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Third-Party Certifications and the Role of Auditing Policies in Sustainability: The Time and Space of Materiality Within Combined Audits

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Abstract

In the European context, the proliferation of private agrienvironmental certifications leads many farmers to become subject to increasing controls by either independent, private third-party certifying bodies or public authorities. The aim of this study is thus to explore the potential benefits of and the organizational limits to the use of combined audits when farmers are involved in multiple private certifications. Our analysis especially emphasizes the role of time structuring during the audit process, the transition from checklist toward risk-based auditing and the role of knowledge artefacts for the reliability of the audit process and the certification. Our study offers insights on the possible transformative role of auditing policies in the governance of agrienvironmental certified schemes toward more sustainability in agriculture.

Keywords

time perception, knowledge codification, organizational learning, risk analysis, behavioral auditing, cognitive-based regulations, organizational economics

Introduction

With the development of private third-party certifications, the governance of global commodity and food supply chains has tremendously transformed over the past several decades, as attested by a growing body of academic literature (Hatanaka, Bain, & Busch, 2005; Ponte, Gibbon, & Vestergaard, 2011). In agricultural sectors, the proliferation of private certifications is the result of either a strategy to add economic returns and value to producers (Henson & Reardon, 2005) or a strategy to strengthen environmental regulations through the voluntary adoption of private

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quality assurance schemes or more environmentally friendly standards and agricultural best practice guidelines by farmers (Manhoudt, Ven de Ven, Udo de Haes, & de Snoo, 2002; Mazé, Galan, & Papy, 2002; Mzoughi, 2011). As a consequence, farmers are currently subject to increasing controls not only by public authorities but also by private independent third-party certifiers (Henson & Reardon, 2005).

Inspired by recent trends in industrial sectors, where the rise of private environmental audits and self-reporting policies now complement mandatory regulations (Khanna, 2001; Anton et al., 2004, Khanna & Widyawati, 2011; Simon, Bernardo, Karapetrocvic, & Casadesus, 2011), the implementation of combined audits (also called *Combi-Audits*)[1] has been viewed by a number of European farmers as a solution to reduce the number of redundant controls and certification costs at the farm level (Mazé et al., 2007). While some certifying bodies already implement combined audits at the farm level, when possible due to specific organizational and regulatory constraints, the lack of understanding about current auditing practices among farmers and other stakeholders, and the possible threats to the reliability of the audit process have been identified as potential obstacles to this practice.

The aim of this study is then to explore the potential benefits of and the organizational limits to the adoption of combined audits when farmers are involved in multiple private, third-party certifications by combining a theoretical analysis and a field study. In theory, the adoption of combined audits does not necessarily lead to a reduction in audit duration. In practice, most debates among stakeholders focus on the question of potential time savings and the downward reduction in audit tariffs applied by certifying firms (Mazé et al., 2007). Time and space have played an increasingly important role in organizations and market economies. Recent research in economic geography and sociology has challenged the acceleration of time–space compression and their conflicting dynamics on the distortion of *real values* within commodity markets and their consequences for the sustainability of natural resources.

In this article, we advance the knowledge in the field by attempting to identify the trade-offs and possible inner contradictions between the potential for time savings by farmers and the conditions required for an auditor to maintain audit quality, that is, his ability to detect noncompliances to certified requirements and to identify potential sources of deviations. In highly competitive markets such as those in the agrifood sectors, where certifying firms and their customers may share a common interest in reducing certification costs, such solutions still remain contested because of their possible negative impact on audit quality and the reliability of the certification (Anders, Souza-Monteiro, & Rouviere, 2010; Deaton, 2004; Jahn et al., 2005).[2] By imposing more complex auditing tasks and knowledge-intensive activity on auditors, there is an apparent paradox in accomplishing combined audits in less time for an individual auditor.

To substantiate our analysis, we build on two trends in organizational research. The first trend acknowledges the role of the time and space of materiality in structuring organizations, especially in connection with the natural environment and sustainable development (Orlikowski & Yates, 2002; Roe et al., 2009). Much of the work in this field explores the relationship between time and space compression and the materiality of organizations. Following Orlikowski and Yates (2002), our analysis adopts a practice-based approach; that is, we examine how an auditor works in practice and how such work achieves task performance. Here, this definition means auditing activity and the reliability of the audit process. The second trend originates in the literature on organizational learning, situated cognition and knowledge codification (Amin & Cohendet, 2004; Lorenz, 2001), and especially the "activity system theory" (Engeström, Miettinen, & Punamäki, 1999; Miettinen & Virkkunen, 2005). Specific attention is paid here to the role of knowledge artefacts, tools, and procedures as cognitive aids in the organization of work activities (Lorenz, 2001; Miettinen & Virkkunen, 2005).

By bringing together these two approaches, our study especially emphasizes the nature of *interactions among designed tools, mediating artifacts, temporal structures, and other operating*

rules play an important role in task performance and overall for the reliability of audit process and certification. Our analysis differs then from other research traditions in behavioral auditing primarily focusing on the role of mental heuristics and biases in auditor judgment, as inspired by the pioneering work in cognitive psychology of Tversky and Kahneman (1974) and of Gigerenzer (2000) on adaptive thinking and smart and frugal heuristics used in problem solving by decision makers. By employing recent cognitive and behavioral insights, our study aims to inform specific dimensions of public or private regulations that govern private third-party certifications in agrifood sectors.

The empirical data are based on a thorough examination of the diversity of organizational structures and institutional designs supporting private third-party certifications in the French agricultural sector and a field study conducted with a small set of farms and a professional auditor to evaluate the conditions of and potential limits to combined audits in the case of multiple certifications. In addition to using the specific European context, our study also attempts to provide a more systematic investigation of auditing practices in their formal and informal aspects and in their time structure and space of materiality.

The remainder of the article is organized as follows. The first section emphasizes the recent changes in regulatory contexts surrounding private third-party certifications in agrifood sectors and outlines the theoretical principles employed in this study. The third and fourth sections present the methodology developed to evaluate the time savings and audit duration and the main findings from the field study. The fifth section discusses the pragmatic and theoretical issues related to the subjective dimension of time perception and the role of knowledge transfer during the audit and the role of an auditor's tools and checklists to guarantee the audit quality and the reliability of private third-party certifications.

Auditing in Theory and in Practice

In contrast to a well-established body of literature on mandatory public inspections, auditing policies within private third-party certifications remain relatively unexplored.

Combined Audits in the Agricultural Sector

In the European context, in recent decades, private and public authorities have defined and specified an increasing number of new voluntary quality assurance or labeling regulations that rely on independent private third-party certification systems (Anders et al., 2010).[3] The diffusion of good agricultural practices, guidelines, and private environmental certifications aim to promote more proactive environmental strategies among farmers to manage the environmental practices that voluntarily and preventively extend beyond regulatory compliance (Mazé et al., 2002). When involved simultaneously in multiple agrienvironmental certifications, the improved coordination of audits through the adoption of combined audits has been viewed by a number of farmers as a real opportunity to reduce the costs of controls and certification that are increasingly perceived as external constraints rather than the result of voluntary commitments (Mazé et al., 2007).

The proliferation of private certifications and their possible confusion with mandatory public inspections in various fields such as food safety, labor, and environmental protection have recently generated concerns regarding possible motivational crowding-out effects among farmers and a lack of commitment to and compliance with voluntary private certification requirements (Michelsen, 2009; Mzoughi, 2011; Nelson, Tovar, Rindermann, & Cruz, 2010). These concerns were illustrated by the debates surrounding the rise of alternative participatory certification schemes in organic production in relation to the possible reduction of certification costs (Nelson et al., 2010). The reduction of certification costs has prompted many debates among farmers and stakeholders.

Recent European regulations were designed to integrate private certification systems more deeply into national public control plans, and a stronger connection has been formed with the state-run food and feed control regulation (Reg n°882/2004) in relation to the cross-compliance and conditionality principles applied by the new Common Agricultural Policy to encourage farmers to adopt more environmentally friendly agricultural practices.[4] Other changes in the EU regulation on organic production (Reg n°203/2012–March 8, 2012) allow farmers already involved in other private certification schemes to utilize the organic label, which was previously restricted in areas such as the wine sector, where certification-based Protected Denomination of Origin represent more than 50% of French wine production, and these changes will favor these evolutions and the potential use of combined audits.

The expected benefits of using combined audits are twofold. From a farmer's perspective, better coordinated audits may, in theory, allow for greater time savings through a reduction in the number of auditor visits and audit durations by the elimination of redundancies, the application of controls for the auditing the same items twice, and the reduction of interference with routine work at the farm level. For certifying firms, opportunities also exist to reduce organizational costs related to the auditor's time spent and transportation costs while requiring a higher level of auditor competence. Given the strong competitive pressures in the market for certification in agrifood sectors and strong incentives to reduce certification costs, a number of concerns have emerged regarding their possible negative impact on the reliability of the certification process itself (Anders et al., 2010; Jahn et al., 2005).

Auditing as a Knowledge-Intensive Activity

While combined audits were first adopted in industrial sectors in combination with the ISO 9000 and 14000 international standards series on quality and environmental management (Simon et al., 2011), those in the agriculture sector are related more to the coordination of quality or environmental certifications based primarily on previously set process and performance standards rather than ISO 9000 and 14000 individual management systems defined by the firms themselves at their levels (Grolleau, 2001; Mazé et al., 2002). In this study, we use the term "audit" in a generic sense, referring to private monitoring, control, auditing, or inspection[5] regardless of the observed situation. An audit is defined in ISO 19011: 2002 and ISO 9000: 2005 as a "systematic, independent and documented process for obtaining audit evidence and evaluating it objectively to determine the extent to which audit criteria are fulfilled" (ISO 2002, 2005).

The conduct of combined audits therefore requires from the auditor an in-depth knowledge of the specific technical requirements of each standard rather than a simple evaluation of the coherence and relevance of the ISO 9000 or 14000 management systems at the firm level (Simon et al., 2011). In agricultural sectors, a key condition for the implementation of combined audits is the availability of multiskilled and senior auditors in terms of their technical competences, which includes the ability to manage several Good Agricultural Practices (GAP) guidelines and quality or environmental certifications and an appropriate command of auditing techniques based on risk analysis as opposed to the pure logic of chronological control based on closed checklists (Maxime & Mazé, 2006).

While there is a strong regulatory trend to ensure relative uniformity through increasingly greater standardized audits, especially through dedicated formal and codified auditor's tools and certification procedures, the introduction of the concept of risk analysis, such as the one that employs the HACCP (hazard analysis and critical control points) methodology or the one in the ISO 9000 and 14000 management systems, is becoming a shared approach to setting standards at the international level (Benezech, Lambert, Lanoux, Lech, & Loos-Baroin, 2001; Demortain, 2012; Ponte et al., 2011). Recent changes in private auditing policies support a shift from a logic of *control* based on closed and narrowly defined checklists of requirements[6] to a more open ad

hoc logic of a *risk-based audit* in which the auditor has more autonomy in the risk assessment of the compliance to certification requirements (Maxime & Mazé, 2006; Jahn et al., 2005).

The duality introduced in the literature between the "risk-based" versus the "checklist" approaches reflects differences both: (a) in the conduct of the audit and the time management for the audit process (chronological vs. thematic, etc.) and (b) in knowledge codification strategies for the risk assessment, that is, the overall process of identifying risks, risk analysis, and risk evaluation (level of risk against risk criteria, e.g., the process used in determining significant environmental aspects; Mazé et al., 2002). The adoption of risk-based analysis appears counter-intuitive at first glance, as it is argued here that greater uniformity through detailed specifications of long checklists might result in lower auditing quality in the long run (Schreinemachers et al., 2012).

Among stakeholders, "checklist governance" is still often perceived as a "fairer" and "more objective" auditing procedure by farmers and other stakeholders, while the risk-oriented approach aims for an "efficient and effective" audit by focusing more specifically on the critical points identified by the auditor while being perceived as more subjective. In the case of combined audits, this dichotomy between risk-based and checklist types of governance appears to acquire greater importance because of increasingly complex auditing tasks, and the contextualized nature of knowledge and directs the interaction with farmers in order to ensure a cooperative attitude and proper information disclosure, with a potential impact on audit duration, which might contradict the effort to save time.[7] Moving from a control logic to an audit logic raises questions concerning the audits' effectiveness and its perception by the farmers and other stakeholders.

Time Savings and the Materiality of Auditing

The debates surrounding time savings and the reduction of audit duration,[8] which are behind the search for a reduction in certification costs, also highlights the possible inner contradictions for the reliability of private certifications and the need for a broader approach to the question of the *value of the audit*. In the literature, the question of the *audit's value* has been in the past primarily addressed through the lenses of the reduction of information asymmetries and its credibility with consumers, who would accept paying a price premium (Arrunada, 1999; Deaton, 2004). However, the audit process can be by itself a source of value for the farmers.

In the case of combined audits, it could also be argued that spending more time during the audit process can then be viewed as beneficial both for the auditor by allowing a better risk assessment and information disclosure process and for the farmer by allowing a better understanding and corrections when noncompliances are observed and even encouraging behavior changes even if the farmer is not certified. This line of argument is consistent with that of Seppänen and Helenius (2004) on the demand and the role of advice in organic inspections, while auditing regulations currently strictly restrict advice during the audit or inspection.

Time management appears here as key dimension of the relational dimension of the audit both as part of the technical competence of the auditor and as a means to favor the information disclosure and cooperation of farmers during the audit process (Maxime & Mazé, 2006). Recent organizational theories have questioned the impact of time–space compression and the role of technologies in shaping the relationship with the physical environment and highlighting the risk of becoming disembodied (Orlikowski & Yates, 2002). By analyzing the gap between the objective and subjective understanding of time as it is experienced by individuals in action, they shed a different light on time structuring and pure chronological *time management*, with a special consideration of *clock speed, real-time*, or *zero time* management within organizations (Orlikowski & Yates, 2002). For small and geographically scattered entities, such as farms, the temporal structuring of auditing activities and their subjective perception acquires even more importance.

The vast literature on the diffusion of organizational practices makes clear that knowledge artefacts (such as texts, objects, and spaces), codified descriptions, and verbal characterization of performance tasks are important mediating devices in the transmission of organizational knowledge and the reproduction of routines and behaviors (Amin & Cohendet, 2004; Miettinen & Virkkunen, 2005). As a consequence, they can also interfere with time management by the auditor during the audit process. The question addressed in our study is then also how current certification procedures, knowledge artefacts, and other mediating devices play a role in task performance, including time management, and as a form of guidance and cognitive help for the auditor to guarantee the audit's reliability.

The next sections present the methodological framework utilized in our field study and its main outcomes, allowing the disentangling the various effects behind the logic of saving time and the reduction of audit duration with the condition of maintaining audit quality.

Methodology

To assess the potential time savings of combined audits and the means required for the auditor to maintain audit quality, an exploratory field study was conducted utilizing a small sample of seven farms all involved in the same similar set of private certifications. This field study permits an empirical enquiry that investigates a phenomenon in its real-life context in which multiple sources of evidence are employed (Yin, 2009).

Selection of the Sample

The analysis is conducted using follow-up information from several real audits conducted by a professional auditor working for one of the leading certifying firms. The general protocol was negotiated beforehand with the certifying body and the auditor, and the research team received specific training on the specific requirements and control points included in the different private certifications. The interdisciplinary nature of the research team fostered the assessment of the technical relevance of the risk evaluation performed by the auditor. The field study was conducted in Western France using a small set of seven representative medium-sized family farms with similar mixed farming systems, including both animal and crop production (see Appendix C). The smallest farm had a surface area of 30 ha, while the largest covered 122 ha.[9]

All farmers are familiar with the audit processes and their informational requirements, as they are already involved in private certifications for the production of high-quality "outdoor chicken" and for a quality charter on crop production (CH; see the Selected Agrienvironmental Certification Schemes section, for more details). The selected farms were also volunteers to proceed to the initial audit needed for joining a new environmental certification scheme named "Agriculture Raisonnée." The farms involved in the study were then allocated into two different protocols corresponding to two distinct audit situations to be evaluated:

1. The conduct of joint or combined audits by the auditors, as defined above, covering the three different certification schemes included in our study (Farms E1-E3).
2. An experimental setting in which the auditor must consider the results of other audits previously conducted at the same farm following a rule of "mutual acknowledgement," meaning not auditing related technical items twice, allowing then potentially for a time reduction. For this protocol, two subset samples were created: one, testing a mutual acknowledgment between the Agriculture Raisonnée and the quality charter on crop production for the Farms E4 and E5, and the other subsample testing the mutual acknowledgment between the Agriculture Raisonnée and the high-quality outdoor chicken certification for the Farms E6 and E7.

While certifying firms are authorized to proceed to combined audits, current official auditing policies do not allow procedures of *mutual acknowledgment* of previous audit reports, as all previous audit documents are not permitted to be used or are simply considered *for their value* and may only be considered if considered appropriate by the auditor based on his own risk analysis. Such procedure was identified as a possible source of time saving and improvement in time management for the auditor, provided that audit's quality is not negatively affected.

Selected Agrienvironmental Certification Schemes

The criteria used for the selection of agrienvironmental certification schemes for our study reflect the differences in their organizational setting (individual or collective certifications), the nature and scope of the requirements (quality and/or environmental), and the organization of their control plans (different balances between third-party controls, second-party controls [also called "internal controls"] and self-assessment by the farmers themselves (see Appendix B).[10] The three selected private third-party certification schemes are:

1. A publicly managed product certification "Label Rouge" (hereafter LR) concerning the production of high-quality, free-range white chickens called *fermier de janzé* (agreement n = 11-80). This label involves 215 farmers, all located in Brittany in Western France.
2. A privately managed interprofessional quality charter, IRTAC-Arvalis (hereafter CH), created in 2004 and exclusively concerning cereal production, including both quality and environmental requirements. Approximately 30 collective producer groups and their 9,000 farmers covering 280,000 ha in France participated in this scheme in 2013.[11] When joining the certification scheme, farmers are subject to an informal preaudit and receive dedicated advice to comply with the certification requirements.
3. An individual environmental certification called *Agriculture Raisonnée* (hereafter AR) based on a GAP guideline that is similar to the GlobalGAP standard but covers the entire farm through 98 items categorized in 14 chapters.[12] An initial and an intermediate audit were conducted 5 years later. In 2010, 3,000 individual French farmers were involved.

To ensure a comparability of our results, each farm involved in the study is a participant in all three selected certification schemes mentioned above. Detailed requirements and differences across control plans are described in Table 1 and Appendix C. Under these three selected certification schemes, further overlapping requirements are expected for the certifications based on the GAP guidelines *Agriculture Raisonnée* because of the larger number of requirements (98 items) covering the entire farm.

Data Collection

The primary analysis is based on the direct observations of audits performed by the interdisciplinary research team (each involving three observers) of the interactions between the auditor and the farmers during the audit process. The audit process always follows the same main steps and time structuring, beginning with a brief field walk that allows the auditor to obtain a general overview of the farm and potential sources of risk, followed by the auditing of documents at the farmer's office, and finally, a summary of the main audit results is provided to the farmer, and the audit report is written, where nonconformities and corrective actions are reported. The need to travel between fields means that the inspection is nonlinear and conducted in different time periods. The observations focus on three key aspects:

Table 1. Indicators Measuring the Efficiency of the Audit Process in a Combined/Joint Audit.

Joint/combined audit	Definitions
IGT: Indicator for the Gains in Time due to the use of a joint or combined audit relative to separate audits	$\frac{\text{Estimated Total Time for Seperate Audits } b - \text{Observed Total Time for Audit as conducted (f)}}{\text{Estimated Total Time for Separate Audits}} = \frac{d}{b}$
ILT: Indicator for Loss of Time due to the control of common items twice z	$\frac{\text{Total Time to Control Twice Common Items } s = a}{\text{Observed Audit Duration Combined / Acknowledgement Audit} = f}$
ONC: Optimization of the Number of Common Items controlled only once	$\frac{\text{Number r of Common Items } s \text{ Not Checked Twice, but Only Once}}{\text{Total Number of Common Items } s} = \frac{r}{(s)}$
OTC: Optimization of Control Time for Common Items	$\frac{\text{Total Time to Control Common Items}(d) - \text{Time Spent Not to Check Common Items Twice } (x)}{\text{Total Time to Control Common Items } (d)} = g$

Note. Number of common items = s; number of common items controlled twice = z, *indicating a "loss" of time.* Number of common items controlled only once = *r*. Estimated total time for separate audits = $b = f + d$, *with d = total time spent for checking common items.* Total time for checking twice the common items $z = a$ = *"loss" of time.* Calculated time gained from not checking common items twice: $(d - x) = g$ = gain of time.

1. The duration of the overall audit process and the duration of each item controlled during the audit and by the agricultural production areas covered (animal or crop production)
2. The identification of omitted items and the evaluation of the technical relevance of audit results, auditor statements, and the treatment of common items
3. The analysis of interactions between the auditor and the farmer, involving a transcription of discussions and their core topics[13]

Time management also reflects the technical competence of the auditor and his/her ability to process a combined audit, especially with regard to (a) his/her depth of knowledge of the type and levels of requirements for the common items and (b) his/her possible memory lapses or omission of some items. The aim here was also to evaluate in a more complex environment how the auditor was able to maintain the reliability and technical relevance of the evaluation and its potential impact on time management.[14] Each observer employed a simplified grid, including all of the control items, a list of control points and their organization in terms of the priority or group, and a list of common items across the different certification schemes. After the audit, a debriefing was organized with the auditor to analyze the difficulties or problems related to interpretation he encountered when assessing the situation of each farm and the relationship with farmers.

Data Analysis and Indicators

In the industry, the level of cost savings realized through combined audits varies with the maturity of their management systems and the level of integration among the certification systems used by firms (Simon et al., 2011). In this study, the degree of integration among quality or environmental certifications is measured by the number of overlapping requirements and common items between quality or environmental guidelines, which could be assessed at a single point in time, and the quality of previous audit reports and documentations partly influencing the total time spent by the auditor to assess compliance with the certification standards. In our study, the adopted definition differs: *The more common items there are between certified standards, the more potential time could be saved by employing combined audits.*

Different sets of indicators were constructed to evaluate how the auditor manages overlapping and common items under different quality or environmental certifications and the potential time that could be saved through the elimination of redundancies and the time lost due to controlling common items twice. During the audit follow-up, the research team also conducted a detailed analysis of the time spent on: (a) each individual certified item; (b) each type of agricultural production (crops, animal production, and farm management); and (c) drafting the final audit report (by the auditor; Appendix A). The indicators summarized in Table 1 include

1. IGT, an indicator of the time saved due to not having to control common items twice, and ILT, measuring the time lost due to controlling common items twice.
2. ONC, measuring the auditor's ability to not control common items twice, and OTC, measuring the time required to avoid controlling common items twice.[15]

To differentiate the time spent when conducting separate audits compared with combined audits, an estimated theoretical total time when conducting separate audits b was recalculated based on the observed of time spent during the combined audit f, and adding again the observed time spent for checking the common items (see Appendix B).

Findings

This section presents the main outcomes of the field study in relation to audit duration, nonconformities, and compliance levels, time savings for the auditor and the role played by the auditor's tools and documents in guaranteeing audit quality.

Audit Duration Under a Combined Audit

In our field study, the certification scheme with the potential to be more time consuming and to have more potentially overlapping requirements is the GAP guideline *Agriculture Raisonnée.* All observed audit durations are summarized in Table 2. In this field study, the first set of farms (E1-E3) with a full combined audit covering all three certification schemes had a longer total audit duration of approximately one half-day. For the two other sets of farms (E4-E5 and E6-E7), their specific protocols explain the shorter audit duration (approximately 2 hours), as they involve the automatic "acknowledgement" of previous audit reports either for the IRTAC-Arvalis charter for cereals (E4 and E5) or the quality certification "Label Rouge" (E6-E7), when evaluating the GAP guideline "Agriculture Raisonnée" covering the entire farm.[16]

With the rule about the *acknowledgement of former audit reports*, the auditor is required to not check common items twice. All of the farms in our sample were initially selected because they were assumed to be prepared for a successful audit regarding compliance with the *Agriculture Raisonnée* GAP guidelines. The outcome of the audit shows that in fact, most farms were far from compliant with all of requirements necessary to obtain the certification, indicating that the environmental criteria were more difficult to achieve.

During the audit process, the field visit is a very important step in the risk analysis, as it allows the auditor to assess which points might be crucial to subsequently evaluate the utilization of the farmer's documentation. This point is key for the auditor and the audit process itself because it aims to identify potential sources of nonconformities and noncompliance with the certification requirements.[17] A more detailed analysis shows that the differences in audit duration are primarily related to adaptations to the audit process introduced by the auditor based on his initial risk analysis and identification of the potential critical points for each farm.

From the auditor's perspective, this preliminary risk analysis explains, for example, why the audit of crop production for Farm E2 was responsible for approximately 50% of the total audit

Table 2. Audit Progress and Duration Across Farms.

				Acknowledgment of audit report			
	Combined audit (AR/CH/LR)			CH within AR		LR within AR	
	E1	E2	E3	E4	E5	E6	E7
Field visit	64	58	105	36	35	53	35
Document controls, including	210	207	151	98	80	117	117
Audit report writing	44 min	66 min	10 min	22 min	15 min	30 min	32 min
Total without discussions	274 min	265 min	256 min	134 min	115 min	170 min	152 min
Side discussions	34 min	66 min	44 min	19 min	22 min	31 min	26 min
Total duration	5 hr 08 min	5 hr 31 min	5 hr 00 min	2 hr 33 min	2 hr 17 min	3 hr 01 min	2 hr 32 min
Among							
AR	132 min	117 min	72 min	96 min	83 min	124 min	117 min
CH	45 min	67 min	79 min	—	—	×	×
LR	33 min	23 min	68 min	×	×	—	—

Note. See the Selected Agrienvironmental Certification Schemes section, for details on AR, CH, and LR.

duration due to specific problems related the homologation of pesticide products, compared with 39% for E3. Similarly, for Farms E4 and E5, the auditor spent less time checking animal production (veal and pork), which was recently subject to a third-party control. The auditor simply assessed the existing audit documents and focused more on crop production, which was less likely to comply to the environmental requirements under the *Agriculture Raisonnée* GAP guidelines. Another aspect of the audit relates to the assessment of documents and the preparation of the audit report (Table 3). The audit documents are usually prepared at the farm. At the end of the audit, the farmer signs the report, and the auditor should provide one copy to the farmer. Some variations in the audit duration across farms are explained by time needed for the preparation of the audit report, specific geographic issues such as the distances between field slots or farm buildings and the age of existing equipment (especially spraying equipment, buildings, machines, etc.), which may imply a larger number of possible nonconformities.

Nonconformities and Compliance Levels

A major dimension that explains total audit duration relates to the number of nonconformities identified by the auditor and the level of compliance with the certification requirements, especially for GAP guidelines and their environmental requirements. In our sample, most farms were far from being certified for *Agriculture Raisonnée* (especially E1, E4, and E5, especially with regard to waste management criteria) or had a number of critical but easily addressed noncompliance points (E3 and E7; Table 3).[18] Based on the number, criticality and types of nonconformities, a distance from certification for each farm was assessed which differentiate farms as being "very far," "far," "medium," or "close" to the certification (Table 3). *The less nonconformities on critical regulatory requirements, the closer are the farms to the certification.* The Farms E4 and

Table 3. Compliance Level and Number of Nonconformities.

	E1	E2	E3	E4	E5	E6	E7
Nonconformities for the certified Good Practice Guideline "Agriculture Raisonnée"							
Farmer's commitment	9	8	8	5	6	7	5
Critical regulatory requirements	3	5	1	5	2	3	2
Major NC (35R and 36B)	3	0	1	1	2	1	0
Minor NC	6	1	3	2	1	2	
Total nonconformities	21	14	13	13	11	13	9
Nonconformities observed for the Quality Charter IRTAC on cereals							
Nonconformity level	1C	2B, 1C	3B, 1C				
General assessment							
Distance from certification	Very far	Medium	Close	Far	Far	Medium	Close
Farmer's motivation	Medium	High	High	Medium	Medium	Medium	High

Note. NC = nonconformities.

E5 represent here a specific case as being assessed as far from the certification in relation to major nonconformities on animal waste management (fertilization plans and balances, spreading schedule, specific investments, etc.) which requires more time to be resolved. It is then also affecting the farmer's motivation to get the certification quickly and to resolve all observed nonconformities within a few months for the highly motivated, while the others who are less motivated (medium) are considering going through the audit process to get the certification only the year after or later.

In our field study, most of the critical or major observed nonconformities relate to pesticide management (product approval, storage conditions, applied handling rules, etc.), especially for Farms E1 and E2,[19] and to the quality of their documentation systems and waste management for Farms E4 and E5. When critical nonconformities are observed, the auditor proceeds to a more in-depth assessment and returns to the items several times to encourage the farmer to be careful with them (e.g., retaining veterinary prescriptions, even if sanitary regulation does not make it compulsory, etc.). Therefore, the auditor will spend more time for technical reasons by rechecking certain technical requirements and for didactic reasons to aid the farmers in understanding the nature and the importance of the identified nonconformities and the need for corrective actions.

- For technical reasons, spending more time on rechecking technical items allows the auditor to avoid any omissions, especially by completing the usual documents for each certification scheme at the end of each step of the audit process or at the end of the audit process.
- For didactic reasons, providing incentives to farmers to properly identify observed nonconformities and to implement the relevant corrective actions is crucial. In this case, the auditor does not provide any formal advice to farmers about the possible solutions to meet the requirements, as recommended by the official standards defined by the auditing regulations.

For the auditor, the discussion is only supposed to help the farmer understand why there were nonconformities or gaps with the requirements to be certified, not to deliver specific advice on possible solutions. If the farmer is insistent in asking for possible advice (e.g., either through the form of "what-if" questions or benchmarking with similar situations observed elsewhere) or challenging the auditor's assessment, the auditor might shorten the discussion while maintaining a comfortable atmosphere and open dialogue with the farmer, which is generally perceived well by the farmers.

Table 4. Combined Audit and Time Optimization by the Auditor.

	Farm	Total audit duration (calculated without side discussions, see Table 2)	Time optimization and saved in combined audits		Acknowledgment of previous audit reports—not assessing items twice	
			Indicator IGT	Indicator ILT	Indicator ONC	Indicator OTC
Test 1—Combined audit						
	E1	274 min	22%	10%	73.5%	70%
	E2	265 min	16%	0%	97%	100%
	E3	256 min	17%	2%	88%	89%
Test 2—Procedure of "complete acknowledgement of previous audit results" without rechecking						
CH into AR	E4	134 min		17%	47%	
	E5	115 min		16%	33%	
LR into AR	E6	170 min		5%	89.5%	
	E7	152 min		7%	89.5%	

Note. IGT = Indicator for the Gains in Time; ILT = Indicator for Loss of Time; ONC = Optimization of the Number of Common Items; OTC = Optimization of Control Time for Common Items. See the Selected Agrienvironmental Certification Schemes section, for details on AR, CH, and LR.

Another major source of lost time during the audit process is related to "paperwork" and the accessibility of documents before and during the audit. Documents include soil analyses for each homogeneous group of land, the record keeping of the different technical interventions for each individual (or group) slot of land, crop rotations and their spatial allocation during recent years, purchase invoices for plant protection products (including the names of the products, quantities, conditioning, etc.), and veterinary prescriptions, among others.[20] Here, *the less audit preparation there is by farmers, the less the informational value of previous audit reports there is, and the less potential time savings that can be achieved through combined audit systems.* Farmers and other stakeholders often neglect this dimension even though it is crucial to demonstrate their compliance with certification.

Saving Time at the Auditor Level

To evaluate the total potential time that could be saved by the auditor if the audits had not been carried out separately, two categories of indicators were used to measure: (a) the potential time saved by conducting a combined audit relative to two separate audits (IGT and ILT) and (b) the auditor being allowed to not assess common items twice (ONC/OTP). The total number of common items is $s = 34$, with $s_1 = 15$, equivalent to 24% of the items in the (AR) guidelines for crop production (CH), and for the Janzé poultry LR, $s_2 = 19$ common items, covering 57% of (AR) items dedicated to animal production. After an adaptation period for the auditor to handle the different certification schemes, the field study shows that the average gain of time from combined audits is around 20%. The results are summarized in Table 4.[21]

The values of all indicators of time optimization and time saving through a combined audit (ILT and IGT) and not controlling common items twice (ONC/OTP) are high. The indicator ILT indicates that the auditor spent only 10% of his time controlling common items twice. The results for the first farm audited (E1) were lower regarding the indicator IGT (22%) compared with 16% for E2 and 17% for E3, which might be related to a more complex and higher level of observed nonconformities. Conversely, the indicators ONC/OTP obtained high values of approximately 90% to 100% for the two farms in our sample. However, the only exceptions were Farms E4 and E5, where a number of nonconformities related to general management systems led to higher levels for ILT (17% to 16%, compared with 5% to 6% for the other farms) and a lower ONC indicator (47% to 33%, compared with 90%).[22] On a more general level, our results indicate that the optimization of the audit process through the systematic nonrechecking of overlapping

requirements was not as central as initially expected for the use of combined audits. Assuming a gain of 20% on total audit duration has a marginal impact for a reduction on audit tariffs and certification costs.

The auditor involved in this study was experienced (having been a professional auditor for more than 10 years) and had all of the technical competences and training required to properly conduct combined audits, including the assessment of more technically complicated GAP guidelines such as the *Agriculture Raisonnée.* Therefore, the auditor met no particular difficulties in addressing small differences between technical items that were not completely identical, even subtleties; however, as previously mentioned, the conduct of combined audits requires specific competences that need to be available within certifying firms when proposing combined audits to their customers.

The Role of the Auditor's Tools and Audit Reports

The last point reviewed in our field study is the opportunity (or lack thereof) for the auditor to utilize previous audit reports or documents and, as a consequence, accept his conclusions and not recheck all related items. This procedure is for the moment restricted by current auditing policies, with the auditor remaining the sole responsible authority for the entire audit process. Field observations demonstrate two extant limitations to the auditor's "automatic acknowledgement" of previous audit reports:

1. This audit documentation is not necessarily available to all individual farmers involved in the three certification schemes, especially when a technical follow-up is provided by agrifood firms, cooperatives, or other intermediaries in the case of collective certifications. For the adoption of combined audits, the improved formalization and informational value of audit reports, either for internal or third-party controls, and their delivery to farmers who need to retain a copy of these documents is clearly needed, as not all of these documents were available.
2. The lack of transparency and the heterogeneity in the quality of internal controls among agrofood firms, cooperatives, or dedicated organizations: Some implement highly precise technical follow-ups with incentives for their producers (e.g., the quality charter for cereals IRTAC-Arvalis), while others do not do so in a systematic manner or might even encounter a potential conflict of interest with proper information disclosure.

The last point to be considered here is the use of auditing tools that act as cognitive support for the auditor when performing more complex combined audits and to improve the value of auditing for farmers.[23] Our findings indicate that the use of separate audit checklists by the auditor rather than a cross-comparative checklist developed as part of the "benchmarking procedures," such as those used by the GlobalGAP standard in another context, should be preferred, as it reduces possible errors in the interpretation or assessment of certain technical items and thus facilitates the final review and writing of the audit report for each certification. Nevertheless, such benchmarking checklists remain useful for farmers as a self-auditing tool to evaluate their compliance levels prior to an audit.[24] At the auditor level, our field study also reveals no potential change in audit quality under combined audits when performed by an appropriately trained auditor acting under the close supervision and responsibility of the certifying body.

Discussion and Research Directions

Despite the exploratory mode of this study and the inherent limitations regarding the generalization of results from small samples, our study offers some interesting insights we discuss in this section into the possible transformative role of auditing activities within private third-party certifications toward more sustainable agriculture.

Time Perception and the Farmer's Self-Determination

Our starting point for this study was driven by the controversies among stakeholders surrounding the question of saving time and the potential for the reduction of audit duration and of certifications costs through combined audits. The adoption of combined audits would help reduce the total number of audits for farmers and certifying firms and allow reductions in audit duration. Following the recent literature on the role of time in work organization (Orlikowski & Yates, 2002; Roe et al., 2009), more explicit attention was paid to the temporal structuring and the relational dimension of the audit process. Indeed, our field study demonstrates that "real-time" savings through combined audits are likely overrated compared with stakeholders' expectations, while a lack of preparation by farmers prior to an audit is clearly underestimated when it is a major source of time loss. From this perspective, spending more residual time can also be more valuable for the farmer by providing dedicated information and knowledge about what is needed to obtain certification, especially for the most complex items related to the GAP guidelines *Agriculture Raisonnée* and related environmental requirements.[25]

The ability of the auditor to create a comfortable atmosphere and an open dialogue with the farmers to be conducive to proper information disclosure and cooperation appears here as a key factor that motivates the farmers involved in our study. The immediate question of saving time appears afterward to be much less crucial at an individual level, when it is at a collective level. As suggested by Miettinen and Virkkunen (2005), the object of an activity, in this case, the audit process, is both objective (with regard to the raw materials and problems at hand) and projective in the sense that it is also oriented toward the creation of *use value*.

For the farmers involved in our study, this *use value* was mostly related to the assessment and auditing of the certified GAP guidelines, such as the "Agriculture Raisonnée," allowing more proactive environmental strategies that voluntarily and preventively extend beyond mere regulatory compliance while being less demanding in terms of the change in farming systems than organic production. The results of the audits demonstrate that in fact, full compliance to such private GAP guidelines is not as easy as initially expected for many farmers, as none of the farms in our sample were eligible for the certification (Table 3). The same observation was made for other GAP guidelines, such as the GlobalGAP standard (Mazé et al., 2007).

Despite such difficulties, all farmers in our sample, except one (E1) who was more skeptical and very distant from achieving the certification (with 21 nonconformities), expressed a clear interest in and motivation to continue the certification process. From this perspective, our study suggests that the relational dimension of the audit and its time perception can be one dimension of personal satisfaction (or dissatisfaction) and farmers' self-determination and intrinsic motivation as a form of daily engagement in the certification (Mzoughi, 2011; Orlikowski & Yates, 2002). Independent private third-party certifications through their auditing policies may also play a role in achieving a more sustainable agriculture.

Reflexive Learning: The Auditor as a Knowledge Broker

Making sense of words and actions also carries organizational and contextualized knowledge and stimulates the reflexivity of farmers on their own work practices and possible organizational change (Miettinen & Virkkunen, 2005). Although a strict separation between advising and auditing is currently imposed by regulatory authorities, our analysis suggests that the *audit value* for farmers originates from the capacity of the auditor to act as a *knowledge broker* in translating the codified knowledge included in the certified requirements into more accessible information that stretches across particular contexts or localities (Amin & Cohendet, 2004; Nonaka & Takeuchi, 1995).

In our study, even if no formal advice was delivered by the auditor on solutions when nonconformities were observed, the audit is an opportunity to provide a distanced and contextualized assessment of the current situation with regard to the certification requirements. While the aim of

the auditor is not explicitly to foster explicit learning for the farmers, but as already emphasized by Seppänen and Helenius (2004), auditing is not only top-down instruction but involves a joint analysis and an open dialogue and negotiation of problems with farmers as a vehicle for knowledge transfer. The positive role of such distanced assessment provided by the auditor appears to be more crucial in the case of the more complex GAP guidelines and agrienvironmental standards, as in the case of organic standards (Seppänen & Helenius, 2004).

At the early stage of entering into certification schemes, the identified noncompliances by the farmers involved in our field study were much less the result of voluntary fraud than a lack of understanding of the certification requirements and the underlying logic behind the control points in the standards. The information provided by the auditor about the meaning of the certification requirements and the limits in their interpretation with regard to the local context is viewed here as a *reference or focal point* that can be used by farmers and, more important, by other stakeholders that deliver financial or technical support to the farmers, such as advisory services, agrofood firms, cooperatives, and so on, to obtain certification.[26]

The limits observed in our field study to the use of self-auditing tools by the farmers for preparation prior to the audit, as most of the farmers did not reach the certification requirements stipulated by the GAP guidelines, also suggest the role of technical follow-up and advisory support provided, especially in the case of collective certification, through the "second party" or "internal controls" made by cooperatives, agrofood services advisory services or other economic intermediaries. This diversity of institutional and organizational settings behind private third-party certifications is currently clearly underevaluated in the literature, as illustrated by recent studies about alternative *Participatory Guarantee systems* equivalent to *Internal Control systems* in organic production (Katto-Andrighetto, 2006; Nelson et al., 2010). Further research on how these different levels of mechanisms interrelate and complement one another to achieve the better reliability of private certifications over time is definitively needed.

Audit Regulation: Checklist Versus Risk-Based Auditing?

In the recent literature, some studies strongly opposed risk-based auditing by utilizing checklists of controls (Albersmeier et al., 2009; Schreinemachers et al., 2012), but our field study instead suggests that both methods should be considered complementary tools to be employed jointly by the auditor and the certifying firms to guarantee the reliability of the certification. Far from eliminating checklists, auditing tools play a significant role as a cognitive support for the auditors both ex ante, during the preparation and process of the audit and ex post, as evidence that nothing has been omitted during the audit process.

The audit of GAP guidelines in their current design presents some similarity to organic inspection. In the organic sector, Seppänen and Helenius (2004) suggest that approaches based on "Farming System Redesign" are more challenging in terms of inspection than checking "Input Substitution" (especially with regard to pesticides or other chemical inputs) for the auditor. In such situations, some studies advocate the need for some degree of "openness" in the interpretation by the inspector to allow for possible innovations and evolutions in production techniques (Michelsen, 2009). Hence, by providing guidance and framing to the auditor, auditing tools also contribute to the reliability of the audit process.

The conflicting dynamics behind the time–space compression occurring nowadays in a number of organizations appears to contribute to the loss of information embodied in the natural environment. While a focus on a chronological time and closed temporal process in organizational activities *is* not problematic per se, the presumption that such time alone *is* singularly important is problematic (Orlikowski & Yates, 2002). The current temporal structure and especially the nonlinearity of the audit process, particularly in the case of the "risk-based approach," has been a major source of misunderstanding between farmers and other stakeholders, as some believe that some items have been omitted, challenging the technical competence and field knowledge of the auditor about local farming practices (by opposition to "theoretical knowledge

learned in books"), and leading to a perceived heterogeneity in inspection techniques and interpretative leeways for the auditors in assessing certification requirements that have been a source of the questioning of the audit quality and the reliability of the certification (Anders et al., 2010).

The adoption of combined audits is an opportunity to reduce at the farmer level some of the administrative burdens created by the proliferation of private certification schemes in agrifood sectors. At the level of certifying firms, the potential for time savings through combined audits must nevertheless be balanced with specific organizational and regulatory conditions (such as establishing logistics and planning rules, setting deadlines, updating and managing the list of farmers, population sampling, establishing accreditation, etc.) that still impose severe limitations on the implementation of combined audits on a large scale for the moment.[27] Understanding the circumstances surrounding the audit process to make them more transparent to the stakeholders and demonstrate their reflective potential in the face of present sustainability challenges is also one expected outcome of our study.

Conclusion

The premise of this article was to understand the potential benefits and limitations to combined audits when farmers are involved in multiple agrienvironmental certifications. The use of combined audits appears as a possible effective solution to deal with the proliferation of certified quality or environmental management systems in the agricultural sector. This study has also several implications in advancing research on the role of third-party certification and their auditing policies in sustainability management.

Implications for Further Research and Improving Practice

A first implication is that, using a European background, our study suggests that beyond the mere fact that "real-time" savings through combined audits at the level of farmers is certainly overrated, the initially assumed loss of time would be offset by positive knowledge spillovers and more reflection by farmers on their own agricultural practices for better compliance and toward more sustainability. As a matter of fact, organizations in agriculture still face many challenges in implementing more substantial and deeper cultural level changes toward sustainability. The lack of understanding of sustainability issues is still often an obstacle *conceptually* and *in practice* for many organizations to formulate a coherent action plan to become more sustainable. Our study suggests that auditing policies may here also play a performative role in knowledge sharing, raising awareness, and changing perceptions and attitudes among stakeholders.

Second, in the recent literature, the rise of independent private third-party certifications has been also strongly criticized as new market-based and neoliberal instruments and opposed to other types of socially mediated governance (Hatanaka et al., 2005; Nelson et al., 2010). In the European context, such proliferation illustrates more likely a change of its model of regulatory governance on food safety and on environmental issues (Majone, 1996). In our study, private third-party certifications do not act in isolation, but as a complementary tool to other command-and-control public regulations and requires a close supervision by public or private accreditation authorities. A better understanding of the diversity of their organizational and institutional settings, and of the peculiar auditing cultures and practices that supports private third-party certifications is needed.

Limitations and Methodological Challenges

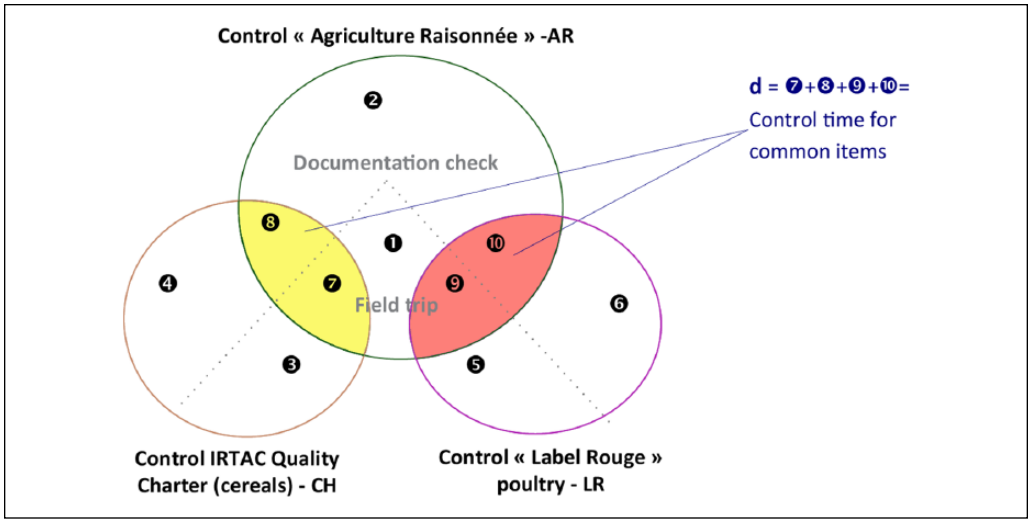
By adopting a practice approach to auditing activity, we have also attempted to bridge the gap between objective and subjective understandings of time, recognizing the active role of people in shaping the temporal contours of their activity with their possible inner contradictions (Orlikowski & Yates, 2002). During the past years, audit duration has been used by some public authorities as a *proxy* for assessing the quality of the *audit process* and identifying possible downward

competitive pressure on audit fees and certifying firms. The detailed methodology developed in this study, through a *minute-by-minute* follow-up of the audit process, casts a different light which we believe can be useful in improving the analysis and interpretation of existing statistical data on audit duration, reported to national and/or European public authorities, as part of their regulatory supervision of private certification schemes.

A number of limitations and methodological challenges remain. In this study, we chose to follow only one auditor, which allowed us to maintain the comparability of combined audits among different farms, avoiding side "learning effect" during the audit process. Extending the analysis to a larger set of auditors and certifying firms would allow addressing the variability of auditing procedures, auditing tools, and IT audit support systems framing the certification process, in a similar way to current researches in the accounting and financial sector (Dowling & Leech, 2007). Additional research on the temporality and space in work organization, on knowledge governance, and organizational learning within certifying firms, acting here as *communities of practices* in interaction with the farmers and other stakeholders, is clearly needed with regard to their potentialities and limitations toward more sustainability.

Appendix A

Data Treatment for Common Items in the Case of a Combined or Joint Audit.



Calculation of Indicators for Combined or Joint and Separate Audits.

Combined or joint audit	Separate audits
Audit duration for AR = ❶ + ❷	Audit duration AR = ❶ + ❷ + [⑦ + ⑧ + ⑨ + ⑩]
Audit duration for CH = ❸ + ❹ + [⑦ + ⑧]	Audit duration CH = ❸ + ❹ + [⑦ + ⑧]
Audit duration for LR = ❺ + ❻ + [⑨ + ⑩]	Control duration LR = ❺ + ❻ + [⑨ + ⑩]
Total audit duration for combined/joint audit = ❶ + ❷ + ❸ + ❹ + [⑦ + ⑧] + ❺ + ❻ + [⑨ + ⑩]	Estimated total duration for separated audit = ❶ + ❷ + ❸ + ❹ + [⑦ + ⑧] + ❺ + ❻ + [⑨ + ⑩] + [⑦ + ⑧ + ⑨ + ⑩] = b
Total time to control common items	d_1 = ⑨ + ⑩ ; d_2 = ⑦ + ⑧ ; Total d = d_1 + d_2
Number of common items s	
Between AR and LR (chicken production)	s_1 = ⑨ + ⑩
Between AR and CH (cereal production)	s_2 = ⑦ + ⑧

Note. See the Selected Agrienvironmental Certification Schemes section, for details on AR, CH, and LR.

Appendix B

General Overview of the Three Certifications and Their Control Plans.

		French label on "Agriculture Raisonnée" (AR)	High-quality Label Rouge on free range chicken (LR)	Quality Charter IRTAC-Arvalis (CH)
General characteristics	Objectives	Consumer information	Consumer information	Business to business
	Main orientation	Environmental and farm management (traceability, etc.)	High-quality product	Product quality and good environmental practices
	Type of certificate	Individual certificate	Collective certificate	Collective certificate
	Period of validity	5 Years (with an intermediate audit)	1 Year	1 Year
Technical content	Type of GAP	Farm level	Only poultry	Only cereals
	General structure	14 Chapters on 9 themes + regional specifications		7 Chapters on parcel characteristics, soil preparation, fertilization, pesticide, irrigation, harvest, storage
	Number of items	98 Items (18 commitments, 47 regulatory items, 37 others)		Maximum 100 (if irrigation and storage)
	Requirement levels	Compulsory; items; commitment		A (major), B and C
	Area of application	All parcels and animal products on the farm	Dedicated poultry production	One product (one charter/cereal), parcels involved
Auditing system	CB accreditation	EN 45011	EN 45011	No specific program but EN 45011 required
	External control	Initial audit + an intermediate control in the 5-year period	Each flock, that is, 4-5 controls/year for every farm	Each year: *x*% of farmers/group; 100% coop or firms
	Internal control (technicians)	None	One control for each flock, fallow period	Each year: 100% farmers
	Specific documentation	Farm records		Plot records; self-assessment

Note. CB = certifying body; GAP = Good Agricultural Practices.

Appendix C

Characteristics of the Farms Involved in the Field Study.

	Combined/joint audit			Acknowledgement of control CH in audit AR		Acknowledgement of control LR in audit AR	
	E1	E2	E3	E4	E5	E6	E7
Surface (ha)	70 ha	43 ha	30 ha	122 ha	65 ha	40 ha	64 ha
Workers	1	1	1	2	2	1	2
Productions							
Crops	Cereal 40 ha (wheat 20, corn 14, colza 6), meadows 30	Cereal 38 ha (wheat 23, corn, colza, peas)	Cereals 26 ha (wheat 17, corn 6, colza 3)	Cereal 77 ha (wheat 39, corn 30, colza 8), meadows 45	Cereals 51 ha (wheat 20, corn 27, colza 4), meadows 14	Cereals (wheat, corn, colza)	Cereals (wheat 22, corn, colza)
Animal	Milk 295,000 L, 45 cows			Milk 480,000 L, 70 cows, pigs: 65 sows	Veal, milk, 230,000 L, 35 cows	65 Young bulls	Milk 235,000 L, 30 cows, 20 suckling herd
	1 Label, poultry building	5 Label, poultry building	4 Label, poultry building			2 Label, poultry building	2 Label, poultry building
Other quality/ environmental scheme applied by the farmers	*n*: 4 Certified Wheat CCP including CH; Traceable Wheat; LR Janzé	*n*: 2 CH: Cereal Quality Charter IRTAC; LR Janzé	*n*: 3 CH; Traceable Wheat Janzé; LR Janzé	*n*: 5 Agriconfiance; Certified Wheat (CCP), including CH; Certified pork CBPE	*n*: 5 Agriconfiance; Certified CCP Wheat including CH; Certified veal CBPE	*n*: 3 Janzé Traceable Wheat; CBPE; LR Janzé	*n*: 3 Janzé traceableWheat; CBPE; LR Janzé

Note. See the Selected Agrienvironmental Certification Schemes section, for details on AR, CH, and LR. Standard size for poultry buildings involved in our case study: 4,400 chickens/building.

Author's Note

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Notes

1. In this article, we use the term "Combined Audit" ("*Joint Audit*") when the requirements of two different certifications are evaluated *simultaneously* (successively) during the audit process. These definitions can differ slightly from those used in industrial sectors, where Combined Audit Systems are related to the evaluation of quality or environmental management systems (such as the ISO 9000 and 14000 systems), while maintaining separate manuals and documentation systems in the case of a "combined audit," or based on fully harmonized systems for an "integrated audit." See Simon et al. (2011), for information regarding industrial sectors.
2. A limited but growing number of studies have emphasized the role of private auditing practices in fostering compliance to agrienvironmental standards, either based on case studies (Maxime & Mazé, 2006; Seppänen & Helenius, 2004), undercover observations of auditing practices (Anders et al., 2010), or statistical data collected by regulatory agencies (Albersmeier, Schulze, Jahn, & Spiller, 2009).
3. For example, in France, approximately 114,000 farms, mostly vineyards and dairy farms, are involved in AOC (Protected Denomination of Origin) involving an independent private third-party certification. Approximately 3,000 farms implement GAP guidelines under the label "Agriculture Raisonnée" ("Integrated Farming") or other GAP guidelines for crop production (such as IRTAC-Arvalis), involving more than 9,000 producers covering 280,000 ha. Similar standards to ISO 9000 have been adopted by more than 30,000 farmers (such as the *AgriConfiance* standard established by cooperatives). One half of French cattle breeders (approximately 100,000) are involved in a breeding best practices charter used as a *common basis* for all quality certifications for beef products. Approximately 20,600 farmers have implemented organic production, and private global standards such as GlobalGAP are commonly employed (Mazé et al., 2005).
4. An example of the deeper integration of private certifications into national control plans has already been observed in France, where public authorities have applied a partial *audit* exemption rule in their targeting policy applied to public controls for farms involved in specific private GAP guidelines or environmental certifications. Audit privilege rules do no apply here.
5. See Maxime and Mazé (2006), for an analytical differentiation between *control* and *audit* activities. In the case of organic production, the term employed is often *inspection*, even if referring to private third-party certification, while the international standard ISO 17020 introduces a difference based on the nature of the decision process for certification.
6. In the case of GAP guidelines, the design of checklists is usually based on a preliminary risk analysis made by a group of experts and includes a list of preidentified risks, specific prioritization of depending of the local environmental context, and a list of related preventive actions in relation to current local farming practices.
7. From a cognitive perspective, auditors may face several difficulties in assessing specific requirements due to (a) different rating systems for a given control point (minor, major, etc.), with some being compulsory in one scheme and not in another; (b) different types of proof for similar control points'

assessment items with slight differences (e.g., a difference in the documentation required as proof of compliance); (c) different domains of implementation for the control (e.g., controlling all pieces of land rather than only those with specific crops).

8. Recent initiatives by public authorities, for example, the French regulatory commission supervising environmental farm certification systems (CNAR-SOC) attempted in 2010 to obtain a more systematic reporting of real audit durations by certifying firms and their auditors as a means of improving the supervision and the possible detection of cutbacks that might affect an audit's quality and reliability of private certifications.
9. In our sample, most farms had no employees, involving fewer requirements in terms of employee training and education and information reporting depending on employees' levels of responsibility in farm operations.
10. For example, in a number of collective certifications, third-party controls only cover a sample of farms each year (typically from 10% to 20% depending on control pressure), while internal (second-party) controls involve an annual visit to all participating farmers, which in return impose specific constraints for combined audits.
11. In contrast to other GAP guidelines, the IRTAC-Arvalis charter emphasizes the technical relevance of the agronomic reasoning applied by farmers to field operations. It includes the agronomic context (crop rotation, production), fertilization strategies (nutrient inputs, manure management, balance sheet calculations for fertilization, etc.), and risk indicators related to irrigation and plant protection to be assessed by the auditor.
12. The *Agriculture Raisonnée* chapters include 99 items: (a) informations about the farm and the surrounding area (location, maps of land slots, education and training, etc.; 4 items); (b) traceability requirements (record keeping, archiving; 2 items); (c) worker's health and security (3 items); (d) soil analysis (1 item); (e) mineral and organic fertilization (storage, spreading, equipment, reasoning, etc.; 19 items); (f) crop protection (16 items); (g) irrigation (5 items); (h) animal identification and traceability (2 items); (i) animal health (11 items); (j) animal feeding (8 items); (k) animal well-being (6 items); (l) hygiene, especially in the case of milk production (9 items); (m) waste management (9 items); (n) landscape and biodiversity (4 items).
13. The observations include (a) information regarding audit preparation by the auditor (general instructions and goals, the framing of the audit's progress, introduction to the farmer, etc.) and the responses or documents provided by each farmer; (b) the auditor's management of his tools and documents during the audit process, the types of documentation, proofs or traceability documents requested from the farmer, and their spatial localization; (c) conclusion of the audit, with a global assessment of compliance, the quality of the relationship between the auditor and the auditee, and problems.
14. In our study, the auditor was aware that the technical relevance and the relational dimension of the audit will be evaluated, which is the usual procedure applied by accreditation authorities.
15. The differentiation between ONC (based on the number of items) and OTC (the time required) highlights the fact that some technical requirements are more complex to assess than others and take a longer time by the auditor.
16. Some differences in production systems between farms explain longer audit durations. In the first set, E1 engages in dairy production that utilizes dedicated meadows and cultivated grassland, which involves specific requirements. In the case of E7, in addition to the combination of cereals, the poultry label and cattle production shared with E6 and E7 raises additional animals, which only requires a few additional documents and informational records on the animals.
17. When employing a risk analysis, the audit process is not organized in a sequence from a more specific certification to a more general certification, as in our case, with an optimal order going from (a) LR > CH > AR for a combined audit, but rather first through a field visit that allows for an evaluation of the general situation of the farm and then completed by the evaluation of documents and the preparation of the audit report in situ.
18. The classification of nonconformities varies across certification schemes. This lack of harmonization reduces the possibilities of mutual recognition and equivalence (Mazé et al., 2007). The items based on a "farmer commitment" (Table 3) is related to items for which there is no possible observable control point by the auditor, but require instead that the farmer signed a document in which he commits to comply with the requirement. Compliance is here performative. Major nonconformities are critical with the possibility of certification withdrawal, while minor nonconformities just require an upgrade.

19. In France, public authorities established an action plan "Eco-Phyto 2018" with the aim of reducing the use of pesticides by French farmers by 50% before 2018. The question of whether farmers following the GAP standards employ fewer and less hazardous pesticides than producers who do not follow these standards is beyond the scope of this study. For an assessment of the impact of the GAP guidelines on the chronic overuse and misuse of pesticides in agriculture at the international level, see Schreinemachers et al. (2012).
20. A number of local agricultural advisory services have proposed short training sessions on information management, archiving policies and on how to apply a "clean desk" policy in farmers' offices. Record-keeping requirements also vary from one certification scheme to another, even for the same items and with sometimes very small differences in the level of detail, which explains a number of nonconformities and reflects a lack of harmonization across certifications.
21. The current design of our study does not allow the calculation of the indicators OTC and IGT in this case, as the time comparison between the conduct of two separate audits and of a combined audit by the same auditor would be biased by some "learning effects" at the auditor level about the specific situation of each farm.
22. This option was evaluated during the audit of Farms E4 and E5, where the auditor quickly checked the previous audit documents that had been filled in by another auditor for certified pork and veal production.
23. In theory, certifying firms are requested by accreditation authorities to prove through the proper recording by auditors in their audit documents that all control points were reviewed.
24. In another certification scheme, the GlobalGAP standard, farmers are requested to send a "self-checklist" before the audit as a tool for the auditor to check what has changed since the last audit, allowing a more selective approach without asking questions and rechecking noncritical items and thus shortening audit duration.
25. This is a major difference from mandatory regulatory public inspections, for which regulatory enforcement is primarily based on a command-and-control logic and sanctions (Khanna, 2001), defining the optimal level of sanctions to discourage opportunistic behavior, the optimization of control frequencies (Spaeter & Verchere, 2004), and control strategies, such as filtering (Rousseau, 2010), or as firm targeting versus random control strategies (Friesen, 2003).
26. Maxime and Mazé (2006) also demonstrated through an analysis of training sessions in audits delivered to groups of local agricultural advisors and cooperative technicians that a better understanding of the aim of the audit and of the nature of auditing practices also transformed the content and the methods of advising farmers.
27. The organizational constraints include the following (a) the availability of appropriately trained auditors able to perform appropriate risk analysis (The usual fee applied for a controller is €400-500/day and €800-1,000/day for an auditor.) and (b) multiple accreditations for the different certifications, which are costly procedures. The accreditation costs for certifying bodies in France are evaluated at €838 for initial fixed accreditation costs (with more than €305 for each additional extension) and annual fees of €829 (in addition to €2,000 for auditing costs).

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