Is the local agriculture related to the well-being of rural community today?
A case from Portugal, Southern Europe

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Abstract (250)
Well-being in rural areas is recognised as one of the primary goals of the European policies aiming at the sustainable development.
Rural settlements are closely connected with agricultural areas, and thus, it can be expected that local agriculture influences numerous aspects of rural life. However, the relations between local farming practices and well-being of rural community were up to date scarcely studied. Recent research indicates that especially the subjective well-being ought to be the measure of progress and should be the explicit objective of government intervention.
The aim of the study is to explore contemporary associations between the perceived qualities of the local agricultural characteristics and the self-reported levels of well-being by rural residents.
A quantitative survey was applied to rural residents in two municipalities in Southern Portugal. In these areas different development trajectories in agriculture can be observed during the recent years.
Results show significant associations between the perceived qualities of local agricultural characteristics and subjective well-being of respondents. The life satisfaction, happiness and the satisfaction with the municipality as a place to live were the measures of subjective well-being assessed. They were positively correlated with most of the studied perceptions about local food, farming practices, landscape, and the environment.
These findings highlight the importance of further research on existing and possible impact of local agricultural practices on the well-being of rural community, and the need to consider these associations in formulating agricultural and rural development policies.

Introduction

Rural Development

The Common Agricultural Policy aims at the “sustainability of European rural areas, including the well-being of rural society”. Accordingly, the European Rural Development programs are designed in the way to contribute to the social, economic and environmental well-being of rural areas and the sustainable management of natural resources. However, how specifically are the agricultural practices and their outputs associated with well-being of rural community in these days is known roughly, but a detailed knowledge in different territorial contexts is still to be explored.
Local agriculture is a complex multi-factorial activity, likely to have multiple impacts, direct as well as indirect on the well-being of those taking part, and also of those living in particular locality. According to the Millennium Ecosystem Assessment (2005), the farming systems represent a dominant land use in European rural areas and embody a vital role in the major aspects of rural life, such as environment, economy, and social relations. From an ecosystem point of view, agriculture can provide different services linked to human well-being. In that perspective, in recent years, a reconceptualization of the role of farming within the framework of wider rural development processes is acknowledged. The reconceptualization must account for, and simultaneously reflect, the substantial heterogeneity of Europe’s rural regions, thus allowing for adequate inputs into the

processes of policy formulation and implementation. At the same time, it must go beyond previous sectoral approaches, and it is to be “interdisciplinary and holistic”.

Contemporary Changing Agriculture and Rural Community

Looking at agricultural changes over last decades, the types of interaction between farming systems and the society are becoming more complex and diversified. Apart from food, farms can produce energy crops, or have environmental, cultural, and recreational functions. Simultaneously, a trend of agricultural modernization intensively involving irrigation water, fertilisers and other inputs is forming large-scale specialised farms. The area occupied by these farms is growing in Europe, bringing to rural territories new environmental, social and economic conditions, which are seen as being negative or at least uncertain in the ability to face future challenges.

The changes are also occurring at the social level. Many rural places have witnessed unprecedented change and transformation to local economies, property and rural politics (Jones et al. 2011). This has led to a dramatic reconstitution of rural populations, with fewer people engaged in agricultural production, but with a new demand for non-production functions of agriculture, as cultural identity, aesthetics, environmental quality, food quality, and recreation (Surová and Pinto-Correia 2016).

As farming can adopt different development trajectories, the knowledge about agricultural values contributing to the well-being of rural society should be of usefulness for policy formulations and implementation.

Some studies indicate that in those areas where the rural represents well-being and the opportunity to prosper, people are caring for that place and are trying to develop and enrich it further. In those other places, where well-being is small there is a critique, concern and a many-sided struggle to improve the overall condition (van der Ploeg and Roeg 2003).

Well-being and its influencers

The concept of well-being has evolved over the past decades as research has continued to reveal its multidimensional, dynamic, person-specific and culture-specific nature. Well-being or quality of life is part of a trend that evaluates progress using multiple factors rather than focusing on a limited view of financial or economic health (Preuss and Vemuri.2004). Recent research indicates that especially the subjective well-being of people ought to be the measure of progress and should be the explicit objective of government intervention (Diener 2000). What is specific about the concept of subjective well-being is that only the person under investigation can provide information on their evaluations, emotions and psychological functioning. It is people’s views that are the subject of interest (OECD 2011). Subjective well-being refers to people’s evaluations of their lives; it encompasses both cognitive judgments of satisfaction and affective appraisals of moods and emotions (Kesebir and Diener 2008; Pavot and Diener1993). Life satisfaction measures how people evaluate their life as a whole rather than their current feelings. It captures a reflective assessment of which life circumstances and conditions are important for subjective well-being. Often, the happiness is considered to be different from life satisfaction, even if these two measures are highly correlated. While the life satisfaction refers to a cognitive evaluation or judgment of one's life, happiness involves more affective components of SWB (Gamble and Garling 2012).

An influential body of literature discuss that the place where an individual is living doesn’t matter considerably in an increasingly mobile and virtually communicating society, and the place is losing its distinctiveness (Friedman 2007; Wellman 2001). On the opposite side, other studies are revealing that the location-specific factors have a direct influence on life satisfaction (Brereton et al. 2008). While there is a considerable amount of studies dealing with residential satisfaction in urban areas, these kind of studies are less explored in rural settlements.

Several researchers have been highlighting an influence of local environmental issues on subjective well-being. The multi-way relationships between environment and well-being were summarised by a New Economic Foundation in the UK (NEF 2005). Here, the environment is understood as the external physical conditions people live in and experience. Landscape, as an externality of agricultural practices in rural areas, can influence human well-being in manifold ways (Bieling et al. 2014).

To date, examples of studies into issues of well-being in the countryside tend to focus on particular subgroups of the rural population (e.g. farmers) or specific topics, such as stress or mental health, rather than an examination of wider life satisfaction concerns (Mzoughi 2014).
A neighbourhood satisfaction connected to the physical environmental qualities is also a critical component of the life satisfaction. (Sirgy et al. 2006). However, this relation needs more attention from the research (Kweon et al. 2010). The answer to the question why people like a place where they live is complex (Fitz et al. 2016). Some studies in urban areas show that the Green spaces, such as local parks, appear to promote well-being in many ways. They facilitate outdoor exercise, which has been found to have even more positive mental health benefits than the exercise of other kinds (Pretty et al. 2005). They can also have important effects on social capital at the community level through giving people a place to meet, and children to play (Marmot et al. 2010). The connections between farming types and activities promoting health or social capital are currently relevant also in rural areas.

The aim of the study is to explore contemporary associations between the perceived qualities of the local agricultural characteristics and the self-reported levels of well-being of rural residents. We believe that this kind of information is necessary for better understanding the current agricultural role in SWB of inhabitants in the countryside, and to help formulate relevant research questions for future studies.

METHODS

Survey and data analysis
A survey was applied to a sample of local inhabitants in the two studied rural settlements. Respondents were selected through a stratified random sampling, where the stratum was the age class distribution in the studied municipalities according to the national statistical records. The answers were measured as the levels of agreement with the statements related to perceived situation of the aspects associated with local agriculture. Specifically, the perception of the food, local farming practices, local landscape, and the local environmental issues was assessed.
The characteristics of the food and the local farming practices included seven variables measured at ordinal scale. The variables were as follows: perceived freedom of choice in the food origin; accessibility to the marketing places selling local farming products; quality of the local farming products; level of the local knowledge maintenance in agricultural practices; the existing possibilities to interact with the local farmers; the perceived local food autonomy; and the frequency of receiving, giving or exchanging the local farming products. The food origin in this study is linked to the food's geographical provenance. The perceived contribution of the local agriculture to one's well-being was measured on a nominal scale with three categories: yes, don't know, no.
The questions about local landscape and environment were assessed as a subjective appreciation of the visual landscape quality, feeling of one's connection to the local landscape, perceived local soil and water quality, and perceived richness of local vegetation, animals and birds.
Moreover, the preferred farming type occupational tendencies in the resident's locality were assessed using an ordinal scale. Respondents were asked to assess four types of the farming differing in their scale and specialisation. The small-scale diversified farming was represented by extensive olive groves, orchards, vineyards and vegetable plots. The second farming system assessed was the small-scale specialised farming. This farming type embodied the production in the greenhouses and the intensive production of the aromatic plants. The large-scale diversified farming is in the region known as the silvopastoral system, the montado and the pasture areas. And the last, fourth studied farming system was the large-scale specialised farming, demonstrated in the region as the intensive olive groves, corn plantations and irrigated vineyards. Within the used scale for the preference assessment, the value zero meant a choice for an elimination of a particular farming type from the municipality. The value five was representing a continuation of the specific farming type on the

currently occupied area, and value ten destined that the agricultural area of the county should be covered uniquely by the particular farming type.
In the last part of the survey, the self-reported levels of subjective well-being (SWB) measures were evaluated. Well-being elicited from individuals through questions about life satisfaction and happiness has been found to have a high scientific standard regarding validity (Pavot and Diener 1993). In the study, a direct SWB was measured by self-reported levels of the life satisfaction and happiness. The indirect SWB measure included a question about the satisfaction with the municipality as a place to live. The levels of SWB were measured by applying the eleven-point Likert scale.

Study area

The two surveyed rural municipalities (Montemor-o-Novo and Ferreira do Alentejo) are located in the Alentejo region of Southern Portugal. They markedly differ in landscape diversity, land cover dynamics, agricultural type and land management intensity.
The municipality of Montemor-o-Novo is dominated mainly by the low-intensity farming systems, in particular, the montado. The montado is a Mediterranean silvopastoral land-use system dominated by holm oaks (Quercus rotundifolia) and cork oaks (Quercus suber) covering a broad range of tree stand densities (Pinto-Correia et al. 2011; Godinho et al. 2016). They are recognised in their capacity to deliver a wide number and variety of ecosystem services (Bugalho et al. 2011). In this study area, the management of the montado is mainly focused on livestock production, combined with forest products such as cork and wood for charcoal production. The county of Montemor-o-Novo also represents a rural area where demand for non-commodity functions, as nature conservation, new and second housing, leisure and recreation, is high. The local landscape quality is recognised, and also the proximity to Lisbon and smaller urban centres such as Évora is relatively small. In the surroundings of the main municipality town, as well as in the other and smaller localities, the landscape is composed of a unique small-scale mosaic of farm units between 1 and 5 ha, sometimes up to 20 ha. In these complex land use systems, the land cover is dominated by old olive groves, small vegetable plots and fruit orchards, pastures used for sheep grazing, a few plots of vineyards, and dense vegetation galleries along the water lines. The individual characteristics of the small-scale farmers observed in our study area by Pinto-Correia et al. (2016) reveals a large diversity in profiles. This area is a highly attractive area for newcomers who appreciate the gentle landscape and the proximity to urban facilities (Pinto-Correia et al. 2010), fostering new dynamics in these patches. As a continuation of an old practice, in the town's centre, a market with the local food products sold by the local farmers is open each Saturday morning.
The second case study is the Ferreira do Alentejo municipality. Due to the access to an extensive irrigation system from a recently constructed dam Alqueva, the modernised large-scale plantations of olive groves with an intensive agricultural management dominate the landscape in the municipality nowadays. Most of the new olive groves arise in the new irrigation projects of the Alentejo region (INE 2011). It is also coinciding with the conclusion of the first phase of the irrigation project of the Alqueva and with the decoupling of direct payments from production (Council Regulation (EC) n.º 1782/2003 of 29 September 2003 – CAP reform of 2003, referred to as Luxembourg agreement or Fischler reform).

Data analysis

Data were analysed using the SPSS software v.22. The Spearman's rank-order correlation was run to assess the strength and direction of the relationship between perceived qualities of the local characteristics and self-reported levels of subjective well-being measures.
A descriptive statistics was used to evaluate the preferred occupational changes of the local farming types. Moreover, the independent samples Kruskal-Wallis test was conducted to determine if there were differences in perceived levels of agriculture-related local characteristics between those who answered "yes" and others. The Kruskal-Wallis H test (sometimes also called the "one-way ANOVA on ranks") is a rank-based nonparametric test that can be used to determine if there are statistically significant differences between two or more groups of an independent variable on a continuous or ordinal dependent variable.

Subsequently, for the analysis of differences between the two studied municipalities, the Mann-Whitney U test was realised. This test is the alternative test to the independent sample t-test when data is ordinal. It is a non-parametric test that can be applied to compare two population means that come from the same population, and it is also used to verify whether two population means are equal or not. It is used for similar sample sizes and is used to test the median of two populations.
Finally, the Pearson Chi-Square test was applied for the differences in the perceived contribution of the local agriculture to respondents' well-being between the two localities. This statistical test is appropriate to sets of categorical data to evaluate how likely it is that any observed difference between the sets arose by chance.

Results

206 questionnaires were collected during summer 2015. In Montemor-o-Novo 105 residents and Ferreira do Alentejo 101 residents participated in the survey. The sample included 107 women and 99 men. A group of respondents included all age classes. The youngest respondent was 18 years old, and the oldest one was 87 years old.

According to the results from the Spearman's rank-order correlation, there were high positive correlations between several locality characteristics as perceived by respondents and their life satisfaction, happiness and satisfaction with their municipality as a place to live (Table 1). Specifically, the evaluation of abundance in vegetation, animals and birds, of visual landscape, freedom of choice in the food origin, the local knowledge maintenance, and the existing possibilities to interact with local farmers were significantly positively correlated with all three studied well-being measures.
Moreover, the frequency of giving, receiving or exchange local agricultural products and the perceived contribution of local agriculture to one's well-being were also positively correlated with reported levels of well-being measures.
Regarding the preferred occupational changes of the local farming types, the respondents preferred the highest increase in area with small-scale diversified farming. The second largest mean rank received the large-scale diversified farming with the mode value six which meant a desire to maintain the existing area of this farming. It was represented mainly by the extensive silvopastoral system, the montado. Similar mean rank received the small-scale specialised farming, nonetheless with the higher mode. The least level from assessed farming types received the large-scale specialised farming. According to the majority of respondents, this kind of agriculture should not spread over its existing occupied area.

Table 1: Spearman's rank correlation between the perceived qualities of local characteristics and self-reported measures of subjective well-being.

	Spearman's rank correlation for Self-reported		
To what extent do you agree with the following statements related to your county?	Life satisfaction	Happiness	Satisfaction with one's county as a place to live
There is a good water and soil quality	-0.072	-0.012	0.212**
There is an abundance of vegetation, animals and birds	0.205**	0.238**	0.220**
I appreciate the visual aspect of the landscape	0.140*	0.165*	0.337***
I feel connected to the local landscape	0.160*	0.134	0.323***

I can freely choose the origin (locality) of the food I consume	0.157*	0.210**	0.351***
The marketing places selling the local farming products are accessible to me	0.153*	0.080	0.310***
The local agricultural products have a good quality	0.116	0.136	0.338***
The local knowledge and skills in farming practices are maintained	0.194**	0.149*	0.296***
There are possibilities to interact with local farmers	0.182**	0.265***	0.314***
I feel that there is a food self-sufficiency when necessary	0.136	0.209**	0.243***
Frequency of receiving, giving or exchanging local agricultural products	0.157*	0.196**	0.173*
Perceived contribution of the local agriculture to one's well-being	0.262***	0.294***	0.378***

Table 2: The preferred development of the four local farming types.

	Farming type			
	Small-scale diversified	specialized	Large-scale diversified	specialized
Mean	8.03	7.51	7.67	5.56
Median	8.00	8.00	8.00	6.00
Mode	9	8	6	6
Variance	4.233	3.607	3.861	5.975
Range	10	10	10	10

The perceived contribution of the local agriculture to residents' well-being was assessed through a nominal question with three following categories: no, don't know, and yes. Most of the respondents 51,5% stated that the local agriculture contributes to their well-being. 26,2% responded that they don't know whether local agriculture contributes to their well-being. A comparable number of respondents (22,3%) thought that the local agriculture doesn't contribute to their well-being. The Chart 1 shows the relation between the perceived agricultural contribution to residents' well-being and perceived local qualities. The group of respondents who perceived their local agriculture as a contributor to their individual well-being, in average also evaluated the local characteristics as having a better quality. As can be observed on the chart, the biggest difference between those who perceived local agriculture as a contributor to their well-being and those who didn't was also in their access to the local agricultural products, in perceived freedom of choice in the food origin and the possibility to interact with the local farmers.

The independent samples Kruskal-Wallis test was conducted to determine if there were differences in perceived levels of agriculture-related local characteristics between those who answered "yes" and others. Results show that perceptions of several local characteristics were statistically different between those reporting the positive influence of local agriculture on their well-being and the others. The subsequent description comprises purely the significant differences observed in the both case studies. In both studied localities, the answer "yes" to the contribution of local agriculture to respondent's well-being was significantly ($p < 0.05$) associated with higher feeling of freedom to

choose the food's local of origin ($\chi 2$ (3) = 5.023 in Montemor-o-Novo and $\chi 2$ (3) = 5.820 in Ferreira do Alentejo), higher perceived quality of local products ($\chi 2$ (3) = 6.162 and $\chi 2$ (3) = 5.340), better possibilities to interact with local farmers ($\chi 2$ (3) = 10.239 and $\chi 2$ (3) = 5.742), higher frequency of giving, receiving or exchanging the local products ($\chi 2$ (3) = 13.898 and $\chi 2$ (3) = 9.284). Moreover, the level of life satisfaction ($\chi 2$ (3) = 4.283 and $\chi 2$ (3) = 4.779) and the level of satisfaction with the municipality as a place to live ($\chi 2$ (3) = 6.951 and $\chi 2$ (3) = 5.228) was also higher in this cluster of respondents.

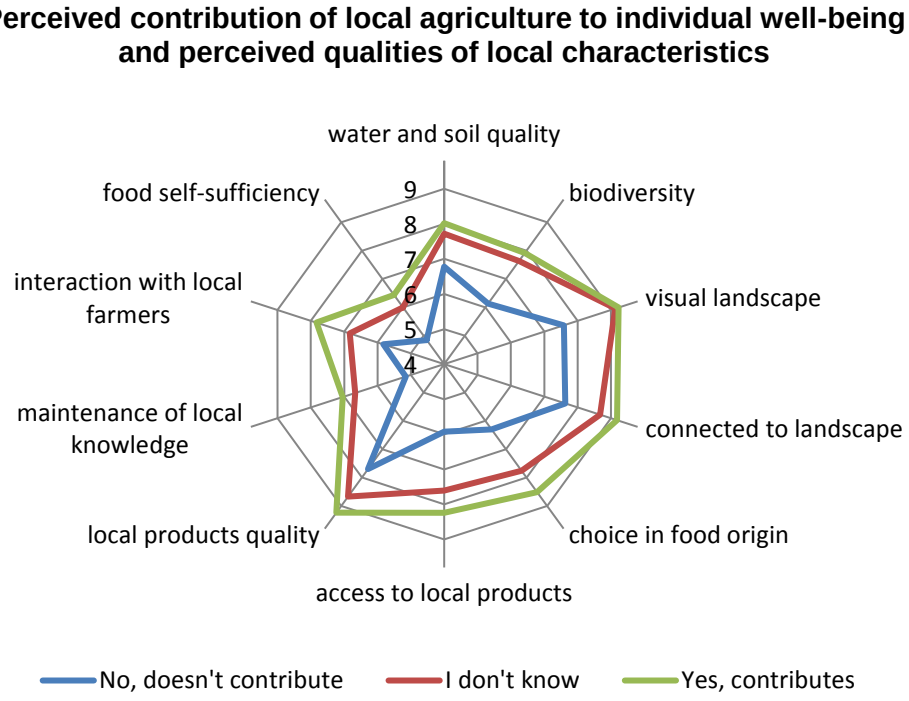
Differences between the two municipalities with distinct predominant farming

Because the characteristic of the local agriculture in two studied localities was different, the preferences and the perceived contribution of local agriculture to one's well-being were compared between the localities.

Regarding preferred farming changes in the living municipality, the two groups were not very different. The respondents in both municipalities preferred an increase of the areas with small-scale farming as well as the area with a large-scale non-irrigated agriculture. The mean value for the small-scale and large-scale diversified farming and small-scale specialised farming was 8.3, 7.5 and 7.4 in Montemor-o-Novo and 7.8, 7.9 and 7.6 in Ferreira do Alentejo. According to the Mann-Whitney U test the only significant difference in preferences between the two groups was in a desirable change in the area occupied by a large-scale irrigated farming. The group of respondents in Ferreira do Alentejo preferred a slight reduction in the area occupied by large-scale specialised farming (mean value 5.1), while the respondents in Montemor-o-Novo preferred the continuation of the current situation (average value six on scale 1-11).

The differences in the perceived contribution of the local agriculture to the well-being of those interviewed were statistically significant between the two localities. The Pearson Chi-Square value of the comparison was 20.8 and p-value 0.000. In Montemor-o-Novo, where more diversified agriculture predominates, 67.6 % of respondents agreed that the agriculture contributes to their well-being. In Ferreira do Alentejo with predominant large-scale specialised agriculture, it was only 34.7% of those surveyed, who thought about the positive impact of local agriculture on their well-being. Those who believed the local agriculture doesn't contribute to their well-being were represented by 11.4% of respondents in Montemor-o-Novo and by 34.7% of respondents in Ferreira do Alentejo. Remaining respondents (21.0% and 30.7%) answered that they don't know whether local agriculture contributes to their well-being or not.

Chart 1: Perceived contribution of the local agriculture to residents' well-being in studied localities.



Discussion

The aim of the paper was to explore the associations between the perceived qualities of local agricultural characteristics and the subjective well-being of rural residents. The quality level of local features in rural areas like environment, landscape, food and social relations are considered to be substantially influenced by the local agricultural practices (e.g. Smith et al. 2012, Westhoek et al. 2013, Wilson and Burton 2015, Bieling et al. 2014).

As shown in the paper, for residents in Montemor-o-Novo and Ferreira do Alentejo in Southern Portugal, the local food products, agricultural practices, landscape, and environment seems to be relevant to their subjective well-being. From the two direct and one indirect measure of subjective well-being assessed in the survey, the satisfaction with one's living place appears to be associated with most of the studied agricultural characteristics.

The local environmental quality, particularly the perceived richness of vegetation, animals and birds seem to relate positively with residents' well-being. The present study also shows a significant positive correlation between a level of landscape visual appreciation, as well as the level of connection to local landscape and subjective well-being. These findings support previous results of studies connecting landscape and human well-being (Bieling 2014).

The feeling of freedom of choice in the food origin, the maintenance of local knowledge and skills in agriculture, and the sense of local auto-sufficiency in food are also perceived as qualities positively correlating with well-being of residents. Curiously, the accessibility to local products through marketing centres and the quality of local products is not significantly connected with direct well-being measures in the studied areas. One possible explanation can be that in parallel to marketing centres, an informal exchange of local products between family members, friends and neighbours exists which is not dependent on marketing. Nevertheless, the possibility to interact with local farmers and frequency of receiving, giving or exchanging the local farming products, are significantly positively associated with subjective well-being. This practice can encourage maintenance of the mutually beneficial relationships between rural residents which can be positive for an interpersonal trust in rural localities. Trusting social relationships tend to enhance people's subjective well-being (happiness and life satisfaction), and that in turn positive feelings of well-being tend to augment cooperation and trust (Tov and Diener 2009).

The small-scale farming systems could increase in the occupied area according to the rural residents in Montemor-o-Novo and Ferreira do Alentejo. Desired is also an unchanging continuation of the large-scale extensive farming systems in the studied areas. This is not surprising as these farming systems are dominant in the region and are embodied by a valuable montado, considered as a multifunctional land use system with important environmental and cultural values for the Alentejo region (e.g. Surová and Pinto-Correia 2016). Concerning preferences for a large-scale specialised farming, the interesting differences between the two localities were observed. Residents in Ferreira do Alentejo, where the large-scale specialised farming is becoming dominant in recent years, would prefer a diminution of the area occupied by this type of farming. Contrarily, residents in Montemor-o-Novo would not mind if this kind of farming would hold a slightly larger area in the municipality relatively to the current situation. But still, the preferences for small-scale farms are higher.

The preferences for a large-scale specialised farming are not the unique perception difference between the two localities. Currently, the proportion of the residents appreciating current local agriculture as a contributor to their well-being is much higher in Montemor-o-Novo than in Ferreira do Alentejo. With this result, a challenging question is arising for research and policy makers related to this changing structure of agriculture and how it affects social well-being, prosperity and sustainability in rural areas (e.g. Smithers and Armstrong 2005, Goldschmidt 1978).

The present study omits the assessment of relations between the perceived qualities of local agricultural characteristics and subjective well-being of rural residents across different individual socio-economic characteristics, like age, gender, and education. Certainly, this kind of assessment would likewise deserve an attention from the research and may be an important lesson for policy and practice. Moreover, to put more accurate weight on SWB variance explained by assessed variables, a further statistical analysis would be needed.

Conclusions

What well-being means in contemporary rural areas and what role the local agriculture plays and can play in rural well-being are only a few questions arising in the context of sustainability in rural areas. Certainly the accurate answer to the above-mentioned questions will not be the same in all rural localities and will or should depend on territorial context and time, involving the social, economic and environmental dimensions.

It is unambiguous that well-being in rural areas is not merely influenced by the agricultural sector alone. Nevertheless, several outputs of local agriculture including environmental quality, landscape, food and social life are significantly associated directly or indirectly with the well-being of rural residents. For policies, it can indicate a necessity to consider local agriculture and its development trajectory as an important issue in rural life quality, even in these days when a smaller proportion of rural population is engaged in agricultural production. For now, there is a need to assess relationships between farming systems and rural well-being more profoundly across different geographical areas, to gain more robust and generalizable knowledge for an improved definition of policies towards a harmony between the sustainability and human well-being.

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