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PUBLIC GOOD AGRICULTURAL PRACTICES CERTIFICATION SCHEMES IN CHOSEN EU COUNTRIES

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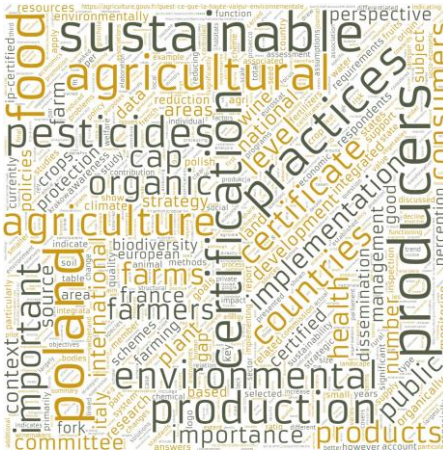

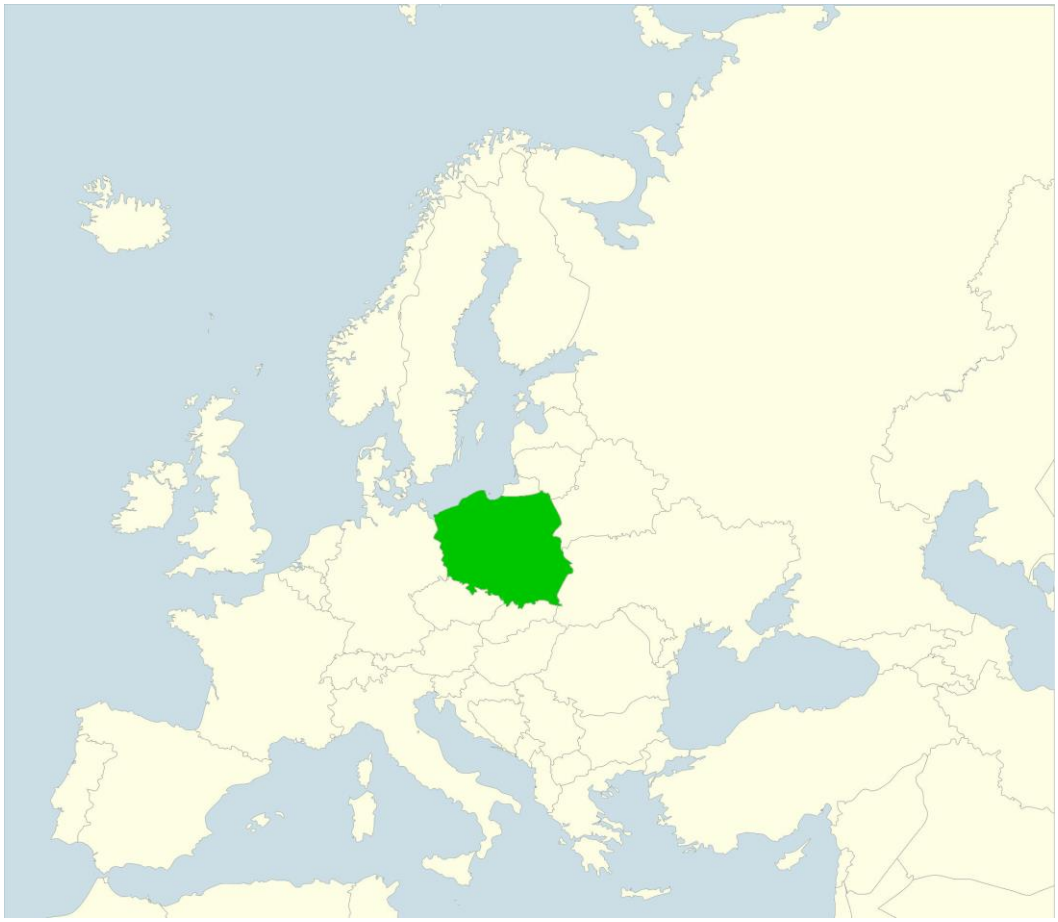

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Abstract: In line with the Farm to Fork strategy and the European Green Deal plan for creating a sustainable food system, the European Commission has set goals for 2030: reducing the use of pesticides and the risks associated with their use by 50%, the use of fertilizers by at least 20%, the sale of antimicrobials used in animal husbandry and aquaculture by 50% and 25% of agricultural land used for organic farming. Implementation of these assumptions requires institutional support and providing farmers with a specific framework. Certification Schemes (CSs) in agriculture are one way to achieve these goals. The number of CSs that support the strategy in the EU member states is 170 intra-EU and 198 including associated countries. Together with Organic farming, the CSs on Good Agricultural Practices (GAP) seem to be particularly important in reducing the use of pesticides and fertilizers. The aim of the article is to present selected issues related to CSs implementing the strategy of reducing the use of pesticides and fertilizers. These include the well-known Organic farming, but also the public, national level CS "Haute Valeur Environnementale" (France), CS "Sistema di Qualità Nazionale di Produzione Integrata per le Produzioni Agricole" (Italy) and CS "Integrowana Produkcja" (Poland), implementing GAP.

Keywords: certification schemes, Good Agricultural Practices, Haute Valeur Environnementale, Integrowana Produkcja, Sistema di Qualità Nazionale di Produzione Integrata per le Produzioni Agricole, dissemination, perception

Highlights

- There are 198 certification schemes (CSs) at the EU level and in the main third countries
- CSs are essential for the implementation of nearly all EU sustainability goals
- In France, Italy, and Poland, public CSs of good agricultural practices are part of the national strategic plans
- The level of implementation and recognition of these CSs varies greatly
- The desired increase in the dissemination of CSs requires building the awareness of producers, consumers and public institutions

1. Introduction

From the second decade of the twentieth century, agricultural holdings in the EU farmed 157 million hectares of land, representing 38% of the total land area in the EU (Eurostat data 1, 2023). The area used for agricultural production in the EU is estimated to be on a slow downward trend, with long-term structural changes consisting of a steady increase in average farm size and a concentration of production on fewer and larger farms. A sharper decline is visible among the new member states (Gaupp-Berghausen et al., 2022). While changes in the area under agricultural crops, whose decline parallels the increase in forest area (World Bank data, 2023) can be considered environmentally and socially beneficial (Krause et al., 2022), structural changes are considered unfavourable (de Roest et al., 2018; Karlsson et al., 2022). Metadata analyses show that farm size is a key issue for sustainable agricultural development (Ricciardi et al., 2021). The authors of the study stated that the smaller farms, on average, have higher yields. The biodiversity of the crop, non-crop species, and the landscape at the smaller farms is higher than in the larger ones. Smaller farms perform better in respect of eco-efficiency and GHG emission, leading to the conclusion that supporting small farms increases food production while providing important social and environmental benefits. Under the new Common Agricultural Policy (CAP) 2023–27, the EU provides support for small farms under the small farmers' scheme. Overall, the new CAP provides goals that emphasize the key role of farms and farmers in tackling the challenges of climate change, creating vibrant rural areas, preserving rural landscapes, protecting the environment, and safeguarding food quality and

health. These economic, environmental, climatic, and socio-economic challenges require farmers to implement methods to reduce the external costs of agriculture (CAP 2023–27). Setting such goals was necessary because not only in Europe but also globally, agriculture generates distinctive environmental and social externalities, strongly affecting prosperity and natural ecosystems. It is estimated that 52% of the world's agricultural land is moderately or severely affected by degradation and desertification (Kopittke et al., 2019). Primarily, agricultural eutrophication has already contributed to more than 400 saltwater dead zones worldwide, with its primary importance linked to dramatic consequences for drinking water sources, fisheries, and recreational waters, mainly in Europe, the eastern and southern United States, and Southeast Asia. Agriculture is also thought to account for around 70% of the projected loss of biodiversity on land (Withers et al., 2014; TEEB 2015; Heyl, 2023). Environmental losses caused by intensive agriculture are not the only problem. Agrochemicals also have a direct or indirect impact on human health. Farmers are the directly exposed group, but the entire population suffers the health and thus economic consequences of the negative impact of e.g., pesticides on health. According to Grandjean and Bellanger (2017), in the EU, human exposure to only one group of pesticides, i.e., organophosphate pesticides, costs USD 194 billion $.

The AGRI Committee of the European Parliament estimates that one of the tools for the correct implementation and achievement of the objectives of the new CAP 2023–2027 will be the use of certification schemes (CSs). The European Commission has determined that this is particularly important for the instruments of the new CAP, such as statutory management requirements, good agricultural and environmental conditions, eco-schemes, and agri-environment-climate measures. The Commission envisages support in the practice of CSs in EU countries by:

- equivalence program between CSs and CAP instruments,
- development and implementation of guidelines for assessing the equivalence of CSs with CAP instruments, taking into account, in particular, the contribution to at least one environmental or climate CAP objective, clear environmental or climate added value, control and implementation of a monitoring (control) system that can be included in the monitoring system EU.

The Commission recommends that targeted and appropriate CSs can be useful as part of the CAP National Strategic Plans to achieve the CAP Sustainable Development Goals, but subject to a thorough assessment of the requirements and implementation methods for each CSs to prevent the risk of greenwashing. The Commission envisages the use of some CSs in the risk analysis for CAP inspections (Chever, Gonçalves, Lepeule – AND International, 2022). According to the recommendations of the AGRI Committee, the level of CSs implementation in EU countries seems to be very important, and currently, it is strongly differentiated in individual EU Member States. Differences in the dissemination of CSs are clearly visible on the example of organic farming, which is one of the main CSs in EU member states. Currently, the largest share of organically farmed land is in Austria (over 25%), Estonia, Sweden (over 20%), Italy, and the Czech Republic (over 15%). The lowest is in Malta, Ireland, Bulgaria, Romania, and Poland (all below 4%), with only Poland, where the area under organic farming has not increased but decreased over the last decade (Eurostat data 2, 2023). The development of organically cultivated areas in the period 2012–2020 had a different pace in the Member States, as shown in Fig. 1.

It is difficult to indicate a clear reason for such a large diversity in the development of organic farming in EU countries. As the research shows, it is not a problem of low trust in Organic CS (Murphy et al., 2022) or reluctance and negative associations with organic-certified foods (Bryła, 2016).

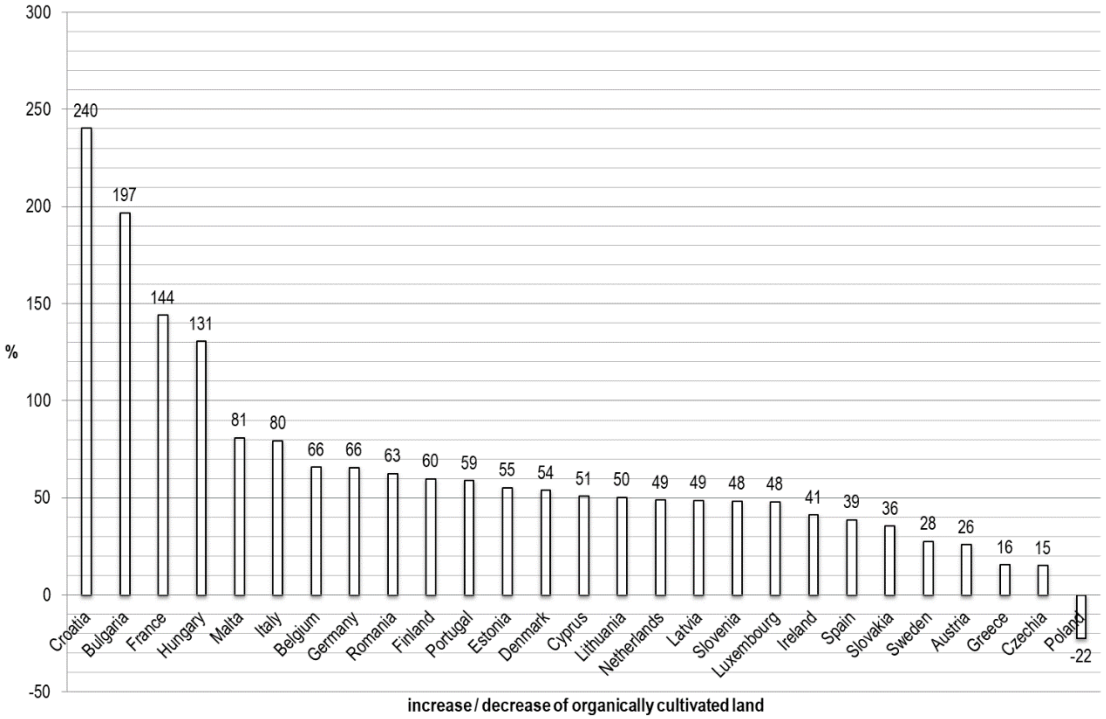


Fig 1. % increase/decrease in the organically cultivated area from 2012 to 2020. Source: Eurostat data 2, 2023

Based on the Report prepared for the AGRI Committee of the European Parliament (Chever, Gonçalves, Lepeule – AND International, 2022), it can be stated that in the case of all 170 intra-EU CSs functioning in the EU Member States, their dissemination is also clearly differentiated. The country that introduced the largest number of them is Germany, which adopted 47 CSs. The remaining countries use between 18 and 1 CS, with the vast majority having introduced only a few or only 1 CS (9 countries). The level of CSs implementation in individual EU countries is shown in Fig. 2. The Report contains information that Croatia, Cyprus, Greece, Lithuania, and Malta do not show the functioning of CSs in their countries. It should be emphasized that the vast majority of CSs in the EU identified by the authors of the Report are private programs (69%) and are owned by private entities, non-profit organizations, processing enterprises, agricultural cooperatives, professional organizations, inter-branch organizations or certification bodies. In some countries, public authorities are involved in financing or otherwise supporting privately owned CSs. The remaining CSs (31% of their total number) are publicly owned, often handed over for management to private entities, e.g., certification bodies.

In the context of the importance of CSs and their implementation in EU countries, the following questions have been analyzed in this article:

- How do CSs fit into the assumptions of sustainable development, so important from the perspective of CAP 2023–2027?
- What is the level of dissemination of selected public national CSs, linked with reducing the use of pesticides and fertilizers?
- What is the perception of those CSs?

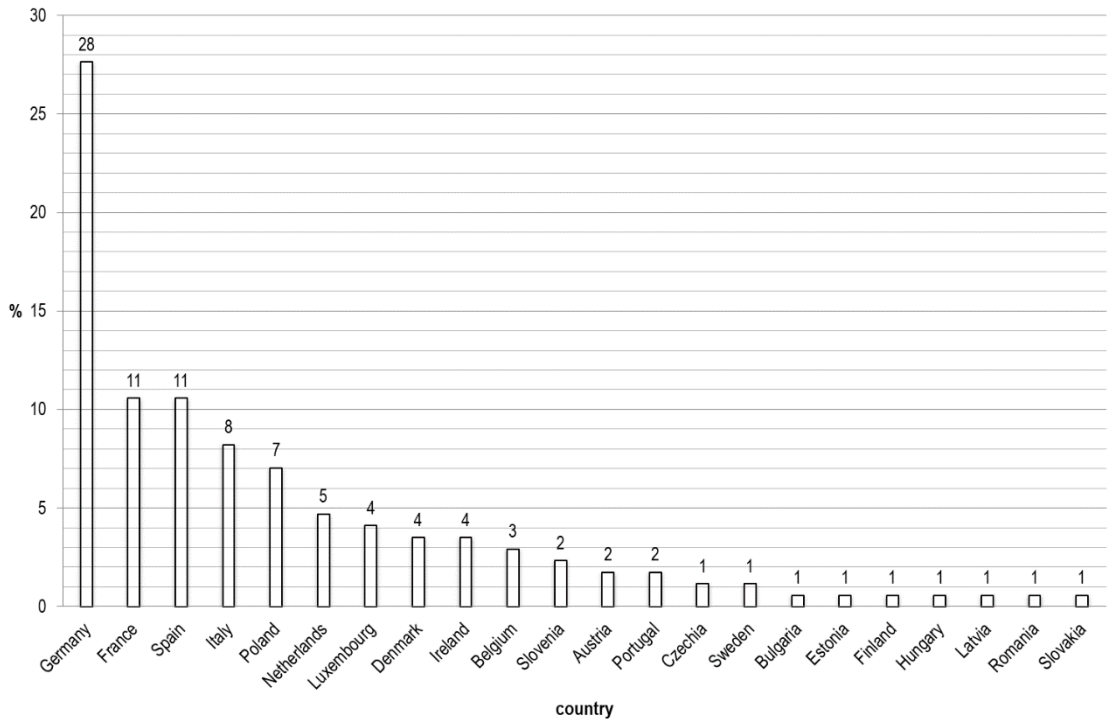


Fig 2. The geographical scope of dissemination of CSs functioning in the EU -percentage share for identified 170 intra-EU CSs. Source: Chever, Gonçalves, Lepeule – AND International (2022)

2. Certification schemes for sustainable agricultural production in the EU

In the EU countries, there are 170 (198 including third partner countries) CS for agricultural production with different thematic scopes, which according to AGRI Committee can be divided into few areas (Chever, Gonçalves, Lepeule – AND International, 2022), which is presented in Fig. 3.

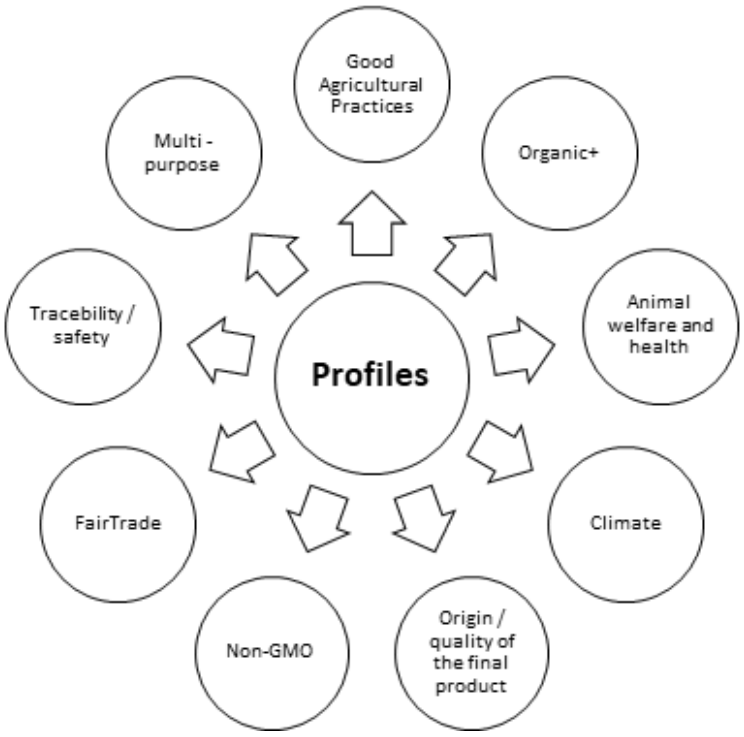


Fig 3. Agriculture certification areas in the EU. Source: Chever, Gonçalves, Lepeule – AND International (2022)

Where: **Good agricultural practices**: CSs focusing on environmentally friendly methods of production, **Organic +**: based on organic standards, with some additional rules, **Animal welfare and health**: focus on animal welfare and health, **Climate**: specific focus on climate-related issues, **Origin / quality of the final products**: CSs guaranteeing a specific origin and/or attributes on the final product, **Non-GMO**: the main guarantee is the absence of GMO, **Fairtrade**: focus on social and ethical trade commitments, **Traceability/safety**: CSs committed to provide high transparency on the origin and quality management of products all along the supply chain, **Multi-purpose**: focus on a combination of issues, for instance, good agricultural practices and quality management.

Analysing the scope of CSs for the selected areas (Fig. 4), Organic + and Good agricultural practices (GAP) turn out to be the key ones, as they concentrate as much as 43% of the total number of CSs occurring in the EU.

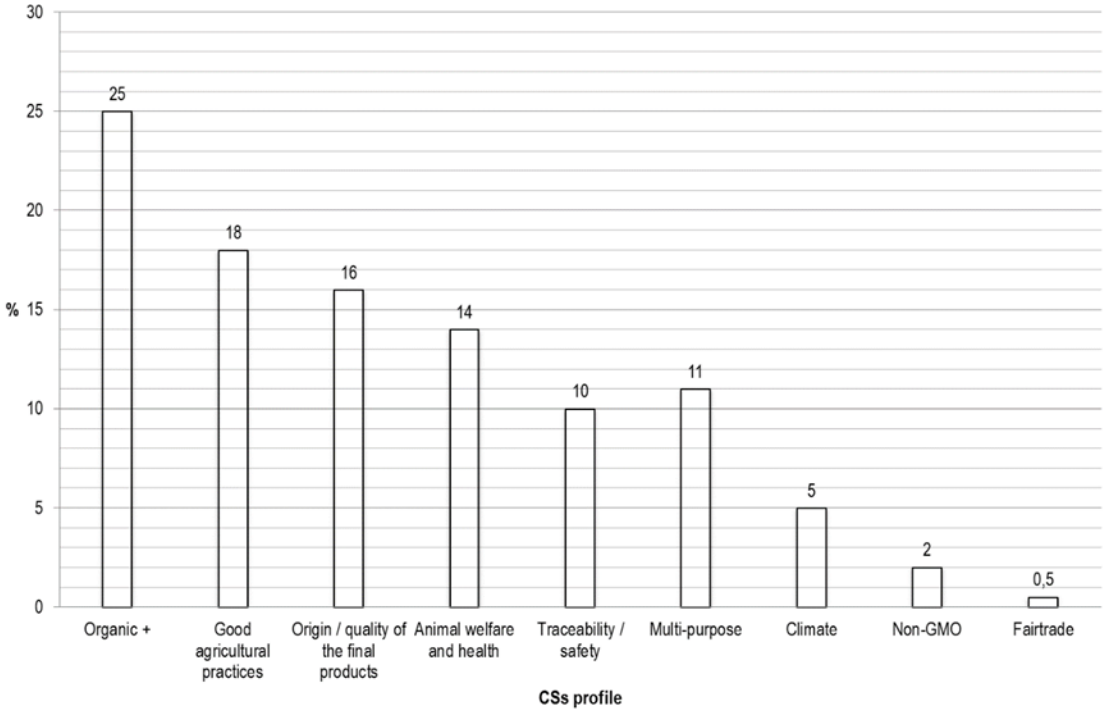


Fig 4. Percentage share of CSs from selected areas in their total number (100%) identified in EU countries. Source: Chever, Gonçalves, Lepeule – AND International (2022)

From the point of view of agricultural practice, those CSs have a significant impact on the reduction of the use of pesticides and fertilizers in agriculture, which is the basic assumption of the priority strategy Farm to fork and they implement other important goals of sustainable development of agriculture. The AGRI Committee defines the GAP as an area of CSs that "promote a variety of environmentally friendly agricultural practices, addressing issues such as soil fertility, water quality and quantity, air pollution, landscape protection and biodiversity. Such practices include, for example, the reduction of phytosanitary products, waste management, and catch crops." (Chever, Gonçalves, Lepeule – AND International, 2022). CSs GAP are mostly national (56%), and to a lesser extent local (17%) and international (28%). Some of these programs have been developed in the last decade at the national level as public CSs to promote the principles of integrated production in the agricultural sector. They can be described as a complementary alternative to the CSs of organic farming, and more accessible to producers due to the level of requirements.

Some of the public GAP CSs are included in the 2023–2027 CAP National Strategic Plans as an implementation tool and will be supported through subsidies in the countries where they apply. Such CSs can be counted as:

- CS „Haute Valeur En vironnementale" (High Environmental Value) in France,
- CS „SQNPI: Sistema di Qualità Nazionale di Produzione Integrata per le Produzioni Agricole" (National Quality System of Integrated Production for Agricultural Productions) in Italy
- CS „Integrowana Produkcja" (Integrated Production) in Poland.

3. Characteristics of public GAP CSs introduced in France, Italy and Poland

HVE (France), SQNPI (Italy) and IP (Poland) are part of the Strategic Plans of the countries where they are broadcast. These schemes are regulated by law, and the assumptions and functioning of individual CSs are included in the legislation of the countries that introduced them. All analysed CSs are on the national level and operate with various popularity within a given country.

CS HVE was established in France in the 2011/2012 season with the aim of broader promotion of environmentally friendly practices alternative to organic farming, and it was the only officially recognized CSs in the country at the time. Until 2017, its use was quite limited, but its recognition as a government instrument for the agro-ecological transformation of French agriculture caused its significant dissemination, especially in the wine sector (Chever, Gonçalves, Lepeule – AND International, 2022). At the end of 2022, the evolution of the criteria for obtaining the highest level of certification was completed. In November 22, 2022, texts revising the criteria for obtaining the HVE standard were published in 'Ordinance No. 2022-1447' of November 18, 2022, on environmental certification. In France, there are 3 levels of environmental certification, and HVE corresponds to the highest level. The scheme covers 4 key areas: (1) biodiversity protection, (2) plant protection strategy in the context of phytosanitary products reduction, (3) fertilizer use management, and (4) water sources management. HVE also contributes significantly to the implementation of EU policies (see Table 2). Both, the individual producers and cooperatives can apply for the certificate. The inspection process is carried out by certification bodies (currently there are 17 of them) approved by the Minister of Agriculture and it includes all certified farms (Ministère de l'Agriculture et de la Souveraineté alimentaire, 2023, Certification environnementale: liste des organismes certificateurs agréés par le ministère de l'Agriculture). Interestingly, HVE is the most popular among winemakers, 77% of certificates were issued in 2021 for this type of crop and more winemakers use this type of certificate than organic CSs (Vignerons Indépendants de France, 2023).

Italian CS SQNPI was established by the Act in 2011 and its aim was to verify the compliance of production with sustainable development standards and covers two key areas: (1) Integrated production at the cultivation level and (2) ethical, social, and environmental criteria at all production levels, including product processing. Compliance in both areas allows for full certification and authorizes the use of the logo on products. Once elaborated, but constantly updated methods of integrated production are controlled by a specialized national certification body established in Italy. Certified crops are fully controlled for residues (100% of producers/entrepreneurs) and are subject to supervision (5% of producers/entrepreneurs).

Polish CS IP is the scheme with the longest history. It was established by the Research Institute of Pomology and Floriculture in Skierniewice in 1991 for apple producers. The Institute issued the first guidelines on methodologies for the integrated protection of apple orchards. Their goal was the agroecological transformation of the dynamically developing fruit-growing in Poland. Initially, the Institute supervised the certification. Since 2004, the supervision over IP has been taken over by a government institution, i.e., the State Plant Health and Seed Inspection Service, and it has started implementing IP in all sectors of Polish agriculture. Currently, IP is a voluntary certification system at the level of agricultural, vegetable, and orchard crops, but it does not apply to processing. The inspection of all applying farmers is carried out by private certification bodies authorized and accredited by the State Plant Health and Seed Inspection Service. Residues in certified crops are controlled in 20% of producers, selected by certification bodies on the basis of a risk analysis. The key areas in CS IP are: (1) the use of all possible preventive measures in plant protection, (2) proper plant protection with the use of chemical pesticides (crop monitoring, handling of chemical plant protection products on the farm, including packaging and equipment used to perform treatments), (3) soil and plant analysis indicating the actual needs of plants for nutrients, (4) water resources management and (5) hygienic and sanitary rules. In 2022, additional requirements were introduced for selected crops, where the use of biological methods of plant protection and identification of pests of the greatest economic importance becomes mandatory. A short comparative summary of the discussed SCs is presented in Table 1.

Tab 1. Comparison of some characteristics in HVE, SQNPI and IP CSs.

CS	Logo	Establishing authority	Sectoral coverage	Certificate validity period	Target of certification	Number of certified producers (in years)
HVE		French Ministry of Agriculture	Wine, fruits and vegetables, crops, horticulture and other plant products, livestock	3 years	consumers	36,225 ('23)
SQNPI		Ministry of Agricultural, Food and Forestry Policies	Crops, fruits, wine and vegetables	indefinite certificate subject to annual mandatory supervision	consumers	9,012 ('21)
IP		Polish Ministry of Agriculture and Rural Development / State Plant Health and Seed Inspection Service	Fruits, vegetables, crops and horticultural products	no longer than 12 months	consumers	2,436 ('22)

Source: Based on the Report (Chever, Gonçalves, Lepeule – AND International 2022); CSs requirements and SQNPI -ADESIONE GESTIONE CONTROLLO/2023 MODALITÀ DI ADESIONE E GESTIONE DEL SISTEMA DI QUALITÀ DI PRODUZIONE INTEGRATA PROCEDURA DI ADESIONE, GESTIONE E CONTROLLO NELL'AMBITO DEL SQNPI/2023 Rev. 12.3 del 15/11/2022; Ministère de l'Agriculture et de la Souveraineté alimentaire, 2023 Les chiffres clés de la Haute Valeur Environnementale (HVE); data obtained directly from the Chief Inspectorate of Plant Health and Seed Inspection in Poland

CSs can be an essential part of national strategies, especially if their assumptions support the implementation of the CAP assumptions and EU environmental strategies. Table 2 presents a summary comparison of the HVE, SQNPI, and IP CSs in the area of GAP from the perspective of their importance for the implementation of the CAP 2023–2027 EU, as well as EU strategy and policies. Based on the assessment of the contribution to individual requirements and standards presented in the table, it can be concluded that the discussed CSs are very similar – they contribute significantly to the biodiversity protection strategy and they fit into the new CAP 2023–2027. Some difference between HVE, SQNPI, and IP can be seen in the Farm to Fork strategy and in terms of some EU policies. Differences result primarily from factors that are not assessed or controlled in the certification process. It should be emphasized that CSs are equivalent to the CAP 2023–2027 instruments, and in particular, they contribute to the environmental and climate objectives of the CAP and have a clear environmental and climatic added value, which proves that they can be an essential part of French, Italian and Polish sustainable agricultural development strategies.

Tab 2. Contributions of the HVE, SQNPI, and IP CSs in the policies and strategic objectives of the EU. Based on the Report (Chever, Gonçalves, Lepeule – AND International 2022)

EU policies / strategy	Requirements / standards	CS		
		HVE	SQNPI	IP
CAP 2023-2027	Improve the farmers' position in the value chain	NE	NE	NE
	Contribute to climate change mitigation and adaptation, as well as sustainable energy	+	+	+
	Foster sustainable development and efficient management of natural resources such as water, soil and air	++	++	++
	Contribution to the protection of biodiversity, enhance ecosystem services and preserve habitats and landscapes	++	++	++
	Improve the response of EU agriculture to societal demands on food and health, including safe, nutritious and sustainable food, as well as animal welfare	+[1]	+[1]	+[1,2]
Farm to Fork	Carbon sequestration	NE	+	+
	Circular bio-based economy	++	++	++
	Production of renewable energy (production of biogas and solar energy)	NE	+	NE
	Reduction of the overall use and risk of chemical pesticides and hazardous pesticides by 50% by 2030 and encouragement of alternatives (integrated pest management, crop rotation,…)	++	++	++
	Reduction of nutrient losses in the environment by 50% in 2030 and reduction of the use of fertilizer by 20% by 2030	++	++	++
	Limitation of GHG emission	NE	+	+
	Reduction of EU sales of antimicrobials by 50% by 2030 in relation with antimicrobial resistance (AMR)	NE	NE	+
	Improve animal welfare	NE	NE	NE
	Plant health (emerging pests diseases)	++	++	++
	Increase organic production: at least 25% of EUs agricultural land by 2030	NE	NE	NE
Biodiversity	Effectively manage all protected areas, defining clear conservation objectives and measures, and monitoring them appropriately	++	++	++
	Legally binding EU nature restoration targets to be proposed in 2021, subject to an impact assessment. By 2030, significant areas of degraded and carbon-rich ecosystems are restored; habitats and species show no deterioration in conservation trends and status; and at least 30% reach favourable conservation status or at least show a positive trend	++	++	++
	The decline in pollinators is reversed	++	++	++
	The risk and use of chemical pesticides is reduced by 50% and the use of more hazardous pesticides is reduced by 50%	++	++	++
	At least 10% of agricultural area is under high-diversity landscape features	++	++	++

EU policies / strategy	Requirements / standards	CS		
		HVE	SQNPI	IP
Biodiversity	At least 25% of agricultural land is under organic farming management, and the uptake of agro-ecological practices is significantly increased	++	++	++
	Three billion new trees are planted in the EU, in full respect of ecological principles	++	++	++
	Significant progress has been made in the remediation of contaminated soil sites	++	++	++
	At least 25 000 km of free-flowing rivers are restored	NE	NE	NE
	The losses of nutrients from fertilisers are reduced by 50%, resulting in the reduction of the use of fertilisers by at least 20%	++	++	++
	The negative impacts on sensitive species and habitats, including on the sea bed through fishing and extraction activities, are substantially reduced to achieve good environmental status	++	++	++
EU policies	Social and economic aspects	NE	NE	NE
	Climate change mitigation	NE	+	+
	Climate change adaptation	+	+	+
	Production of sustainable energy	NE	+	NE
	Sustainable management of resources	++	++	++
	Protection of biodiversity, habitats and landscape, ecosystem services(incl. limitation of pesticides and fertilizers)	++	++	++
	Animal welfare	NE	NE	NE
	Antimicrobial resistance	NE	NE	+
	Plant health	++	++	++
	Human health	+	+	+
	CAP 2023–2027 ratio NE / + / ++	1 / 2 / 2	1 / 2 / 2	1 / 2 / 2
	Farm to Fork ratio NE / + / ++	6 / 0 / 4	3 / 3 / 4	3 / 3 / 4
	Biodiversity ratio NE / + / ++	1 / 0 / 10	1 / 0 / 10	1 / 0 / 10
	EU policies ratio NE / + / ++	5 / 2 / 3	3 / 4 / 3	3 / 4 / 3
	total ratio NE / + / ++	13 / 4 / 19	8 / 9 / 19	8 / 9 / 19

Designation: NE – not evaluated/audited in the certification process but possible impact, + – limited contribution, ++ – high contribution, [1] in context of human health, [2] in context of antimicrobial resistance.

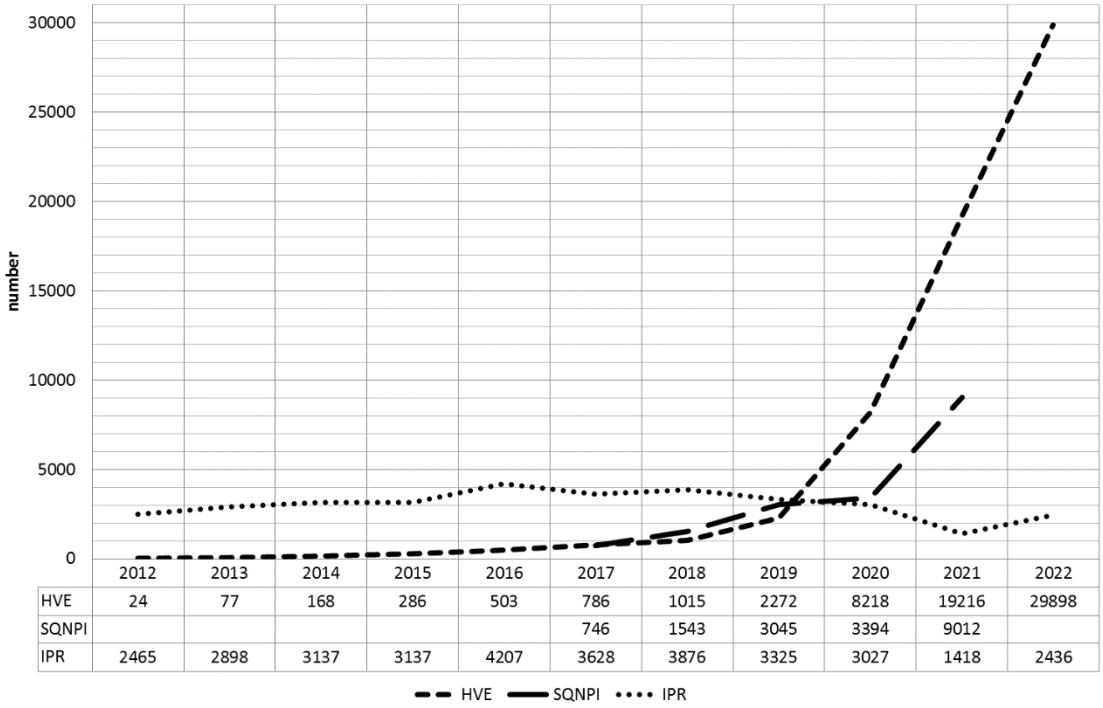
4. Dissemination of certification schemes for good agricultural practices

Assessing all the CSs operating in the EU, their economic importance is very diverse. Ranging from small, local projects with a small number of producers involved, such as Bavaria's "Kontrolliert Integrierte Produktion" with around 600 farms, to initiatives such as the UK's "Leaf", under which 45% of UK fruit and vegetables are produced, or HVE in France, where there were 36 225 farms in 2023 (Chever, Gonçalves, Lepeule – AND International 2022; https://agriculture.gouv.fr/quest-ce-que-la-haute-valeur-environnementale).

HVE, SQNPI, and IP show many similarities, but their level of dissemination in the three countries varies significantly (Figure 5). In this context, it is interesting to analyse changes in the number of farms certified in France, Italy, and Poland. In the first two countries, dynamic growth is observed, and in Poland, the level of certified farms remains more or less constant, with a slight downward trend. This phenomenon,

combined with the problem of the decreasing amount of land cultivated organically in Poland presented above is quite worrying.

Although the trends in France and Italy seem to be positive, it is also worth referring to the absolute values showing the universality of the state certification scheme. In 2020, there were 416,400 farms in France, so below 2% were HVE certified. In the case of Italy, with a number of farms around 1,060,000, only 0.3% is subject to SQNPI certification, and in the case of Poland, the number of farms was at the level of 1,317,000 and the number of IP certificates at 3,027, which gives below 0.1% taking into account the fact that some farms get several certificates because they are granted for plants species and not the producer. So, we talking about a niche activity. Where does the lack of wider interest in this certification come from and what is its perception?



	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
HVE	24	77	168	286	503	786	1015	2272	8218	19216	29898
SQNPI						746	1543	3045	3394	9012	
IPR	2465	2898	3137	3137	4207	3628	3876	3325	3027	1418	2436

Fig 5. Developments in the number of certified farms in HVE, SQNPI, and IP programs (2012–2022) based on available data.

Source: HVE – https://agriculture.gouv.fr/les-chiffres-cles-de-la-haute-valeur-environnementale-hve
SQNPI – https://www.reterurale.it/flex/cm/pages/ServeBLOB.php/L/IT/IDPagina/24338 (only producers covered by the issued certificate, excluding producers in the transformation stage)
IP – data obtained directly from the Chief Inspectorate of Plant Health and Seed Inspection

5. Awareness of certification of good agricultural practices

The discussed CSs, i.e., HVE, SQNPI, and IP, remain largely outside the mainstream research – they do not show records in the Scopus and Web of Science databases, and when comparing the results of "Google Scholar" searches, the results of these CSs in relation to organic certification are extremely low (Figure 6). Thus, while the knowledge about the perception of agriculture and food with a 'Green Leaf' certificate is quite broad, the motivations and attitudes of farmers implementing organic production are also known, but we know relatively little about the perception and awareness of the discussed SCs from the perspective of consumers and producers. This is largely related to the local or national coverage of these solutions.

The data presented in the paper indicated that the French CS of GAP HVE is the most widespread among producers and is also the most researched and analysed. SC HVE turned out to be particularly important in the wine sector, where in 2020, 11,615 wine farms certified their crops (compared to 2,687 certifications for other crops) (Association HVE Développement 2023). Among French winegrowers, even before the implementation of this CS, the 'reasoned agriculture' approach was common, dispensing

with certification. There is an opinion in the literature that HVE has taken over this function (Delmas and Gergaud, 2021). Factors related to the adoption of this CS have been studied, among others, at the demographic level and have shown that the actions taken to decarbonize production are related to the winegrower's age, being an independent winegrower, farm size, the number of workers hired, vine's age, being certified HVE, being certified organic, practicing irrigation, receiving subsidies and perceived resources – those phenomena influenced the decision to implement the practices required in HVE certification, although to a different extent (Payen et al., 2022).

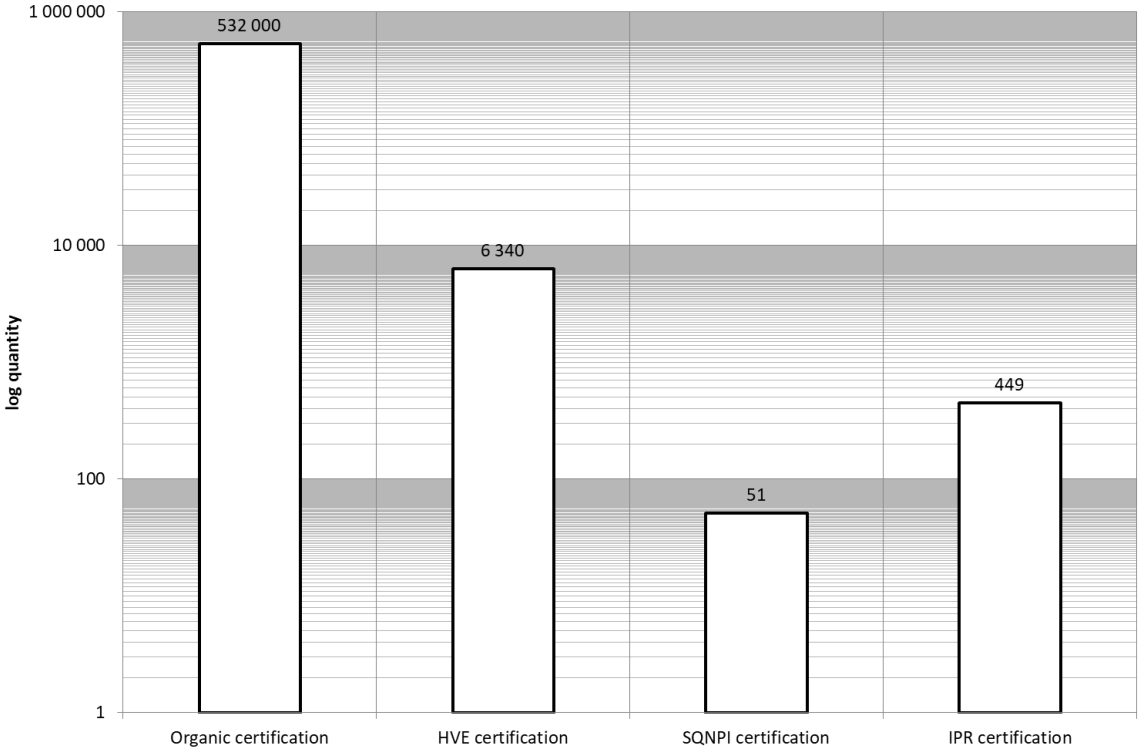


Fig 6. Number of records in Google Scholar on 2023. Source: own elaboration based on Google Scholar

An earlier study shows that the determinants of the adoption of HVE certification are:

- prior involvement in an environmental certification,
- crop diversity,
- farm size and,
- relational proximity of the farmer with his cooperative (Lassalas, 2020).

The available research results indicated that CS HVE is actually embedded in institutional conditions and the importance of environmental values for producers.

From a consumer perspective, the HVE certification used for the wines of the Burgundy region was examined, and the respondents expressed a lack of confidence in the HVE logo (Ginon et al., 2014). However, the study was published in 2014, i.e., 2 years after the implementation of SC HVE when the scheme was implemented by only 168 producers.

Studies on the perception of the SQNPI CS by demand-side entities have shown a relatively low willingness to pay higher or premium prices for the SQNPI certificate (in relation to wine), which consumers are willing to pay for products with an organic production CS (Stanco and Lerro, 2020). SQNPI plays an important role among the producers of Prosecco, a sparkling wine associated rather with the industrial scale and method of production and the resulting environmental problems. In the context of striving to make Prosecco production more sustainable, the DOCG (Denominazione di Origine Controllata e Garantita) consortium has adopted a target for 2021 to achieve 25% of production compliant with the SQNPI certification, which

should be considered a sign of confidence in this certificate on the part of the DOCG consortium; although according to the authors of the study, production sustainability is enforced primarily by local communities and to some extent by customers from Scandinavian countries and the UK (Ponte, 2021). The inclusion of CS SQNPI in the strategy for Prosecco DOCG is certainly an important step in disseminating and popularizing this SC. However, based on the cited studies, it is difficult to draw simultaneous conclusions regarding the perception and awareness of SQNPI in Italy.

CS IP perception studies were carried out on a small scale. The CS IP awareness and perception survey showed very low consumer awareness of the certificate, which was recognized by less than 10% of respondents. Respondents were also asked to assess the level of trust in the certificate, which was only 3.5 points on a 7-point scale (Kaczorowska et al., 2018).

For the purposes of this article and future research, a pilot study was carried out, the aim of which was to reveal the attitude of the certificate among farmers holding it and constructing a tool for a broader study. The subjects of the sample were certified farmers, as a group that understands the benefits of certification to the greatest extent and can reveal potential problems related to its dissemination. The size of the research sample was 50. An in-depth interview questionnaire was used, which allowed to obtain initial information on the attitude towards the certification, and was used to identify further potentially significant factors relevant from the perspective of CS IP dissemination.

Out of 8 general questions discussed during the in-depth interviews, for the purposes of this paper, 3 allowed to draw preliminary conclusions about farmers' attitudes towards the certificate they were granted. The most important question was about the importance of certification for farmers (Fig. 7). Farmers were asked to indicate 1 answer, characterizing their attitude the most:

- I care for food and/or environmental safety
- My recipients expect certificates
- It is required in EU modernization and subsidy programs
- I get a higher price

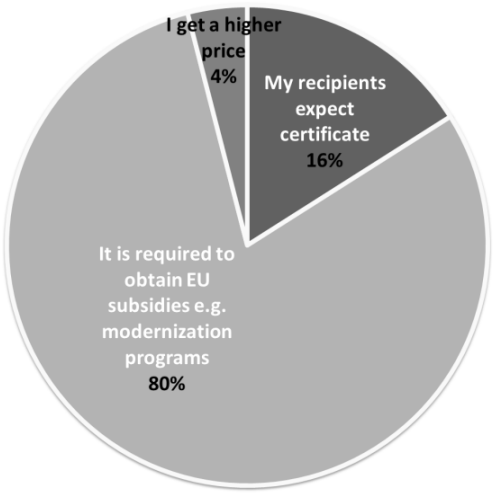


Fig 7. Motivations of CS IP-certified producers. Source: own elaboration

80% of the respondents indicated that the reason for having the IP is the possibility of applying for subsidies from the EU, special for farm modernization programs. 16% of the farmers certify their products because wholesale customers require such a certificate, and 4% due to the possibility of obtaining a better price. What is worrying is, none of the respondents indicated that they participate in the certification process because they care about food/environmental safety.

In this context, it also seemed important to determine the source from which farmers obtained knowledge about certification (Fig. 8) and how it was promoted among them. Respondents were asked to indicate the source from which they first learned about the certification. They could point to the following sources:

- Mass media and advertisement
- Agriculture Advisory Centre and Agency for Restructuring Modernization of Agriculture
- Other farmers
- Ministries and other government websites and documents
- Other

Respondents indicated only the first three listed answers.

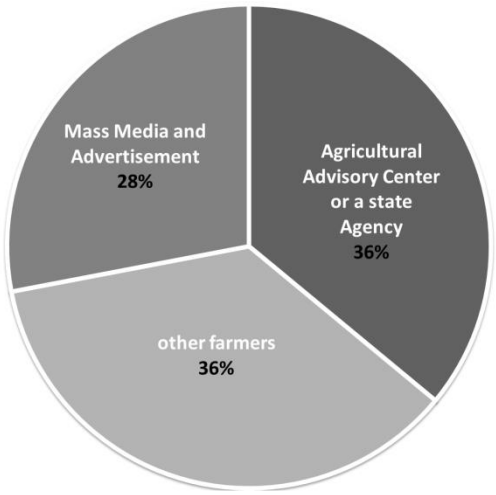


Fig 8. CS IP-certified producers answers for question: Where did you find out about CS IP? Source: own elaboration

Due to the poor visibility of the certificate on the Polish food market, the question was also asked about the use of the logo of the certificate for the purposes of trade (Fig. 9). The fact that 76% of respondents do not use the certificate or the logo (Grochola, 2022) speaks volumes about the insignificant importance of the certificate's image and indicates the need for a wider promotion of the certificate and building awareness among both consumers and producers.

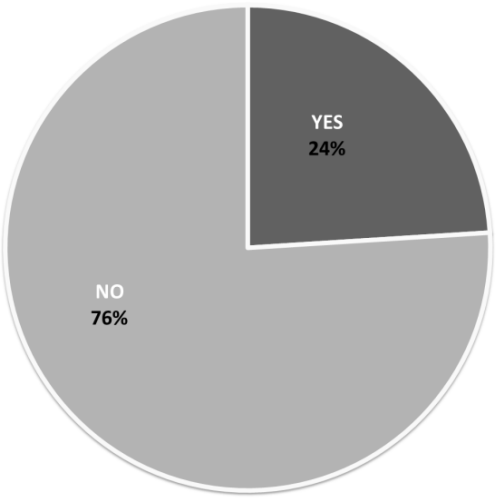


Fig 9. CS IP-certified producers answers for question: Do you use of the logo of CS IP certificate for the purposes of trade? Source: own elaboration

6. Conclusions

CSs of GAP can play an important role in implementing the EU strategy and improving the system of production of safe and sustainable food. Being an element of strategic activities at the national level, however, they do not seem to have adequate image support. They remain in a niche both from the perspective of consumers and, as can be seen especially from the example of Poland, producers. The lack of unequivocally positive associations, even with regard to the example of HVE, the most widespread CS of GAP, indicates problems related to the implementation of the certificate, its promotion, and the actual promotion of sustainable solutions. Undoubtedly, education is needed on the supply and demand side, not only in terms of the marketing function of the certificate but also in environmental needs. Probably, it would also be expected some stronger support from the ministries responsible for these certifications. It is significant (in relation to the Polish pilot studies) that the farmers themselves do not display the certificate, not seeing its informative, environmental, ethical, or even commercial function. Also, the long-term lack of interest in the certificate among Polish producers, but also still relatively low share in Italy and France, indicate problems with this solution or deeper problems in the entire agricultural sector. Based on this initial assessment, further research questions arise related to the actual benefits noticed by IP-certified farmers, but also, in a broader sense, the actual significance of this type of certification.

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