Technical advisors and technical inspectors for the development of organic agriculture: professional profiles and job issues.

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Abstract

The development of organic farming is one of the drivers for the green transition envisaged by the European Union. Strengthening the network of technicians and dissemination services along the chain is a turning point to achieving this objective. Preliminary interviews with technicians specialised in organic farming have shown that the work of advisors and technical inspectors is not always associated with adequate satisfaction levels. Considering the scientific literature, we conducted an empirical online survey about these issues. This paper used selected variables relating to respondents' characteristics, work activities, and job satisfaction to analyse frequencies and degrees of association between variables. Results showed positive satisfaction levels with remuneration, the possibility of bringing out personal and professional qualities, and work autonomy, except for high-stress conditions and excessive responsibility. In addition, measuring the association between variables made it possible to identify the variables influencing satisfaction levels. The deepening of the developed analyses could bring to identify strategies to promote technicians' work.

Keywords Organic Agriculture, Extension Services, Job Satisfaction

JEL code Demand and Supply of Labor: Safety; Job Satisfaction; Related Public Policy J28 – Particular Labor Markets: Agricultural Labor Markets J43 - Agriculture Q01 – Environmental Economics: Ecological Economics: Ecosystem Services; Biodiversity Conservation; Bioeconomics; Industrial Ecology Q57

1. Introduction

Agri-environmental measures were officially introduced in 1992 with the reform "Mac Sharry" of European Agricultural Policy, gradually affecting the competitiveness of the organic sector (Dabbert et al., 2004). Currently, the development of organic farming is one of the drivers for the green transition envisaged by the European Union, as it represents a productive method aimed at food production using natural substances and processes. Thus, the organic supply chain adds value to the land by contributing to the production of eco-friendly goods and services and involves the use of techniques to make effective use of natural resources, conserve biodiversity, improve soil fertility, and avoid water resources depletion (European Commission, 2022; Polidori, 2003). For aforementioned, organic management and cultivation techniques are appropriately regulated to ensure complete transparency by introducing a control system that covers the entire supply chain from production to marketing.

The European Union has set a goal of reaching 25% of agricultural land for organic farming by 2030. In the European context, the countries that have contributed the most to the organic area over the years are confirmed to be France, Spain, Italy, and Germany (Willer et al., 2022). Italy is not far from this goal. Italy's organic UAA (Utilised Agricultural Area) is approximately 2.18 million hectares, reaching 17.4% of the total national cultivated area in 2021 (Ismea, 2022). Also, within the national context, the Sinab (National Organic Farming Information System) report highlights that the Italian regions that rank the highest in organic agriculture are Sicily, Apulia, Calabria, Tuscany, and Emilia-Romagna.

To achieve these sustainability challenges and increase the number of companies entering or operating in the organic agri-food chain, however, it is necessary to strengthen the network of technicians and dissemination services that professionally support farms and companies along the chain (Cerf & Hemidy, 1999; European Commission, 2019; Van Oost, 2019). Considering the changing agricultural scenario, developing, carrying, and disseminating new farming techniques is very important, and a primary European debate is about the measures that can accelerate agricultural innovation, achieve national food security, and build farmers' social capital (Klerxk, 2020; Sunita, 2020) through the European cross-cutting objective: promoting knowledge and innovation.

Regarding knowledge and innovation, Landini et al. (2021) have created a summary of agricultural extension objectives identified from a few references. Some of these are transferring agricultural technologies, skills, and knowledge, training farmers to use sustainable practices (Habtom, 2019; Swanson and Rajalahti, 2010; Zwane and Davis, 2017), and provision of relevant and current information to producers (Baloch and Thapa 2019; Ingram 2008). So, the farmers can obtain many

advisory and extension services on technical, economic, social, and environmental issues (Desjeux et al. 2012). Extension workers can hold different positions, and some researchers have highlighted the importance of these professional roles because they are a crucial part of the vast world of agricultural development. For this research, we proposed an analysis model of components linked to two organic agriculture actors: technical advisors and technical inspectors. During this experimental phase, we benefited from collaboration with the Italian National Association of Technical Consultants and Inspectors for Organic Production (ATBio).

In the case of the national organic sector, technical assistance services are offered by public agencies such as the region, semi-public services, agricultural organisations, and freelancers, who act as third-party figures to support farms which have chosen an organic and sustainable approach rather than a chemical one. Therefore, technical advisors capture farmers' needs and serve as a source of information for their decision-making processes (Cerf & Hemidy, 1999; European Commission, 2019), directing them toward a greater understanding of production techniques. On the other hand, technical inspectors, employees of private Certification Bodies, grant organic cultivation licenses and annually verify the reliability and compliance with current regulations through appropriate sampling.

Technicians also play a political role by connecting public authorities and operators (Canavari, 2010). A uniform system throughout the European Union follows inspections of the entire organic production chain (plant crops, animal farms, processing activities, and others). (Vitulano, 2007). By providing all these services, technicians are crucial in promoting rural development and supporting the transformation to organic farming (Baiyegunhi et al., 2019; Kassem et al., 2021). For this reason, they enhance their perception, knowledge, and skills will allow them to transfer efficiently the wealth of experience that they have and improve farmer performance (Alotaibi et al., 2021; Anesukanjanakul et al., 2019; Desjeux et al., 2012). These attributes influence job satisfaction in different ways. Some authors examined the role of knowledge and the overload of extension workers in the agricultural sector and showed that job satisfaction influences job performance (Anesukanjanakul et al., 2019). In a long time scientific literature, papers that analyse job satisfaction (e.g., Bakker & Demerouti, 2017; Hackman & Lawler, 1971; Rhodes, 1983; Sverke et al., 2002; Yadav et al., 2022) are mainly in the corporate or social services field. Locke defined job satisfaction as "a pleasurable or positive emotional state resulting from the appraisal of one's job or job experiences" (Locke, 1976). However, it is also considered a multidimensional system of interrelated psychological responses to work performed, and these responses are conditioned by cognitive, affective, or behavioural components (Hulin & Judge, 2003).

The research goal has been to express how technicians experience, feel, and appreciate their working conditions and how they work. However, our preliminary interviews carried out as part of the planned research activity have proven that the work of organic technical advisors and inspectors is not always associated with adequate job satisfaction levels. Therefore, we realised that this could be a bottleneck holding back the development of organic farming. In the case of the organic sector, further factors to be analysed are indeed represented by the multiplicity and characteristics of the companies involved in the entire supply chain, from farm to fork, and by the contractual relationship that binds advisors and technical inspectors with companies in the organic sector. As a result, we considered it necessary to conduct an empirical online survey about the level of satisfaction of technical advisors and inspectors with their job. In this research, we have investigated the job satisfaction topic from different points of view. These are: a) remunerative satisfaction; b) personal and professional satisfaction referred to a type of tasks, relationship with clients, work environment, feedback received, emotions from one's work, personal growth, and others; c) job autonomy satisfaction referred to the place of work, the order in which tasks are completed, the possibility to have more control over work activities, or even the freedom to decide when and where to work. Job autonomy also refers to the degree to which the job provides substantial freedom, independence, and discretion to the individual in carrying out one's job (Hackman & Oldham, 1976); d) responsibility; and e) stress levels. Satisfaction levels can depend on many variations. For example, different researches showed how the degree of job autonomy enhances job satisfaction (Deci, 2008; Gagnè, 2005; Hofmans, 2013; Moran, 2012; Van den Broeck, 2013), also considering socio-environmental features and job environment (Prieto et al., 2022).

For our research, we also considered essential investigation components. These were agricultural technicians' characters, work attitudes and management, services provided, and workload perception. Our analysis focuses on the relationship between the selected independent variables and the dependent ones related to job satisfaction. In addition, thanks to this analysis, we have identified the variables that influence satisfaction levels. The deepening of the developed analyses could bring to identify strategies to promote technicians' work.

2. Materials and Methods

The literature review developed in the previous paragraph made it possible to circumscribe the investigation field and define the research objective.

2.1 Investigation

An online interview was adopted to collect respondents' quantitative and qualitative data. The three steps that led to the complete questionnaire implementation were: design, drafting, and verification. During the questionnaire design, we defined the target respondents as two professional figures: technical inspectors and advisors.

Therefore, we listed the variables to be measured, determined, formulated, and ordered the questions (Crawford, 1990; Istat, 2017; Sudman et al., 1973). Concerning the questionnaire framework, all the questions had to be understandable to respondents and convertible into statistical variables (Istat, 2017). The questionnaire included 42 questions, organised into 12 specific sections. The first sections covered the personal characteristics, the training and the professional activities performed by the respondents, the geographical area and specialisation of job activities, and the types of farms or companies assisted. Afterwards, we asked technicians about their opinions regarding the evolution and sustainability of workloads over time.

We have included a Likert-type scale to measure the technician's job satisfaction levels to complete the questionnaire. The self-assessment form on satisfaction/ dissatisfaction levels was a mainstay for the research because the questions later represented the dependent variables in the data processing stage. The Likert-type items concerned: economic satisfaction for living needs; satisfaction for the degree of job autonomy; the ability to express personal and professional qualities; and the degree of satisfaction/dissatisfaction with the stress and level of responsibility required. The Likert items had five response options: "totally disagree", "enough disagree", "neither agree nor disagree", "enough agree", and "totally agree".

Ultimately, we have decided to include questions about the courses or workshop participation, the technicians' work shadowing with young trainees, and to which degree digitisation affects the organic sector. Considering the objective of this paper, these questions were not considered during data processing. One hundred sixteen agri-food technicians participated in the survey, completing the questionnaire.

A preliminary questionnaire draft was discussed and tested with prominent members of the association ATBio (National Association of Technical Consultants and Inspectors for Organic Production), which protects, enhances, and trains its associates. Numerous technicians adhere to ATbio, and the association also helped us to get in touch with them by sharing the link to the online questionnaire. The online questionnaire version was developed using Google Forms and forwarded to technicians. In addition, the participating technicians were asked to forward the link to the questionnaire to other technicians, even if they did not belong to ATBio, thus activating a snowball

process. The connection with ATBio also allowed us to repeatedly contact the technicians to solicit their participation in the survey to reduce the risk of a low redemption rate.

2.2 Data processing

This contribution presents the first results of the previously described survey. Therefore, processing data activities developed so forth are essentially descriptive and exploratory. The data processing concerned a subset of the collected data. We focused mainly on two types of variables: on the one hand, those relating to the characteristics of the respondents and their work activity, and on the other, the variables relating to the degree of satisfaction or dissatisfaction with the job itself. In the following table, we reported the list of the variables analysed and whether they are nominal, dichotomous or ordinal.

Table 1 - Analysed variables[1]

Respondents' characteristics and work activities		**Satisfaction levels (all ordinal)**
Educational qualification	Ordinal	Job remuneration
Specialisation field	Nominal	Job autonomy
Professional activities	Ordinal	Personal/professional satisfaction
Working localisation	Dichotomous	Job stress
Specialisation of activities	Nominal	Responsibility
Workload evolution	Ordinal	
Workload h/w	Ordinal	
Workload sustainability	Dichotomous	

[1] see Appendix A1 for a full explanation.

At first, we calculated the frequencies with which the modalities of each attribute manifested themselves in the sample. For example, in the paragraph relating to the results, the percentage of respondents with a master's degree appears accordingly. Particular attention must be paid to the variable relating to professional activities. Indeed, the technicians interviewed all work as freelancers, and many carry out more than one activity simultaneously, relating both to the organic farming production system and other kinds. As a result, the absolute frequencies relating to professional activities are higher than the number of respondents, and the total percentage is higher than 100.

The planned elaborations subsequently envisaged a verification of the degree of association between pairs of variables. In particular, forty pairs of variables were considered, formed by the eight variables

relating to the characteristics of the interviewees and their work activities and by the five variables relating to their degree of satisfaction or dissatisfaction with the work.

The verification was based primarily on calculating traditional statistical indicators: Pearson's chi-square and the chi-square likelihood ratio to verify a generic association level for all pairs of variables. Further statistical indices were then calculated with the nominal, dichotomous, or ordinal nature of the variables relating to the characteristics of the interviewees and their work activity. The Contingency coefficient, Phi (coefficient) and Cramér's V, Lambda, Goodman and Kruskal's tau, and Uncertainty coefficient were calculated for nominal or dichotomous variables. In the case of ordinal variables, we computed Gamma, Kendall's tau-b, Kendall's tau-c, and Somers'd.

3. Results

3.1 Univariate analysis

Table number 2 shows part of the results of the univariate analysis. Considering social and educational characteristics (Table 2, points A - B), 70.69% of technicians acquired a master's degree, and the main selected specialisation category is agriculture science (74.14%), followed by animal production, forestry and environmental sciences, and food technology. From the perspective of professional activities, the technical inspectors are the most numerous, representing about 78.45% of respondents, while the consultants are 50.00% (Table 2, point C). Indeed, many respondents accomplish two or more activities: 25.86% also work as teachers or farmers, and 18.96% perform training in organic farming.

The technicians interviewed perform their work activities in different Italian regions or areas and abroad (Table 2, point D). Many technicians (40.52%) operate at the regional level, mainly in Tuscany, Emilia-Romagna, and Sicily, but most operate in broader (59.48%), over-regional areas. Central Italy, North-East, and North-West Italy are the more frequent operational areas.

The activities performed by technicians sometimes involve just one productive chain or even a single phase of it. Some technicians, for example, are specialised in counselling farmers about organic milk production, but other technicians develop transversal activities. Specifically, 50.86% of respondents focus their activities on specific productive processes, mainly at the farm level (Table 2, point E). This percentage includes three different answers: 1. those who engage in sectorised activities; 2. those who do not engage in sectorised activities but have nonetheless acquired various professional skills; 3. those who engage in specific production directions but not through sectorised activities. The farms most frequently representing their customers specialise in arable crops, fruit growing, viticulture, and olive growing. Few technicians support food processing companies. However, many technicians

(49.14%) perform transversal activities, interfacing with different types of companies and productive processes.

Table 2. Technicians' characteristics and professional activities: relative frequencies

Sample characteristics	**% of 116 respondents**
A. Educational Qualification	
PhD	6.03%
Master degree	70.69%
Bachelor degree	5.18%
High school degree	16.38%
Other	1.72%
B. Specialisation field	
Agricultural science	74.14%
Animal production	7.76%
Forestry and environmental sciences	6.03%
Food technology	5.17%
Other	6.90%
C. Professional activities (possible multiple choice)	
Technical inspector	78.45%
Technical consultant	50.00%
Other activities (teacher or farmer)	25.86%
Organic agriculture trainer	18.96%
D. Working localisation	
Activity concentrated in a single region	40.52%
Activity concentrated in several regions	59.48%
E. Specialisation of activities	
Transversal work activities	49.14%
Activities for specific production industries	50.86%

Table 3. Technicians' view about workload: relative frequencies

Sample characteristics	% of 116 respondents
A. Workload evolution	
Large increase	50.00%
Mild increase	25.86%
Unchanged	10.35%
Mild reduction	9.48%
Large reduction	4.31%
B. Workload h/w	
> 50 h	31.90%
30 - 50 h	62.07%
< 30 h	6.03%
C. Workload sustainability	
Workload sustainability	69.83%
Workload unsustainability	30.17%

Regarding workload evolution (Table 3, point A), the responses show that for 75.86% of technicians, workloads have increased in the long run (50.00% large increase and 25.86% mild increase), while only 13.79% (9.48% mild reduction and 4.31% large reduction) of technicians consider them to have decreased. In the middle, 10.35% of respondents answered that the workloads are more or less stable. Concerning weekly working hours, the technicians state three different job situations (Table 3, point B): 6.03% of them work less than 30 hours per week, 31.90% more than 50 hours per week, and 62.07% work 30 to 50 hours per week.

Regarding the sustainability of the present workload in the long run, 30.17% of technicians define workload as unsustainable in the long run. Even if it involves a minority of interviewed technicians, this symptom of dissatisfaction should not be underestimated, as it detects an inefficiency of the bioAKIS. Considering their experience, technicians highlighted the leading causes of unsustainable workloads in the following open question. The most frequent ones were excessive workload and increased bureaucracy. In addition, their proposed solutions were administrative simplification, business reorganisation and staff recruitment.

Table 4. Technicians' view about job satisfaction: relative frequencies

Satisfaction	Completely agree	Moderately agree	Neither agree nor disagree	Moderately disagree	Completely disagree
Job remuneration	12.07%	54.31%	12.93%	18.10%	2.59%
Job autonomy	26.72%	53.45%	12.07%	5.17%	2.59%
Personal/professional satisfaction	26.72%	52.59%	15.52%	5.17%	0%
Job stress	14.66%	35.34%	27.59%	14.66%	7.75%
Responsibility	20.69%	36.21%	24.14%	12.07%	6.89%

The last part of the univariate analysis concerns the satisfaction levels of technicians concerning their work. On the Likert scale, technicians could choose from 5 options, and relative frequencies are reported in Table 4. The overall responses show substantially positive opinions.

The technicians somewhat satisfied with their remuneration are 54.31%, and those completely satisfied are 12.07%. In contrast, unsatisfied respondents account for 20.69% (18.10% moderately and 2.59% completely). Responses about job autonomy confirm favourable judgement. 80.17% of technicians (moderately and completely) agree that their job "allows them to feel autonomous for some decisions about the activities to do, how and when to do them". On the contrary, the negative answers are just about 8%. We can observe similar evaluations considering the answers about the possibility of bringing out one's personal and professional qualities. Moreover, no one technician gave an entirely negative answer.

Favourable judgments are somewhat overshadowed by assessments of stress levels and job-related responsibilities. Indeed, 50.00% of the interviewees complain that the job involves excessive stress levels (35.34% moderately and 14.66% completely), while about 57.0% (36.21% moderately and 20.69% completely) of the technicians feel the weight of excessive responsibilities.

3.2 Bivariate analysis

The bivariate analyses highlighted the existing links between the characteristics of respondents and their work activities, on the one hand, and the levels of job satisfaction, on the other. Appendix A2 reports all the significant statistical indicators, and there it is possible to verify how these links are not always present if we consider the 40 pairs of variables mentioned in the paragraph relating to the

methodology. Proceeding in order and considering first of all the variables relating to the characteristics of the respondents and the activities carried out, the following can be observed.

Educational qualification:

It is not significantly associated with the interviewees' satisfaction level. The lack of this connection is not too surprising for those who know the labour market in Italy, especially about jobs that require bachelor's or master's degrees, since the studies carried out rarely have an immediate reflection on the work activities carried out subsequently.

Specialisation field:

It is not significantly associated with the level of satisfaction that the interviewees show about job remuneration, job autonomy and job responsibilities. On the other hand, the Lambda values suggest a relationship between specialisation and the possibility of bringing out personal and professional qualities and between specialisation and the stress level associated with work activity. Furthermore, the values assumed by the statistical indicators have a moderate significance level, so it is challenging to draw relevant indications about the link between specialisation and satisfaction.

Professional activities:

The analysis highlighted a high level of association between satisfaction with earnings and the opportunity and ability of technicians to carry out multiple activities, thus valuing their skills and avoiding an excessive repetitiveness of their activities. Almost all the statistical indicators show significant values concerning this pair of variables, with significance ranging between 95% and 99%. However, the degree of association between the number of professional roles assumed and the other variables relating to the degree of satisfaction of the technicians are not significant.

Working localisation:

No association was found between this variable and those related to technicians' satisfaction.

Specialisation of activities:

The degree of specialisation of the activities carried out shows a good association with the level of satisfaction regarding working autonomy. In particular, the statistical indicators and the distribution of frequencies show generalised high satisfaction levels and that the technicians mainly dedicated to specific production lines register higher satisfaction levels. On the other hand, there does not seem to be any connection between the level of specialisation and other variables related to job satisfaction.

Workload evolution:

As was expected, there is a direct link between the perception of the evolution of workloads and the variables relating to work stress and job responsibilities. All the relative statistical indicators, especially those relating to stress, are highly significant. The statistical indicators do not show an association with satisfaction about earnings, contrary to what was expected and desirable. Therefore, perceptions about higher workloads have not been matched by perceptions about a pay increase.

Workload h/w:

The actual workload, measured by intervals of working hours per week, also shows a relationship with the variables relating to levels of work stress and responsibility. Compared to what we have seen regarding the evolution of workloads, the associations between variables are less clear-cut in this case, which is compatible with the intellectual nature of consultancy or inspection work.

Workload sustainability:

The assessment of the sustainability of current workloads over time shows a significant or very significant association with the variables relating to economic satisfaction and the opportunity to bring out one's qualities, as well as to the variable relating to work stress. As expected, the technicians considering their current workloads sustainable over time, tend to be more satisfied with their remuneration. Similarly, the interviewees who declare themselves satisfied with the possibility of bringing out their qualities more frequently judge their workload to be sustainable. The relationship between the perceived excessive stress and the non-sustainability of workloads over time also aligns with expectations. It is interesting to observe how the sustainability (non-sustainability) of workloads corresponds to a substantially positive (negative) judgement concerning the three fundamental dimensions of work activity, i.e. income, professional satisfaction and the stress it follows.

4. Discussion and conclusions

The technical advisors and inspectors are committed to supporting organic farming, promoting its knowledge and dissemination, fostering relations between the players in the system and disseminating information to bring out the needs of farmers. This outstanding commitment is faced by an operational reality that is, after all, little known and little analysed. Through the analysis of scientific literature and field research, this contribution highlights some of the daily problems that technical advisors and inspectors face in their work activities and provides a first assessment of their satisfaction with their work. Indeed, job satisfaction assumes particular importance if one considers that the production system connected to organic farming is called upon to achieve the objectives that the European Union has set itself on the subject.

The first aspect to underline is that the activities of technical advisors or inspectors are not carried out, in most cases, as a full-time activity. Operating as freelance professionals, many of the technicians interviewed carry out both activities, albeit working for different companies. Moreover, some technicians combine the two activities of our interest with other activities. Some are trainers (generally on organic farming topics), teach (mainly in high schools), or directly manage farms. It is important to underline how the technicians who divide their time into several activities record the same levels of job satisfaction compared to technicians who deal exclusively with consultancy or inspection activities. An exception is the level of satisfaction with remuneration, which is indeed lower for those who carry out more than one activity. Investigating whether this partial dissatisfaction is due to lower remuneration or higher expectations would be interesting.

Regardless of the roles currently held by the interviewees, the educational background of the interviewees highlights a high level of preparation, so much so that technicians with a two-year master's degree prevail. Thus, we can argue that the organic farming system has been able to attract and recruit high-level technical profiles and can therefore count on high-value human capital.

The issue of work organisation could be undoubtedly subject to further studies. However, the analysis relating to the type of work carried out has provided some initial clues regarding the working situation of the technical advisors and inspectors and the lines of research that could be useful to develop. The technicians who participated in the survey are divided equally between those who carry out transversal activities in all the production chains and those who carry out their activity in just one or a few production chains (for example, fruit and vegetable production or poultry production). This distribution is associated with a more or less high degree of satisfaction with work autonomy. In particular, those who carry out transversal activities are the least satisfied compared to those who can focus their activity on a single production chain. This evidence, as already mentioned, should be studied in depth. However, already here, it may be appropriate to hypothesise that transversal activities are characterised by a more significant burden of bureaucratic, routine work, which should be lightened or automated to dedicate the energies and skills of technicians to support farms and other companies involved in organic production.

Still, concerning the work organisation, it should also be noted that the answers provided to some questions are somehow contradictory. Most of the interviewees report an increase in the workload in recent years, but this does not seem to have led the technicians to work a very high number of hours, so much so that around two-thirds of the interviewees declared that they work between 30 and 50 hours per week, which appears perfectly in line with work standards, especially if we consider the seasonality of agricultural production. The evaluations regarding the sustainability of the current

workloads also provide a positive picture of the working situation of technicians. Overall, these values and the apparent contradiction find two possible explanations: a) the growth of workloads has allowed the full employment of technicians who were previously underemployed; b) the productivity of the technicians themselves has grown over time. However, if we analyse the responses in detail, we realise that a core of technicians, equal to about a fifth of the respondents, express positions different from the "average" ones. These technicians complain of solid growth in the workload, working hours exceeding 50 per week and the unsustainability of the current workloads over time. These technicians represent a critical area for the production system, which must find a way to enhance their skills and reduce the degree of stress. It is no coincidence that the bivariate analysis highlighted the connection between the work stress declared by the interviewees and the variables relating to the workload.

The survey results therefore confirmed what has been highlighted in the literature, i.e. the importance of verifying the levels of job satisfaction of technical advisors and inspectors, which can condition the quality and effectiveness of their work performance. The research carried out has allowed a first "subjective" view of the technicians' work, and the results can represent the basis for analysing the limits and strengths to be addressed in order to improve the technicians' relationship with their work and, consequently, with the agricultural enterprise, as advocated in the literature examined.

Although preliminary, the results discussed allow us to hypothesise some strategic areas of action where to invest in providing added value to the figure of the technician. We are thinking of a series of possible reorganisations, which should affect: 1) the planning of training activities (training and long live learning) to provide more specialised knowledge and skills; 2) the reorganisation of training services to accompany the growth of the organic sector and to guarantee the generational turnover of technical support services; 3) the professional practices of technicians and the development of methods to optimise their activities, according to what emerged from the survey; 4) the identification of more effective and pertinent tools to make the relationship between technicians and agricultural entrepreneurs more effective. A more precise definition of these reorganisation processes is believed to be the object of future research, to be carried out with the help of all the players in the organic farming system.

References

- Alotaibi, B.A., Yoder, E. & Kassem, H.S. (2021) Extension Agents' Perceptions of the Role of Extension Services in Organic Agriculture: A Case Study from Saudi Arabia. *Sustainability*, 13, 4880. Doi: 10.3390/su13094880

- Anesukanjanakula, J., Banpotb, K. & Jermsittiparsertc, K. (2019) Factors That Influence Job Performance of Agricultural Workers, *International Journal of Innovation, Creativity and Change*. 7(2), 71 – 86.

- Baiyegunhi, L., Majokweni, Z. & Ferrer, S. (2019) Impact of outsourced agricultural extension program on smallholder farmers' net farm income in msinga, kwazulu-natal, south africa. *Technol. Soc.*, 57, 1–7. Doi: 10.1016/j.techsoc.2018.11.003

- Bakker, A.B. & Demerouti, E. (2017) Job demands-resources theory: Taking stock and looking forward. *Journal of Occupational Health Psychology*, 22(3), 273-285, 1629. Doi: 10.1037/ocp0000056

- Baloch, M. & Thapa, G. (2019) Review of the Agricultural Extension Modes and Services with the Focus to Balochistan, Pakistan. *Journal of the Saudi Society of Agricultural Sciences*, 18(2), 188–194. Doi: 10.1016/j.jssas.2017.05.001

- Canavari, M., Cantore, N., Pignatti, E. & Spadoni R. (2010) Role of certification bodies in the organic production system. *Looking east, looking west. Organic and quality food marketing in Asia and Europe.* Wageningen Academic Publishers, Netherlands. 85 – 99 ref.30. ISBN: 9789086860951

- Cerf, M. & Hemidy, L. (1999) Designing Support to Enhance Co-Operation between Farmers and Advisors in Solving Farm-Management Problems. *The Journal of Agricultural Education and Extension*. Doi: https://doi.org/10.1080/13892249985300301

- Crawford, I. M. (1990) Marketing Research Centre for Agricultural Marketing Training in Eastern and Southern Africa. Harare Zimbabwe.

- Dabbert, S., Haring, A.M. & Zanoli, R. (2004), Organic Farming. Policies and Prospects. Zed Books. London. ISBN:1842773275

- Deci, E.L. & Ryan, R.M. (2008) Self-determination theory: A macro theory of human motivation, development, and health. *Canadian Psychology / Psychologie canadienne* 49 (3), 182. Doi: https://doi.org/10.1037/a0012801

- Desjeux, Y., Faure, G. & Gasselin, P. (2012) New Challenges in Agricultural Advisory Services from a Research Perspective: A Literature Review, Synthesis and Research Agenda. *The Journal of Agricultural Education and Extension*, 18(5). 461-492. Doi: 10.1080/1389224X.2012.707063

- European Commission (2019) Building stronger agricultural knowledge and innovation system (AKIS) to foster advice, knowledge and innovation in agriculture and rural areas. Available at: https://ec.europa.eu/eip/agriculture/en/news/building-stronger-akis. Last accessed 18 December 2022.

- European Commission (2022) L'agricoltura biologica in sintesi Available at: https://agriculture.ec.europa.eu/farming/organic-farming/organics-glance_it. Last accessed 15 January 2023.

- Gagné, M. & Deci, E.L. (2005) Self-determination theory and work motivation. *Journal of Organizational Behavior*, 26 (4), 331–362. Doi: 10.1002/job.322

- Habtom, G. (2019) An Overview of the Challenges of Decentralized Agricultural Extension Practice in Developing Countries: The Case of Eritrea. *International Journal of Public Administration*, 4 (3), 45–66.

- Hackman, J.R. & Lawler, E.E. (1971) Employee reactions to job characteristics. *Journal of Applied Psychology*, 55 (3), 259-286. Doi: 10.1037/h0031152

- Hackman, R. & Oldham, G.R. (1976) Motivation through the design of work: test of a theory. *Organisational Behavior and Human Performance*, 16 (2), 250-279. Doi: 10.1016/0030-5073(76)90016-7

- Hofmans, J., De Gieter, S. & Pepermans, R. (2013) Individual differences in the relationship between satisfaction with job rewards and job satisfaction. J. Vocat. Behav, 82 (1), 1–9. Doi: 10.1016/j.jvb.2012.06.007

- Hulin, C. L. & Judge, T. A. (2003). Job attitudes. *Handbook of psychology: Industrial and organisational psychology*, 12, 255–276.

- Ingram, J. (2008) Agronomist–Farmer Knowledge Encounters: An Analysis of Knowledge Exchange in the Context of Best Management Practices in England. *Agriculture and Human Values*, 25(3), 405–418. Doi: 10.1007/s10460-008-9134-0

- Istituto di Servizi per il Mercato Agricolo Alimentare, Ismea (2022) Appuntamento con il Bio: l'agricoltura biologica del futuro. Available at: https://www.ismea.it/flex/cm/pages/ServeBLOB.php/L/IT/IDPagina/11843. Last accessed 7 December 2022.

- Istituto Nazionale di Statistica, Istat (2017) Guida alla compilazione del questionario. Available at: https://www.istat.it/it/files/2013/04/Guida-alla-compilazione-del-questionario-2017.pdf?title=Posti+vacanti+e+ore+lavorate+-+03%2Fapr%2F2017+-+Guida+alla+compilazione+questionario-Italiano.pdf. Last accessed 15 December 2022.

- Kassem, H.S., Alotaibi, B.A., Muddassir, M. & Herab, A. (2021) Factors influencing farmers' satisfaction with the quality of agricultural extension services. Eval. Program Plann, 85, 101912. Doi: https://doi.org/10.1016/j.evalprogplan.2021.101912

- Klerkx, L. (2020) Advisory services and transformation, plurality and disruption of agriculture and food systems: towards a new research agenda for agricultural education and extension studies. The Journal of Agricultural Education and Extension, 26(2), 131-140. Doi: 10.1080/1389224X.2020.1738046

- Landini, F., Turner, J.A., Davis, K., Percy, H. & Niekerk, J.V. (2021) International comparison of extension agent objectives and construction of a typology. The Journal of Agricultural Education and Extension, 28(4), 415-437. Doi: 10.1080/1389224X.2021.1936091

- Locke, E.A. (1976) The Nature and Causes of Job Satisfaction. In: Dunnette, M.D., Ed., *Handbook of Industrial and Organizational Psychology*, 1, 1297-1343.

- Moran, C.M., Diefendorff, J.M., Kim, T.Y. & Liu, Z.Q. (2012) A profile approach to self-determination theory motivations at work. *Journal of Vocational Behav*, 81(3), 354–363. Doi: 10.1016/j.jvb.2012.09.002

- Polidori, R. (2003) Sviluppo, ambiente, territorio: il metodo produttivo biologico. *AESTIMUM42*, 1-30.

- Prieto, L., Amin, M.R. & Canatay, A. (2022) Examining Social Sustainability in Organisations. *Sustainability (Switzerland)*, 14(19). Doi: 10.3390/su141912111

- Rhodes, S.R. (1983) Age-related differences in work attitudes and behavior: A review and conceptual analysis. *Psychological Bulletin*, 93(2), 328-367, 584. Dai: 10.1037/0033-2909.93.2.328

- Sudman, S. & Bradburn, N. M. (1973) Asking Questions, 208 - 28.

- Sunita, R. (2020) Agricultural Extension Agents and Challenges for Sustainable Development. *Sustainable Business Practices for Rural Development:The Role of Intellectual Capital*. 6, 93 - 119. Doi: 10.1007/978-981-13-9298-6_6

- Sverke, M., Hellgren, J. & Näswall, K. (2002) No security: A meta-analysis and review of job insecurity and its consequences. *Journal of Occupational Health Psychology*, 7(3), 242-264, 1169. Doi: 10.1037/1076-8998.7.3.242

- Swanson, B., & R. Rajalahti (2010) Strengthening Agricultural Extension and Advisory Systems: Procedures for Assessing, Transforming, and Evaluating Extension Systems. *Agriculture and Rural Development Discussion Paper.* The World Bank. http://hdl.handle.net/10986/23993

- Van den Broeck, A., Lens, W., De Witte, H. & Van Coillie, H. (2013) Unraveling the importance of the quantity and the quality of workers' motivation for well-being: A person-centered perspective. *Journal of Vocational Behavior*, 82(1), 69–78. Doi: 10.1016/j.jvb.2012.11.005

- Van Oost, I. (2019) EIP AGRI and perspectives for AKIS in the CAP post 2021-2027. Unit B2 – Research & Innovation.

- Vitulano, S. (2007) Il quadro di riferimento normativo e istituzionale. Le politiche per l'agricoltura biologica in Italia. FrancoAngeli, 23 – 34. ISBN: 9788846489852

- Willer, H., Trávníček, J., Meier, C. & Schlatter, B. (2022) The World of Organic Agriculture, FiBL & IFOAM Organics International.

- Yadav, A., Pandita, D. & Singh, S. (2022) Work-life integration, job contentment, employee engagement and its impact on organisational effectiveness: a systematic literature review. *Industrial and Commercial Training.* 54(3), 509-527. Doi: 10.1108/ICT-12-2021-0083

- Zwane, E. & Davis, K. (2017) Extension and Advisory Services: The African Renaissance. *South African Journal of Agricultural Extension*, 45(1), 78–89. Doi: http://dx.doi.org/10.17159/2413-3221/2017/v45n1a437

Table A1 – Variables' short names, actual questions, and possible answers

Short Name	Question	Answers
Educational qualification	Define your educational qualification	High school degree
		Bachelor degree
		Master degree
		PhD
Specialisation field	Define the field of specialisation of your major (e.g., agriculture)	Agricultural science
		Animal production, forestry, environmental sciences, food technology
		Other
Professional activities	What professional activities do you usually do? (You may also select more than one option)	Technical consultant
		Technical inspector
		Organic agriculture trainer
		Other activities (teacher, farmer, other)
Working localisation	Is your work activity concentrated in one region?	Yes, activity concentrated in a single region
		No, activity concentrated in several regions
Specialisation of activities	Is your professional activity about a specific value chain (e.g., fruit growing, animal husbandry or food processing)?	Yes, the activities are sectorised
		Yes, even if the activities are not sectorised
		No, the activities are cross-functional
		No, the activities are sectorised, but I have acquired different skills/professional expertise
Workload evolution	How much have the workloads related to consulting/inspection changed over the years?	They have significantly reduced
		They have slightly reduced

		They have remained unchanged
		They have slightly increased
		They have significantly increased
Workload h/w	On average, how many working hours per week do you devote to your job (considering ALL activities performed)?	< 30 h
		30-50 h
		> 50 h
Workload sustainability	Are current workloads sustainable over time?	Yes
		No
Level of satisfaction with the job		
Job remuneration	The job satisfies me economically	Completely agree Moderately agree Neither agree nor disagree Moderately disagree Completely disagree
Job autonomy	I am satisfied with the level of job autonomy	
Personal/professional satisfaction	The job satisfies me professionally and personally	
Job stress	The job requires a high level of stress	
Responsibility	The job requires a high level of responsibility	

Table A2a – Statistical indicator of the association between variables (nominal x ordinal)

Respondents' characteristics and work activities	Satisfaction levels	Pearson Chi-Square	Likelihood Ratio	Lambda	Goodman & Kruskal tau	Uncertainty Coefficient	Phi	Cramer's V	Contingency Coefficient
Specialisation field	Personal/professional sat.			.55					
	Job stress			.80					
Specialisation of activities	Job autonomy	21.06	21.49*		.68**	.78*	.426*	0.246*	0.392*
Workload sustainability	Job remuneration	9.64*	10.23*		.21*	.35*	.288*	.288*	.288*
	Personal/professional sat.	14.19**	14.07**	0.44	.03**	.05**	.35**	.35**	.33**
	Job stress	25.97**	27.28**		.05**	.08**	.47**	.47**	.43**

Table A2b – Statistical indicator of the association between variables (ordinal x ordinal)

Respondents' characteristics and work activities	Satisfaction levels	Pearson Chi-Square	Likelihood Ratio	Somers' d	Kendall's tau-b	Kendall's tau-c	Gamma	Spearman Correlation	Pearson's R
Professional activities	Job remuneration	18.94		-.18*	-.18*	-.16*	-.28*	-.21*	-.22*
Workload evolution	Job stress	33.15**	35.63**	.25**	.24**	.21**	.33**	.27**	.26**
	Responsibility	27.88*	.27.57*	.20*	.19*	.16*	.26*	.21*	.18
Workload h/w	Job stress			.19	.16	.15	.25	.18	.19*
	Responsibility	17.68*	18.63*						

Only values with a significance higher than .90 are showed
* Significance higher than .95
** Significance higher than .99