Agricultural Systems 162 (2018) 46–55

Contents lists available at ScienceDirect

Agricultural Systems

journal homepage: www.elsevier.com/locate/agsy

An application of Q-methodology to Mediterranean olive production – stakeholders' understanding of sustainability issues

Nathalie Iofrida, Anna Irene De Luca*, Giovanni Gulisano, Alfio Strano

Department of Agriculture (AGRARIA), Mediterranean University of Reggio Calabria, Feo di Vito, Reggio Calabria, Italy

ARTICLE INFO

Keywords:
Agricultural sustainability
Mediterranean olive growing
Stakeholders' perceptions
Q-methodology

ABSTRACT

Olive growing is one of the most significant sources of income for agricultural areas in the Mediterranean basin, and a characteristic element from environmental and landscape perspectives. Italy is the second largest producer of olive oil; this cultivation represents the nation's most important supply chain, especially in the southern Italian Calabrian region, contributing to both local and rural economies. However, in a Calabrian context, olive production underperforms due to structural and managerial weaknesses, and farming techniques' potential impacts are not properly addressed due to farmers' poor knowledge of agricultural sustainability techniques. Therefore, Calabrian olive growing requires innovation, especially to respond to new sustainability requirements, currently claimed by public policies (eco-conditionality), and consumers and citizens increasingly concerned with environmental quality, human health and social liveability. This paper analyses the aspects that require innovation towards sustainability aims by exploring the perceptions of various actors, including local and supply chain stakeholders, and highlighting and suggesting new pathways to be introduced in Calabrian olive growing. The application of a mixed qualitative/quantitative statistical method, or the 'Q-methodology', small and medium-sized farms, academic experts, technicians and consumers have been interviewed to investigate their perceptions and interpretations of sustainability issues. Further, their opinions on possible weaknesses and areas of improvement are examined, highlighting either a consensus or diversity regarding their points of view. The results indicated that all actors perceived a need to orient Calabrian olive growing towards more sustainable management practices by better exploiting its potential and focusing on product quality. Sustainable innovation, in this sense, would increase production efficiency and economic performance, thus satisfying the need for employment and fairer remunerations.

1. Introduction

Sustainable development has been gaining growing interest and concern in prior decades, specifically with regard to environmental protection and inherent socio-economic impacts. This can be observed in the evolution of development policies in many economic sectors; increasingly conscious consumer behaviours; and in the evolution of research topics in academia, generally oriented towards the creation of more sustainable production and consumption patterns. Agriculture is a principal sector that claims to be involved in sustainability concerns, as it is directly linked to the use of natural resources and impacts in terms of greenhouse gas emissions, soil quality degradation, water pollution, and repercussions for human health. Further, local communities' liveability is strongly affected by the agricultural economy in terms of incomes and employment, especially in rural areas (Food and Agriculture Organization - FAO, 2011; Benis and Ferrao, 2016). Agricultural sectors can be oriented towards more sustainable models of production and management, but evaluation tools must be provided that enable quantifying impacts and hotspots (Craheix et al., 2016). However, complex contexts, such as those that are agricultural or rural, must focus on several factors, which sometimes conflict. This is the case in, among others, environmental protections preserving farms profitability, decreasing production costs while respecting workers' rights, and in the increase of productive levels preserving consumers' health (De Luca et al., 2018; De Luca et al., 2017). Further, when agricultural systems are socially relevant in local communities, such as rural ones, the interests of different typologies of stakeholders should be considered; it is of the utmost importance to find compromises among conflicts, such as those concerning the access to resources for different productive, recreational, residential, or conservative uses (Pretty, 1995; Sinclair et al., 2007; Reed, 2008; De Luca et al., 2015; Hassenforder et al., 2015; Bockstael et al., 2016). Evaluation instruments for decision-makers, both public and private ones, should enable them to handle contrasting forces. Therefore, the management of conflicts in decision-making must

* Corresponding author.
E-mail address: anna.deluca@unirc.it (A.I. De Luca).

https://doi.org/10.1016/j.agsy.2018.01.020
Received 24 April 2017; Received in revised form 9 January 2018; Accepted 21 January 2018

involve actors in the decision-making and evaluation processes, especially in the case of local governances and bottom-up development models, as well as the analytical tools that facilitate these processes.

Scientific literature provides several participative and inclusive evaluation tools, applied in agricultural contexts. Stakeholders' degrees of participation can vary, from a simple opinion survey and data gathering (information), to the involvement of actors in empowerment and co-learning processes, which consist of the sharing and acquiring of new knowledge about evaluation models and their implementation, whether with or without the researcher (Johnson et al., 2003; Reed, 2008).

The 'Q-methodology' or 'Q-method' concept can be described as a 'qualiquantological' method (Watts and Stenner, 2012), as it is a hybrid method that allows the researcher to measure statistically (quantitatively) subjectivity or personal opinions (Stephenson, 1953; Ramlo and Newman, 2011; Howard et al., 2016; Spruijt et al., 2016; Weldegiorgis and Ali, 2016). The psychologist and physician Stephenson (1953) created this research method during the 1930s; he was a student of Spearman, the statistician who created the factorial analysis (Watts and Stenner, 2012).

The Q-methodology has sometimes been described as a qualitative social research method, but has been associated in other instances with quantitative methodologies because of its factorial analysis. The Q-methodology is presently considered by most as a mixed qualitative-quantitative method that allows not only for the conjugating of strengths from both quantitative and qualitative researches, but also to build a bridge between them (Brown, 1996; Ramlo and Newman, 2011; Bacher et al., 2014; Liu and Chen, 2013; Dziopa and Ahern, 2011). This method provides psychometric information that allows for the systematic studying of in-depth individual perspectives (Naspetti et al., 2014). It has been applied in various research fields since its development, such as psychology, policy-making, human health, education and operative research, among many others (Brown, 2005).

The present study aims to investigate stakeholders' perceptions and interpretations of the sustainability issues in agricultural contexts, with particular attention to Mediterranean olive growing systems. The purpose is to contribute to an understanding of olive growers' potential inclination towards innovative practices to enhance their farming systems' sustainability. A Q-methodology framework has been applied to obtain, examine and explain the differences in the stakeholders' viewpoints. The article is organized as follows: the second section describes the Q-methodology and provides detailed information on its application in the case study. The third section describes and discusses the obtained results. Conclusions are outlined in the final section, with a focus on both the distinctive elements and commonalities between the perspectives of the different actors interviewed about the pathways to follow to improve sustainability in Mediterranean olive growing.

2. Materials and methods

2.1. Q-methodology for the objective study of subjectivity

William Stephenson used a statistical framework from a factorial analysis to conceive the Q-methodology to cluster different 'ideas' systematically (Mandolesi et al., 2015), or 'to correlate persons instead of tests' (Stephenson, 1935:2). The Q-methodology is an inverted factorial technique that differs from the well-known R-method, as the former aims to measure the correlations between subjects in a sample of variables, instead of correlations between variables in a sample of subjects (Naspetti et al., 2014). Another distinction from other social research methods is that these latter typically consists of an analysis of data gathered from surveys according to categories selected ex ante, while the Q-methodology's result is a set of factors that explain (group) actors' perceptions, enabling their own arguments to emerge instead of being imposed upon by the researcher (Bacher et al., 2014).

At the academic level, the Q-methodology's usefulness is widely recognized in studying opinions, perceptions and subjectivity; however, Previte et al. (2007) highlight that this can be classified and defined in different ways, according to the ontological and epistemological positions underlying its application. In fact, many scholars emphasize this method's scientific robustness in analysing subjectivity phenomena, framing it into the realm of "science of subjectivity" (Goldman, 1999), as well as a method for the scientific study of human subjectivity (McKeown and Thomas, 1988). This emphasis on the method's scientific characteristics reflects Stephenson's positivist epistemological position (Previte et al., 2007).

Regarding its practical aspects, the Q-Methodology's application entails five principal steps (McKeown and Thomas, 2013):

1. 'Concourse' or the 'Q-universe' definition
2. 'Q-set' or the 'Q samples' development
3. "P-set" or "person-sample" definition
4. "Q-sort" gathering
5. Factorial analysis and interpretation

The 'concourse' is defined by the gathering of opinions, ideas, and perceptions from a population about an argument, which is obviously linked to the research objective (Previte et al., 2007; Van Exel and de Graaf, 2005). The 'concourse' is a technical concept that is not exactly coincident with the 'discourse', which indicate all possible opinions that interviewees can have about an argument (Van Exel and de Graaf, 2005); in contrast, the concourse is empirically developed (McKeown, 1998).

The sampling of the actors to be interviewed differs from other statistical methodologies, as the sample's proportionality is less important than its variety and breadth (Liu and Chen, 2013). The choice of participants should include subjects with knowledge and/or roles coherent with the field of study, and who are invited to freely expose their opinions, whether positive or negative (Bacher et al., 2014). Beyond direct interviews and participatory observations, the concourse can be developed through literature reviews, both scientific and grey, document analyses, and mass-media information. While qualitative research typically develops a set of hypotheses noted in the research's initial steps, the Q-methodology develops research questions, participants are not tested, and there is not an imposition of a priori concepts (Stainton Rogers, 1995; Previte et al., 2007).

The Q-set consists of a selection of topical sentences from the concourse, which will be used for the factorial analysis; this typically consists of 30 to 60 sentences, or a third of the entire concourse. The Q-set's selection is crucial, but primarily based on the researcher's discretion, through such unstructured or structured methods (McKeown, 1998), such as a review of affirmations, based on a given theory. Regardless of whatever structure is chosen, the researcher should select the most divergent opinions to obtain a heterogeneous Q-set, representative of variety instead of proportionality (Van Exel and de Graaf, 2005; Brown, 1980).

This step also allows for the reviewing and better defining of the research question. As actors are invited to freely express their opinion based on their personal experience, the Q-set appropriately represents the complexity of the system under study (Previte et al., 2007); many authors suggest that if this complexity is considerable, the interview should be guided with suggestions to actors and the avoiding of repetitions (Previte et al., 2007).

The P-set is a group of actors interviewed who represent the previously gathered opinions, and is smaller than the Q-set; the choice of the P-set is not random, as it is rather a structured sample of interviewees with knowledge about the topic, who can therefore define a factor (Van Exel and de Graaf, 2005). As with the Q-set, the P-set's development has theoretical significance: the Q-methodology does not involve the identification of possible causal relationships or of the distribution of opinions observed in a wider population; rather, it aims to identify and interpret subjective perspectives (Davis and Michelle,