rotations play a decisive role in yields performances: when rice is cultivated immediately after other crops (rotation), production is higher because rice pests are reduced. After three consecutive years of rice cultivation, however, production decreases considerably. The production peaks (maximum yields) are the potential to be tended and which will probably come with the continuous work of improving the productive techniques. Fixing average values as an alert could limit this improvement work and discourage the serious farmers, as who exceed these values would be subject to controls, even if they are in good standing. Moreover, due to the diversity of environmental, soil, climatic and agronomic situations in organic rice, it is not possible to set average values that fit well for every situation. It would be reasonable to establish ranges of production for each condition, but it would involve complex data collection and analysis. The group concluded that using average yields as a risk indicator within the control and certification scheme is not particularly useful for preventing illegal behaviour, because the fraudulent rice farmer would be penalized in the income obtained (lower productions allowed to be declared per hectare), but not prevented from illegal activity. It is also suggested that, in its control activity, the CB should always consider the yield of the year and those of the previous years and should compare them with the rotation plan, in order to verify whether they are compatible.

Finally, the CLW made it possible to highlight that, at the moment, the system of sanctions is too weak and it needs to be toughened up. Indeed, in case of irregularities, the farmer is obliged to

disqualify the production from organic to conventional, for two years, and only for the parcel that presents irregularities, without other penalties, while the certifier has no consequences at all.

At the level of the CBs, they wish a reform of the certification system that avoids possible conflicts of interest between the CB and the organic operator, for example by introducing tariff systems calculated on the service performed and not as a percentage of the turnover of the certified farm; prohibiting any form of participation in the ownership of the certified farm; etc. Furthermore, a pact between the CBs that defines a shared code of ethics and common guidelines on issues not yet regulated is hoped for, which will ensure greater uniformity in control and certification procedures.

The FG with the CBs allowed to deepen their point of view on the responsibilities of the CBs.

Representatives of CBs also complained about the lack of a tougher sanctioning system, because the downgrading of the production, from organic to conventional, is judged to be not enough. But they complained about a widespread lack of legality of all operators in the sector.

In fact, they listed a series of very concrete criticalities that the CBs face due to this attitude and which would require corrective interventions in the system that regulates the control and certification activities, but also interventions that should involve the entire sector, in order to create a supportive, technical, but also cultural context. From a regulatory point of view, for example, eliminating the use of exemptions for "mixed" organic-conventional farmers and the possibility of cultivating the same variety of rice with both methods (conventional and organic) in mixed farms, could facilitate the CBs control task, eliminating potentially contradictory situations and therefore at risk of illegality.

The analysis conducted by the representatives of the CBs during the FG made it possible to draw up a list of intervention proposals that have to do with the entire production system and that require a praxeological change that should affect not only the CBs, but also the rice farmers and all the other actors, including researchers, advisors, institutions, etc.

In the following table 3, some examples of critical issues are shown.

Table 3 – Critical points and proposals emerged during the FG with CBs for improvement of the control and certification system

| Issue  | Consequence for the control system                                | Proposal for CBs  | Proposal for the sector   |
|--|---|---|---|
| Land fragmentation (presence of numerous plots in the same farm) | Numerous checks and long duration of checks                       | Strengthening of the staff in charge. Perform random sampling of controls and use satellite control systems   | Reflection on the possibility of certification of mixed farms (organic-conventional)                                    |
| High yields  | Risk of fraudulent situation (conventional passed off as organic) | Surveyor's training and experience Recourse to inspection personnel with specific and significant experience on rice Careful documentary analysis: production plan for the current year, analysis of previous years' yields, analysis of data in official databases | Raising awareness and training of rice producers on alternative agronomic techniques to the use of chemical treatments* |
| Submersion of rice fields just before sowing and / or            | Risk of fraudulent situation (weeding against <i>Crodo</i> rice)  | Surveyor's training and experience Recourse to inspection   | Raising awareness and training of rice farmers on alternative agronomic   |

|  |   |  |  |
|--|---|--|--|
| absence of green manure in pre-sowing  | that is not edible)   | personnel with specific and significant experience on rice Associate the evaluation of the field conditions (visual observation) with the floristic analysis and that of the soil, water and green plants**  | techniques to the use of chemical treatments*  |
| Use of modern varieties, e.g. not very resistant to <i>Brusone</i> (rice blast)  | Risk of fraudulent situation (conventional passed off as organic)   | Surveyor's training and experience<br>Recourse to inspection personnel with specific and significant experience on rice  | Investment in variety research programs (genetic improvement and variety selection)  |
| Massive use of fertilizing or corroborating products allowed in organic farming, without adequate agronomic and economic justification | Risk of fraudulent situation (use of not allowed fertilizers in a mixture, difficult to identify)   | Surveyor's training and experience<br>Recourse to inspection personnel with specific and significant experience on rice production<br>Agronomic surveys that allow to have a feedback on the correspondence between the technique used and the evidence in the field                             | Raising awareness and training of rice farmers on alternative agronomic techniques to the use of chemical treatments*  |
| Presence of residues from chemical treatments  | Risk of fraudulent situation or accidental contamination due to drift of pesticides and entry of polluted waters from conventional rice farmers | Surveyor's training and experience<br>Recourse to surveyors' personnel with specific and significant experience on rice<br>Agronomic Surveys<br>Associate the evaluation of the field conditions (visual observation) with the floristic analysis and that of the soil, water and green plants** | Adoption of protection measures against accidental contamination: areas of environmental respect such as ditches, channels, rows, hedges<br>Prohibition of submersion of paddy chambers during chemical treatments in neighboring paddy fields |

\* Green mulch with cover crops, transplanting rice seedlings which, being in tillering, are able to prevail over the development of weeds, etc.

\*\*CBs report that the intermediate laboratory analyses (in the pre-sowing and sowing phase), even if they cannot determine the final outcome of the control, based on the results of the controls on the final product, support in analysing risks and identifying the critical control period.

More, from the in-depth interviews with key informants, it emerges quite clearly that the inefficiency of the control and certification system should not be attributed only to the system itself, but also to a lack of legality that has affected the entire sector.

A conventional rice farmer from *Lomellina*, in Lombardy, well summarizes the loss of integrity that has affected the rice industry: "Morality has always been a flag for this sector, as well as professionalism. There are many concrete examples. But the price difference between organic and conventional is too high. Earnings are too tempting. The opportunity has made the thief man. Organic should be a choice of life, but prices have become the only motivation for conversion" (KI1).

Another key informant states: "Those in the countryside know who does the treatments, even if the treatments are done at night to avoid being seen. In the fields where pesticide treatments are done there is no longer a blade of grass. And treatments with products based on algae, that have no agronomic effect but are allowed in organic, are noted in field notebooks for the sole purpose of justifying the traces of the tractor wheels in the field" (KI12).

The criticisms of the false organic are unanimous, as is the lack of confidence in the current certification system and the sense of frustration with the situation of immobility in the sector. The interviewees propose many practical and easily practicable solutions, but they seem sceptical about the possibility of their application. There seems to be a lack of change, clear and shared by all the actors. The state of crisis that prevents any action is caused by strong economic interests related to the organic, conflict and distrust that pervade the sector. Organic prices have pushed up land lease and purchase costs for all rice farmers, organic and conventional, and have increased speculation.

Speaking of the need for transparency and traceability of the supply chain, an interviewee explains: "Traceability verification is possible because the information base exists. There are various public databases available, there are the information held by the insurance companies, those that can be obtained from the applications for public contributions but it is necessary a crossover of data that allows to carry out a check, for example on production yields and mixed farms. Obviously false data would turn up. Who is who doesn't want more transparency? There is a complicity of the whole system in maintaining the opacity of the rice chain. The sector is very conflicting (young people against the big ones, provinces against each other, rice mills and rice farmers who each go on their own), there are strong market interests (organic prices are double or even triple compared to those of the conventional), conflicts of interest in the representative bodies. All this ensures that nobody trusts anyone" (IC12).

"Seriousness and ethics" are the key words mentioned in the interviewees' stories. An organic rice farmer summarizes: "Organic is a possible, but difficult, reality. It is an ethical discourse: the desire and the duty to aim for the best. I have not maximized the profit with organic agriculture but my personal expectations" (KI4).

It seems clear that the certification system can make improvements, but the sector needs a cultural and ethical revolution that invests all the actors not only in the sector, but in all the organic: "organic rice could be a fuse for a large revolution" (KI4).

In this sense, the demonstration that the organic rice can be done in a responsible and remunerative manner, the dissemination of good practices among rice farmers and the collaboration with the research institutions and the extension services make it possible to extend the organic method to serious rice farmers, by gradually isolating the false organic farmers. "Around the organic rice, large economic interests revolve, the certified organic rice has reached 700-800 euros per tons. It is normal that there are tensions and conflicts, but it is necessary to set a good example. The goal is to demonstrate that the true organic rice can be made, without waging war, but through the way of example, of dissemination: moments of dissemination extended to people interested in organic organized by serious farms" (KI8).

From the interviews with key informants, supply chain measures emerge which encourage group certification, as a tool for mutual control and training between farmers; make use of alternative measures to organic certification in the form of commercial contracts that provide for compliance with more stringent regulations than those of organic certification, as a guarantee for producers and consumers; introduce incentives for farms that operate exclusively in the organic sector ("dedicated organic supply chain"); ensure greater integrity of the entire supply chain

through a series of collaboration initiatives between different actors. At the production level, greater discussion between farmers, sharing of experiences and good practices, mutual knowledge, socialization and collaboration could trigger processes of emulation, healthy competition and isolation of unprofessional farmers. At the level of the supply chain, the establishment of working groups that favour moments of discussion between institutions, researchers, agricultural associations, and other supply chain actors could encourage the design and coordination of actions aimed at ensuring the integrity of the sector, filling a void left by the public authority.

#### 4. Discussion

Following the analysis of the meetings with the SH of the Italian organic rice sector, considerable critical issues emerged in the control and certification system. Through the methodology adopted in this study and by the results that emerged during the meetings with the SH, some solutions were proposed for overcoming the previously highlighted critical points. Participant observations during four stakeholders 'meetings made possible to understand that the control and certification system of organic rice is a cause of great concern among all the actors in the rice sector.

The analysis of the framework supported by the field analysis have permitted to highlights some critical issues.

From 1<sup>st</sup> January 2017, supervision and control activities have been strengthened by the operation of CUTFAA - which, in exercising its control function on the safety of the food supply chain carries out surveillance activities on the CBs.

With the so-called control decree in 2018 a unique text on controls was introduced, which forecast an administrative sanctioning system against the CBs and operators along the entire rice chain. To support the subjects involved in CCS some activities have been implemented thanks to computerization: the activity of Organic Farming Information System (OFIS) and the supervisory database (BDV) increase the exchange of information. Moreover, the Italian Agricultural Ministry Decree. no. 6793/2018 introduces compulsory rules for the importers, the first recipients and for the staff of the exercise of the commercial control skills and of the system of experts and that has strengthened the efficiency and the ability of coordination of the subjects responsible for the supervisory activity and control.

Lastly, the proposal of the new organic regulation (Reg. EU 2018/848) introduces both group certification (including cross-border certification) which will enable small rice producers to meet, and the provision for the elimination of derogations for "mixed" organic- conventional farms.

With regard to the diversified control protocols, a strict package of agronomic solutions and production techniques should be defined, diversified according to the type of soil, variety of seeds, availability of water, in order to allow the various organic farms to join the solution that is more suited to the characterization of each of them. This would allow to fix pre-established solutions within which the rice farms must act, so as to avoid the use of techniques which, due to economic opportunities, risk compromising the quality of the product and allowing more standardized and specific controls for the rice crops. Adherence to the protocol should provide for high penalties in the event of failure to comply with the production requirements.

The use of floristic and/or agronomic analysis is considered important so that the evidence and the results of laboratory analysis assume, within the certification procedure, a strategic value, especially in the case of different method of production of the same crop or even the same variety (organic and conventional). The admissibility of mixed farms should only be provided in the case of adoption of sustainable farming methods (integrated production as a certifiable method) on the entire farm surface, with the commitment to fully convert the farm within a medium-long term (almost five years).

The specialized training of consultants who carry out inspections on behalf of CBs should also be developed, since rice cultivation is very technical and requires a good level of experience.

As follow up of this research, organic rice system should be considered after the implementation of new Regulation (EU) 2018/848 to validate our findings, as it would also be relevant to introduce a new product specification of the organic rice value chain.

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