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High Environmental Value (HVE) Certification: Cost Implication and Coordination Need In The Value Chain

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Introduction

Recently, there is development of many farm' environmental certifications which aim to identify and promote particularly environmentally friendly practices applied by farmers.

High environmental value (HEV) or Haute Valeur Environnementale (HVE) is a French voluntary farm certification corresponding to the highest level of a more general scheme of environmental certification for farms. It is open to all sectors and covers four key environmental issues (items): biodiversity conservation, plant protection strategy, of fertilization management and water resource management (French Ministry of agriculture). It is designed on the basis of certification of the whole farm at three levels. Only the third or "high environmental value" level enables farmers to label their final products with a value statement "from farms certified as having high environmental value", with the logo HVE. It is based on an obligation to achieve fixed results measured by environmental performance indicators.

Created in 2012, the uptake of this certification was very limited until 2017 and concerns specifically wine-growing farms (80% of certified farms until January 2021). Recently, this certification scheme is undergoing a rapid development. Indeed, the number of HVE-certified farms increased by 73% in one year to reach 24,827 farms on January 1, 2022, representing around 6.4% of French farms and covering at least 1.17 million hectares (French Ministry of agriculture, 2022). Field crop farms show the strongest growth in certifications: they account for 7.8% of HVE certified farms on January 1, 2022. This development is primary due to a political support, stating the scheme as a governmental instrument for agroecological transition, then to a commitment of some private actors of the value chain.

This article aims first at giving an overview of the existing certification schemes in France and identify the place and specificities of the HVE-certification. Second, it aims at evaluating the economic impact of the HVE-certification scheme both at the farm level and the value chain level. A particular attention is paid to the involvement of the certification schemes in terms of coordination needs between the different actors of the value chain.

High environmental value certification: within a general public scheme of agroecological transition and a commitment of private actors

Thought all the European Union (EU) countries, there is a huge development of farm certification schemes for sustainable agriculture[1]. Although most of the certification schemes are issued from private operators in specific production sectors, a significant share has been developed or supported by national governments to offer an official framework for the promotion of agroecological practices (AEP) (Clever et al. 2022). Some of them have an international coverage, namely EU Organic scheme, geographical indications (GIs) and protected geographical indications (PGIs), traditional specialities guaranteed (TSGs) and others are implemented at national level. In France we can mention five main public certification schemes: Organic Agriculture (AB), the High Environmental Value (HVE) certification, environmental certification level 2 (Certification environnementale niveau 2), Label Rouge, and label Bas-Carbone. Private certification schemes are undergoing a strong growth and are either individual (i.e. undertaken by an industry or a brand like Lu'Harmony which is the initiative of the Lu brand) or collective (i.e. Vigneron engagés en développement durable (Winemaker committed to sustainable development), Zéro Résidus de Pesticides (Zero Pesticide Residues), Etiquette Bien-être animal (Animal Welfare). All of those labels and certification are more or less easy to identify by the consumer through signs and logos. The AB certification still the reference and the most recognized by the consumer (Dekhili and Achabou 2013).

The HVE certification, refer to two ways or "paths" of certifications: "voie A" or "voie B". Voie B is based on the validation of only two indicators: biodiversity (share of agroecological infrastructure in the UAA ≥ 10% or share of permanent grassland in the UAA ≥ 50%) and weight of inputs costs in turnover ≤ 30%. This path is expected to be deleted as it favourite specific productions with high value and do not imply a big agriculture practices change. By this way are certified most of wine-growing farms.

Only Voie A will be covered in this article. Indeed, it aims to identify and promote environmentally friendly practices applied by farmers. It covers four key areas: biodiversity conservation, plant protection strategy, management of fertilizer use and management of water. To be certified producers much reach at least 10 points in each of these four areas, through a choice of different possible criteria and practices. In order to maintain this certification, certified farms are audited at least once every eighteen months by a certification institution to ensure compliance with the thresholds of the environmental performance indicators throughout the certificate's validity period (Ministry of Agriculture and Food 2020).

This approach is therefore based on environmental performance indicators that cover the entire farm. It's therefore considered as a systemic approach (Domallain, Roman-Amat 2017). the HVE approach is not only based on the improvement of operational practices but also on the use of management tools, new technologies, etc. It is this synergy of means that makes its strength.

The HVE certification is seen by some private actors as an opportunity to engage agriculture in the ecological transition and to enhance the value of issued products. The High Environmental Value project in Beauce Val de Loire, in which this study is included, is a multi-partner project supported by the Centre Val de Loire region (French region specialized in field crops) and co-funded by the European Union. It aims to develop this certification in the study region through cooperation between different actors from different sectors. It brings together several partners, including the main players of the value chains studied, as well as support partners such as research institutes (the ESA in Angers) and technical/development institutes (the Loiret Chamber of Agriculture).

[1] A document requested by the European Parliament' Committee on Agriculture and Rural Development and recently published identify a total of 198 certification schemes at the EU level and in the main third countries (86% of them are established in the UE) (Clever et al. 2022).

This multi-partner project was the initiative of an association of 48 farmers, and an operator specialized in the condiment sector (garlic, onions, shallots). Already involved in several quality initiatives and labels (Global Gap, AB, Zero Pesticide Residue, IFS, BRC FOOD, GRASP), the association wishes to become more involved in environmentally friendly agricultural practices and to enhance the value of its products with the "HVE" label. The partners of this project seek to mobilize other farms and to develop the offer of products resulting from HVE certified farms as well as to valorise and promote the HVE certification to consumers.

The HVE certification commits the farms in their entirety. However, the farms that are members of the association also produce for other sectors that are also very present in Beauce-Val-de-Loire region: cereals, potatoes, beets, etc. This constraint involving several sectors is also an opportunity to create a transversal HVE dynamic in the Beauce-Val-de-Loire region, and thus to develop the entirety of the production from certified farms and to pool the approaches (upstream and downstream mobilization, technical support for farms, technical monitoring, promotion - communication, investments...).

The objective of this cooperation is to evaluate the conditions and the costs of the implementation of the HVE certification in the value chains considered. it responds to a demand from processors and distributors to develop an offer of products bearing the HVE certification. It also responds to a demand from farmers in order to valorise/value all the products of their farm in HVE and more globally to the desired agroecological transition.

Data collection and analytical framework

We focus our study on four field crop sectors, namely cereals, onions, potatoes and sugar beets. To collect data, questionnaires and interviews are carried out in the spring of 2021 with farmers and some downstream operators of each product (some of them are members of the research project). Two methodological approaches are used at the farm level. The first approach was to evaluate the impact of HVE-certification by analysing data of two distinct years, before and after the certification implementation (for farms already HVE certified). The second, was to simulate the impact for some farms, of different practices and degree of greening practices to achieve the HVE certification. For downstream operators interviews are elaborated to estimate with them additional costs and activities linked to those costs and where better coordination is needed.

As considered products may be produced by the same farm but the downstream operators are not the same, an appropriate methodology is needed to share the additional cost of the HVE implementation between products and therefore between actors. This methodology has been discussed with the different project partners and has led to negotiations and coordination, especially among processors.

From a list of 12 farms provided by partners members of the project, 9 farms specialized in field crops accepted to be interviewed. Two of them are already involved in the HVE certification and allowed us to develop HVE scenarios applied to the seven other conventional farms with substantial efforts to be certified.

Each partner who provided one or more farms also gave us the name of a technical expert to accompany us in the field regarding the technical aspects and HVE simulation. The appointments were made by email or by phone during the month of May and the surveys took place during the month of June.

Calculation of the production cost at the farm level

The cost of production is a key element of our study because it allows us to economically evaluate the changes linked to HVE certification at the farm level.

The production cost of an agricultural product refers to the expenses or charges related to production, borne by a farm. it includes the remuneration of all the production factors and is subdivided into various cost items which are (see Table 1):

- Land costs
- Structural costs
- Labour costs
- Mechanization costs
- Input costs
- Irrigation costs

Table 1 shows what is included in each cost item and the details of the calculation. The total production cost can be calculated using the following formula:

Total production cost (€/ha) = Sum of direct and indirect costs (€/ha) i.e. the sum of all the costs mentioned above.

The unit production cost is the production cost of one ton of product. It is generally calculated from the total production cost. The formula to calculate it is as follows:

Unit production cost (€/T) = (Sum of costs (€/ha))/(Yield (T/ha)) (Ait M Bark, 2009, Debois, 2006, Riffard and Odin 2021)

The calculation of the production cost by crop is difficult to obtain because it requires a lot of very precise data. It is calculated here for each crop and for each farm included in the study.

The estimation of production costs was originally based on the direct recording of detailed farm accounts, based on the a priori allocation of costs to the different productions that the different cost (analytical) accounting methods achieve. However, because of the difficulty to elaborate cost accounting, these estimates are often made on a limited number of products. In addition, they are generally carried out based to a limited technical and economic network of specialized producers located in a specific geographical area (Desbois, 2006). In our case, because of the homogeneity of the territory and the limited number of products and production combinations, we proceed to a direct observation of production costs on farms using surveys and based on a reconstruction of the allocation of costs according to cost accounting standard.

For mechanization and labor costs, the allocation is little complicated because few farmers calculate these data accurately. Thus, we use the technical itinerary/practices to allocate the mechanization and labor costs (obtained bellow) among crops in the most appropriate way. Indeed, onions and cereals, for example, have very different cropping systems, and adjustments to the allocation of the expenses are necessary in order not to underestimate or, on the contrary, overestimate the mechanization and labour expenses according to the crops. To do this, it is necessary to count the number of passes, to look at the equipment used (data provided by the farmer) and to calculate the associated costs using the regional register of cost equivalents (“barème d’entraide”) (see table 1). The allocation keys used are also discussed and validated with technical experts and members of the project.

Table 1: presentation of different costs items, data sources, and method of calculation

Costs items		**Sources and calculation method**
Land cost	Land leasing Property taxes	Total UAA remunerated at the value of the actual rent Accounting data observed

Structural costs (fixed costs)	Maintenance and reparation of buildings	Accounting data observed
	Depreciation of buildings	
	Maintenance and reparation of materials	
	Return of capital	
	transport	
	Water, Gaz, Electricity	
	Insurance	
	Professional fees	
	Other amortizations	
	Other supplies	
	Taxes	
	Financial costs	
	Other miscellaneous costs	
Labour costs	Salary of permanent and occasional labour	Accounting data observed specific to each technical practice
	Social charges for labour	Accounting data observed
	Medical security for the farmers	
	Remuneration of family labour	remuneration commensurate with a qualified tractor driver
Mechanization costs	Depreciation	Accounting data (straight-line depreciation recorded) Mechanization data related to technical practices by crop (per ha, per passage)
	Maintenance of mechanical equipment	Accounting data observed "Barème d'entraide"[2] database (register of costs of use of each equipment in €/h or €/ha)
	Reparation	
	Fuel	
	Work by third parties	
	Financial charges	
Inputs	Fertilizer	Accounting data observed specific to each technical practice per crop. Regional database of input prices ("l'indispensable 2020 region Centre Val de Loire")
	Amendments	
	Pesticides /chemicals	
	Seeds	
Irrigation	Irrigation water and mechanical costs	
Total costs		€/ha
Yields		Annual yield per crop
Production costs		€/ton

[2] The "barème d'entraide" (mutual aid scale) is a departmental register of cost equivalents between the agricultural equipment themselves and the equipment and labor. It is primarily intended to establish the balance sheets of work carried out in common. This register is elaborated by the Chamber of Agriculture of Centre Val de Loire for 2021.

Development of HVE simulation scenarios

At the end of the interview with the farmers and after the collection of all the data concerning the actual situation (technical practices, costs and prices) a discussion was made with the expert and the farmer concerning the levers (the most easily reachable) to be implemented to obtain HVE certification in the simulation scenarios. This crucial step for the survey is broken down into 4 sub-sections with respect to the HVE items.

- Determination of the levers for the Biodiversity Management item (i.e., based on the number and the surface of cultivated species, the presence of animal (or protected animal) species, etc.)

- Determination of the levers for the Water Management item (i.e., based on the irrigated surface, the ability to provide a detailed registration/recording of irrigation practices (use of a Decision Support Tool (DST)), implementation of agronomic practices to save water, etc.)

- Determination of the levers for the Phytosanitary Strategy Management item (i.e., based on an Indicator of the frequency of phytopharmaceutical treatments and compared to a regional reference and/or based on the surface of treatment, etc.)

- Determination of the levers for the Fertilization Strategy Management item (i.e., based on a global nitrogen balance, share of unfertilized UAA, share of surface of leguminous in UAA (only or in intercrop), use of a Decision Support Tool (DST) or precise materials, soil coverage, etc.)

For the simulations, the levers selected for each item were carried out according to the criteria of option (voie) A of the HVE certification achievement. Here some examples of different kind of identified levers: Adding 5% of fallow land or flower strips, adding new crop or legume, remove a growth regulator for wheat, application of half-doses of fungicides on wheat and barley, buy a new sprayer, build a new storage building, etc.)

The potential costs of different scenarios are elaborated from different databases of technical practices and associated costs (register of costs of the use of agricultural machines or equipment and associated labor costs, input prices, etc.) and also with the collaboration of farmers already certified and different experts.

An Excel© tool was developed using formula or VBA code to calculate actual production costs and simulate HVE certification costs.

Calculation of additional costs and potential valorisation at the value chain level

The operators of the concerned sectors all have a very complex organization due to the number of product references as well as a desire not to disclose a large amount of information concerning costs, mainly for fear of competition. Since it was impossible to calculate production costs, the aim was to obtain more general data concerning additional costs from the various operators. Initially, the information is obtained via semi-directive interviews or a questionnaire with those who are furthest ahead in terms of certification, i.e., those who already process HVE products. At the end of this first step, an assessment is made to decide on a potential second step in order to deepen the data collection.

Some hypotheses are made regarding the yield and the possible valorisation. Those hypotheses have been negotiated between the actors of the value chains, including the farmers, members of the project. Regarding the yield, decreases ranging from 0% to 20% with the following 5 levels: 0%, 5%, 10%, 15%, 20% are assumed. 20% is the maximum level because according to bibliographic research a 20% yield decrease seems to correspond to organic farming (Senate 2021). It is considered that the

decrease will not be greater than that of the BIO. The percentage of income loss caused by the yield decrease is therefore distributed in a first simulation equitably among the crops of interest according to their contribution to the turnover and in a second simulation in proportion to their contribution to the income loss. An equitable distribution between the crops is interesting to study here because the objective is to create an inter-value-chain cooperation.

Regarding the valorisation, as HVE products are still immature markets the value can vary greatly. Indeed, it is possible that not all HVE products are sold under the HVE label for reasons of calibre, insufficient demand, etc. Thus, the lower the percentage of products sold, the higher the valuation per ton must be to sufficiently compensate for the loss of income. We performed three valorisation simulations of a percentage of 50, 70 and 100% of products marketed under the HVE label.

Results

Impact of the HVE-certification scheme on the total cost and the production cost

Results show that there is an impact of the HVE-certification scheme, where the extent of the cost depend on the crop. Expenses are higher after the HVE-certification schemes for all crops, ranging from +32.10€/ha for spring barley to +139.43€/ha for rapeseed. The results are very heterogeneous depending on the crop (see Table 2). However, we note a high level of standard deviations for all crops, which is linked to the heterogeneity of the farms. This heterogeneity is evident with the average change in the total costs of all the crops of interest per farm ranging from -4.2% to 16.4%. Moreover, we have to notice that for some crops, the number of farms in our sample is too small and the results should be taken with caution.

Table 2: Variation of the mean of the total cost per crop

	Number of farms concerned by the crop	Mean of total costs (€/ha) before HVE	standard deviation before HVE	Min	Max	Mean of total costs (€/ha)	Standard deviation	Min	Max	Variations (€/ha)
		Before HVE				After HVE				
Durum wheat	8	1563.96€	21%	1 227,38 €	2 186,78 €	1 601,50 €	18%	1233.49 €	2127.40 €	37,54 €
Soft wheat	8	1 467,20€	18%	1 166,67 €	1 981,24 €	1 534,90 €	15%	1221.32€	1 884,83 €	58,70 €
Beet	7	2 106.68€	17%	1 761,65 €	2630.00 €	2 206,78 €	21%	1732.67€	3052.24€	100,11 €
Spring barley	6	1445.41€	16%	1 235,00 €	1860.36 €	1477.50 €	11%	1300.67€	1744.14 €	32,10 €
Rape	6	1 551,72€	17%	1 313,00 €	2 046,24 €	1 691,15 €	12%	1355.34 €	1 921,78 €	139,43 €
Corn	4	1984.15 €	8%	1 800,09 €	2 125,21 €	2 046,66 €	10%	1800.09 €	2266.94 €	62,51 €
Onion	4	4619.40€	15%	4024.42 €	5429.88 €	4 702,82 €	12%	4 131,42 €	5 417,01 €	83,42 €
Potato	3	3661.50€	22%	2 768,40 €	4315.45 €	3 745,90 €	24%	2759.48€	4573.53 €	84,40 €
Winter barley	3	1465.43€	16%	1 220,64 €	1698.32 €	1568.61 €	23%	1 171.97€	1848.94 €	103,18 €
High-Protein wheat	3	1 476,29	16%	1 288,00 €	1 731,00 €	1 573,44 €	9%	1 482,44 €	1732.88 €	97,15 €

Source: Auteurs

Table 3 details the sources of changes in average expenses for all farms. These changes are due to:

- the increase in structural costs with an average of +6.6% (minimum at -0.7% and maximum at 22.5%). For the farms with the highest increase in structural costs, investments are sometimes necessary, for example storage equipment and materials purchase. Land and structural costs represent on average 29% of total operating costs, with a minimum of 15% and a maximum of 42%.

- the variation in labour costs with a +10% on average (minimum -5% and maximum +27.2%), the transition to HVE-certification scheme sometimes requires more manual labour, training time, time for audits, etc. It should be noted that once the transition to HVE has been made, the expenses related to the audit and preparation time will tend to decrease. Thus, assuming a preparation time divided by

two and the cost of the audit spread over 3 years (audit every 3 years), we obtain a variation in labour equal to +7.5% on average (minimum at -5% and maximum at +19%). In both cases, labour represents on average about 8% of total operating expenses, with a minimum of 0.4% and a maximum of about 20%.

- the increase in mechanization costs for +6% on average (minimum at -10.9% and maximum at +20.3%) linked to the reduction in the UAA cultivated, as this implies a distribution of costs over a smaller surface area, which increases them per hectare, we also note an increase in mechanical work. Mechanization costs represent on average 32% of total operating costs, with a minimum of 18% and a maximum of 43%.

- the decrease in input costs with an average of -7.7% (minimum of -27.8% and maximum of +8%), the transition to HVE-certification scheme very often implies a reduction in input costs but not consistently. For example, a farmer can buy more disease-resistant seed varieties that are more expensive or increase the seeding density in the case of a semi-late season. These expenses represent on average 32% of total operating expenses with a minimum of 21% and a maximum of 49%.

It should be noted that despite all the changes brought about by the HVE-certification scheme, only an average increase (for the 9 farms) of +1.5% of total expenses was observed, with variations ranging from -8.1% to +9.7% (see table 3).

Table 3: Sources of the costs change before and after HVE

	Structural and finance costs				**Structural and financial costs**		
Change in % on the whole farm	Mean	Min	Max	Share of structural costs in the total costs of HVE	Mean	Min	Max
	6,6%	-0,7%	22,5%		29%	15%	42%
	Labour costs				**Labour costs**		
Change in % on the whole farm	Mean	Min	Max	Share of labour costs in the total costs of HVE	Mean	Min	Max
	10,0%	-5,0%	27,2%		8%	0%	20%
	Mechanization costs				**Mechanization costs**		
Change in % on the whole farm	Mean	Min	Max	Share of mechanization costs in the total costs of HVE	Mean	Min	Max
	6,0%	-10,9%	20,3%		32%	18%	43%
	Input and irrigation costs				**Input and irrigation costs**		
Change in % on the whole farm	Mean	Min	Max	Share of input and irrigation costs in the total costs of HVE	Mean	Min	Max
	-7,7%	-27,8%	8,8%		32%	21%	49%
	Total costs						
Change in % on the whole farm	Mean	Min	Max				
	1,5%	-8,1%	9,7%				

Regarding the average variations of the production costs by crop in €/Ton, the trend previously observed on the total expenses continues with a general increase going from +1,38€ for beets to 37,40€ for rapeseed (an increase of 5,32€/T for durum wheat, 7,19€/T for soft wheat, 4,77€/T for spring barley, 6,69€/T for corn, 1,51€/T for onion, 1,69€/T for potato, 12,84€/T for winter barley and 17,33€/T for high-protein wheat. Results still very heterogeneous according to the crops and across farms as is evident from high standard deviations levels.

Impact of the HVE-certification scheme on the turnover

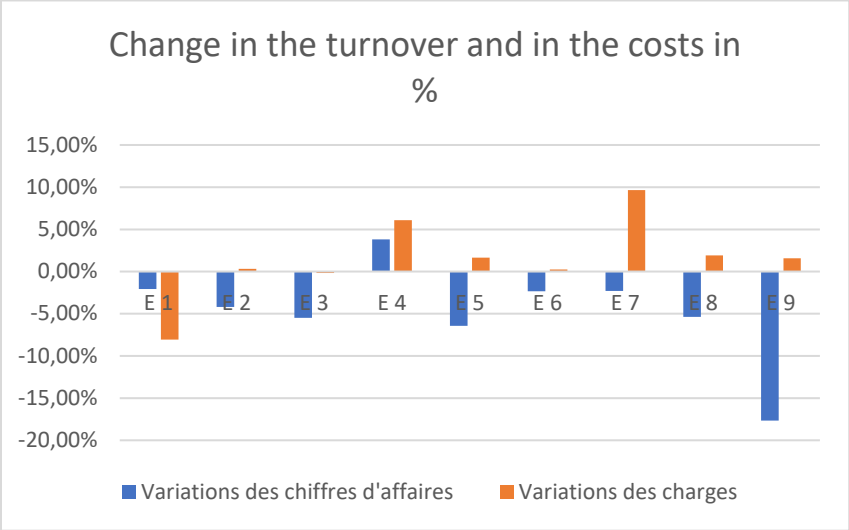
The figure 1 illustrates that for most studied farms (8/9) the implementation of the HVE-certification scheme would decrease the turnover. This is mainly due to an increase in non-productive areas (agroecological infrastructure: ponds, hedges, grassy strips…, fallow land, etc.) which is needed to fulfil the biodiversity item of the HVE-certification scheme. Indeed, the average of non-productive area increased from 2%, the situation before HVE to 8% after HVE-certification scheme (this gives in average 8 points/10 points need for the biodiversity item), an average increase of 6%. This is not without consequence on the operating income, as an average decrease of -4.68% of the turnover is observed.

However, some differences between farms are observed. Figure 1 shows that for farms 2, 3, 5, 6, 7, 8 and 9 the turnover is decreasing, and the costs are either unchanged or increasing. This situation is the most expected. For farm 4, there is an increase in turnover associated with an even greater increase in costs. This farm is HVE-certified, and farmer has undertaken progressive changes for many years (for example non-productive area and diversification) so he was able to adapt gradually and the transition to HVE was done without major changes. Finally, Farm 1 is the only one where the decrease in costs is greater than the decrease in turnover. This is due to the simulation scenario where we consider an investment in a new and precise equipment for spraying liquid fertilizers and phytosanitary products that will soon be available on the market and that would allow for a significant reduction in inputs use. This item being the weakest point of the farm, the expenses are then strongly reduced.

Moreover, it should be noted here that prices and yields are unchanged between the situations before and after HVE, which means that the variations observed are directly due to the changes in practices induced by the certification. Thus, by combining an average increase in costs and a decrease in products, we obtain an economically unfavourable situation.

The transition to HVE also leads to an increased vulnerability to pressures (reduction in treatments), which leads to a higher-than-normal probability of a drop in yield for these farms. Several scenarios were imagined in order to study the impact of different yield decreases on net margins and on the necessary valorisation. Only scenarios retained by the project partners and the value chain operators will be detailed.

Figure 1: Percentage change on turnover and costs for each farm after HVE-certification scheme



Value chain coordination and potential valorisation

For each simulation scenario, three levels concerning the percentages of marketed products were studied, namely 50%, 75% and 100%. For project partners and value chain stakeholders, scenarios of the 50% and 75% levels appear to be plausible because they consider that it will be difficult to value 100% of the products with the HVE logo, for lack of sufficient demand. Only those scenarios will be discussed in results section.

Regarding the yield, project partners advocated to consider a decrease of at least 10%, arguing that there is greater variability in yields associated with the HVE practices. First, with an average yield situated between conventional and organic farming, estimated at -20%. Second with four good years where yields are within the norm and a fifth bad year with yields divided by two due to the reduction in treatments which give a smoothed average over the 5 years of -10. Thus, we constructed two combined scenarios: an optimistic scenario with no loss of yield and a valorisation of 75% of products and a pessimistic scenario with a 10% of yield loss and 50% of product valorisation.

In conjunction with partners, we also tested both an equal distribution and proportional distribution between crops and therefore value chains of the income loss.

Results show that, within a situation of an equal distribution of income loss, in the most optimistic scenario (see Table 4), cereals have on average an additional valuation requirement of +13%, beets and potatoes +7%, and onions +15%. For more pessimistic but nevertheless realistic (according to value chains stakeholders) scenario, we obtain a different trend with much higher figures. Indeed, cereals require an additional valuation of +43%, onions are the most impacted with +51%, beets are at +44% and potatoes at +34%.

Table 4: Equal distribution of income loss

		0% yield loss		Additional Valorisation for **optimistic scenario** (0% yields loss and 75% HVE valorisation)	10% Yield loss		Additional Valorisation for **Pessimistic scenario** (10% yields loss and 50% HVE valorisation)
	Prix de ventes moyens France	50% valorisation production	75% valorisation production		50% valorisation production	75% valorisation production	
Durum Wheat	209,00 €	10%	8%	**13%**	31%	23%	**43%**
SOFT WHEAT	153,00 €	20%	15%		46%	34%	
IMPROVING WHEAT (high protein)	200,00 €	19%	14%		44%	33%	
SPRING BARLEY	142,00 €	12%	9%		34%	26%	
Rapeseed	342,00 €	22%	16%		47%	35%	
Maïze	139,00 €	21%	16%		55%	41%	
Beet	25,00 €	10%	7%	**7%**	44%	33%	**44%**
Oinon	150,00 €	20%	15%	**15%**	51%	38%	**51%**
Potato	150,00 €	10%	7%	**7%**	34%	25%	**34%**

Within a situation of proportional valorisation according to the contribution of each crop to the income loss, results (presented in Table 5) show that in the most optimistic scenario, cereals seem to have an additional required value of 13%, while it ranges from +2% for potatoes to +15% for onions and +13% for beets. In the pessimistic scenario, we obtain a slightly different trend. Indeed, cereals require an additional valuation of +39%, beets are the most impacted with +59%, onions are at +33% and potatoes at +27%. However, we observe a greater variability between crops in this situation especially for cereals, where rape needs a valorisation of 32% and 69% respectively for optimistic and pessimistic scenarios.

Table 5: Equal distribution of income loss

		0% yield loss		Additional Valorisation for **optimistic scenario** (0% yields loss and 75% HVE valorisation)	10% Yield loss		Additional Valorisation for **Pessimistic scenario** (- 10% yields loss and 50% HVE valorisation)
	average price in France (10 years)	50% valorisation production	75% valorisation production		50% valorisation production	75% valorisation production	
Durum Wheat	209,00 €	10%	7%	**13%**	33%	24%	**39%**
SOFT WHEAT	153,00 €	13%	9%		33%	25%	
IMPROVING WHEAT (high protein)	200,00 €	8%	6%		29%	21%	
SPRING BARLEY	142,00 €	10%	7%		32%	24%	
Rapeseed	342,00 €	43%	32%		69%	52%	
Maïze	139,00 €	22%	16%		36%	27%	
Beet	25,00 €	17%	13%	**13%**	59%	44%	**59%**
Oinon	150,00 €	20%	15%	**15%**	33%	25%	**33%**
Potato	150,00 €	3%	2%	**2%**	27%	20%	**27%**

Comparing the two situations, we should notice that, in the case of an equitable distribution, the additional costs are underestimated for beets and rape, while the other crops have overestimated additional costs. This situation hides disparities between crops, yet it allows for better inter-sector and inter-value chain cooperation in order to distribute the additional costs more evenly.

Conclusion

Certification of good agricultural practices is seen as an effective tool to both achieve environmental objectives and value agricultural products. The recent evolution of the HVE certification in France raises many debates and questions about its impact and the value it brings. Our study provides insights into the cost and effort involved in implementing HVE certification both for farmers and for different actors of the value chain.

Results show that for farms specialised in field crops, the cost is high yet variable between crops. It ranges from +32.10€/ha for spring barley to +139.43€/ha for rapeseed and is in average at 79.85€/ha for all crops considered in our study. It's quite interesting to note that in the recent proposal of the CAP National Strategic Plan, France included the HVE-certification, as well as organic farming, as tools supported by the eco-schemes. This HVE-certification scheme is considered to contribute to and be consistent with EU climate and environmental legislation and commitments, including those set out in the "Farm to Fork" and "Biodiversity" strategies.

After a long debate and a claim to distinguish between HVE-Certification scheme and Organic label, much more demanding specially regarding fertilization and phytosanitary management items, government decides to reward organic farms with the highest eco-regime payment of 100€/ha The HVE-certification would allow to claim the payment of 80€/ha. Regarding our results, this payment would cover just production costs and don't consider potential yield and market variability. These subsidies also were very controversy in France because of its closeness to the subsidies given to organic farming.

The development of the HVE-certification cannot be achieved without a better coordination and negotiation of an appropriate distribution of the additional costs generated by its implementation. At this stage, most of actors consider that the yield would decrease by at least 10% and only 50% of the production would be valued as HVE Labelled. This would require an additional valuation going from +34% to 51% according to the crop.

The environmental certification eco-scheme proposed in France's CAP Strategic Plan would boost its development. However, at the same time, these subsidies accorded by the government could restrict the valuation of the HEV products by the market and the price paid by the consumer.

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