Measurable Impacts of the "Principles of Organic Agriculture"; Survey of a Vietnamese Organic PGS

CORY WILLIAM WHITNEY[1], KOEN DEN BRABER[2], NHUNG TU TUYET[3], SØREN THORNDAL JØRGENSEN[4]

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Abstract

A farmers' survey within the Organic Participatory Guarantee System (PGS) in Soc Son, Hanoi, Vietnam, indicates that farmers are largely satisfied with the management schemes and farming systems but that they feel there is room for improvement. Farmers gave a high score for questions related to the organic principles of health (74%), ecology (79%), fairness (68%), and care (71%). These results are outlined and the case is made that the organic principles are measurable and comparable. It is further argued that with a quantifiable measurement of the functioning of organic systems from the farmer we may find more ways to promote and help shape the future of the movement according to the principles.

Introduction

The Principles of Organic Agriculture are considered to be the basis from which organic agriculture grows and develops. They were developed by the International Federation of Organic Agriculture Movements (IFOAM) through a global participatory stakeholder process to help to address globalization challenges and to unite the values across the organic movement (Luttikholt 2007). They also help to define the uniqueness of organic agriculture, to serve as a guide for practice and development and to mitigate the need for an organic movement based on too many rules (Alrøe & Kristensen 2004).

Material and methods

A full description of the four principles, *Health*, *Ecology*, *Fairness*, and *Care*, can be found in extended form in 19 languages (IFOAM 2013). The principle of Health states that Organic: *should sustain and enhance the health of soil, plant, animal, human and planet as one and indivisible*. The principle of Ecology states that Organic: *should be based on living ecological systems and cycles, work with them, emulate them and help sustain them*. The Principle of Fairness states that Organic: *should build on relationships that ensure fairness with regard to the common environment and life opportunities*. The Principle of Care states that Organic: *should be managed in a precautionary and responsible manner to protect the health and well-being of current and future generations and the environment* (IFOAM 2013).

As of yet there have been no concrete attempts to measure these principles in action. The survey results described in this paper are an early attempt to find a holistic, but also comparable data set based on the principles.

Similar attempts to measure qualitative and holistic aspects of people's lives can be found in the literature regarding happiness. They have successfully been able to estimate happiness regressions using large random samples of individuals (Clark & Oswald 2002) and with single item scales (Abdel-Khalek 2006). Some critiques of happiness measurements point out poor design of questionnaires and results with low comparability, hampered by non-uniform data. There has been a call for more professional, uniform, and reproducible analysis (Ng 1996).

Measurable data on the state of the organic principles came from part of a farmer survey done for the NGO Agriculture Development Denmark Asia (ADDA) and Vietnam Farmers Union (VNFU) collaborative Organic Project on the Organic Participatory Guarantee System (PGS) in Soc Son, Hanoi, Vietnam (Whitney et. al. this issue). Based on information gathered in these interviews this paper argues that the organic principles are measurable and comparable.

[1] Rhine-Waal University of Applied Sciences, Germany, www.hochschule-rhein-waal.de, eMail: cory.whitney@hsrw.eu

[2] Agriculture Development Denmark Asia – VietNam Farmer's Union (ADDA-VNFU) Organic Project, http://www.adda.dk/eng/organic_eng.html, eMail: koenhuyen@gmail.com

[3] Hữu Cơ Organic PGS Vietnam, http://vietnamorganic.vn, eMail: nhungadda@gmail.com

[4] Agricultural Development Denmark Asia (ADDA), www.adda.dk, eMail: s.thorndal@mail.tele.dk

Farmers from six organic vegetable PGS producer groups in the villages of Trung, Thanh Nhàn and Bái Thượng in Thanh Xuân commune, Sóc Son district, Hanoi, Vietnam were interviewed. See Whitney et al. 2013 for a full description of the farmers, etc. (Whitney et al. this issue).

Interviews were conducted from mid March to early April of 2012 with 30 farmers (2 men and 28 women) from 6 PGS groups (Bái Thượng, Thành Công, Thanh Nhàn, Trung, Anh Duong, Doan Ket) from the Thanh Xuân PGS Inter-group. The surveys were conducted in the field a s semi-structured questionnaires by a researcher, a translator and a farmer-trainer from the ADDA-VNFU Organic Project. The principles related aspects of the survey were based on current standard happiness and satisfaction questionnaires (OECD 2013). Final analysis of quantitative data was done using Microsoft Excel for Mac (2007), Open Office Calc 3.2.1 (2010) and the program R (R 2011).

As a part of the survey on different management schemes, farmers were asked to gauge their satisfaction (interval scale) with various aspects of the production system, cropping plan, and for their perception of the qualities, the functioning of their groups and areas where they felt there was room for improvement. The survey related strictly to the operation and management of the individual groups and not to the functioning of the whole PGS.

Results

Weighted averages of farmers' (N=30) answers[5] to principles related survey questions to create the variables 'Health' (3 questions), 'Ecology' (4 questions), 'Fairness' (5 questions) and 'Care' (8 questions). The strength and direction of the linear relationship between these variables was tested using Pearson's product-moment correlation coefficient (*r*) (R 2011). Significant positive correlations were found between 'Ecology', 'Fairness', and 'Care' (Table 1). Percent agreement within these variables also indicated that farmers feel there is room for improvement, but that they are largely satisfied with the principles ('Health' 74% (σ13), 'Ecology' 79% (σ12), 'Fairness' 68% (σ20), and 'Care' 71%(σ12)).

Table 1. Correlation and significance of *r* for all principles *(bold where p<0.05)*[¥]

Health	*0.3326*	*-0.2451*	*0.2420*
0.0724	**Ecology**	**0.4020**	**0.8229**
0.1917	*0.0276*	**Fairness**	**0.6895**
0.1976	*2.39E-08*	*2.50E-05*	**Care**

[¥]Correlations upper right and p-values lower left in italics

Strong collinearity was found for 'Care' as it is a more holistic principle based on health and well-being as a fundamental part of farming. Furthermore, this analysis was based on the functioning of management systems and less about the more soft sciences aspects of personal wellness although there were several questions that fit specifically for 'Care' and one question specifically about happiness and well-being (see Table 3 below).

Table 2 shows the results of r against weighted averages of farmers' overall scores for the functioning of the group management system 'System' (25 questions) and the cropping plan 'Crop Plan' (24 questions) against the principles variables. Furthermore, percent agreement within these variables also indicated that farmers feel there is room for improvement within the 'System' (63% (σ9.6)) and 'Crop Plan' (57% (σ7)).

Table 2. Correlation and significance of *r* for cropping and management satisfaction *(bold where p<0.05)*

	System[*]	*p-value*	**Crop Plan**[†]	*p-value*
Health	0.246	*0.191*	0.065	*0.733*
Ecology	**0.812**	*5.08E-08*	**0.513**	*0.004*
Fairness	**0.515**	*0.004*	0.227	*0.228*
Care	**0.816**	*3.88E-08*	0.321	*0.084*

*System = functioning of the farming system in general.

[5] ADDA's farm managers and field assistants, researchers, and translators worked closely with farmers to ensure that there was no missing data for these questions. Follow-up interviews were made where data was missing from first interviews.

†Crop Plan = functioning of the cropping plan in specific.

Table 3. Correlation and significance of *r* for well-being *(bold where p<0.05)*

	Well-Being	*p-value*
Health	**0.465**	*0.009*
Ecology	**0.431**	*0.017*
Fairness	0.227	*0.227*
Care	**0.616**	*2.2E-04*

Finally, measuring happiness with a single item scale has been found to be as effective as other more intensive forms of analysis for life satisfaction (Abdel-Khalek 2006). The survey also asked the farmers to rank the contribution of the system on their own happiness or well-being. Table 3 shows correlation and significance of *r* for scores for this question against the overall scores for the principles

Discussion and Conclusions

The more satisfied the farmers are with the functioning of the farming system in general and with the cropping plan in specific, the higher the satisfaction with the organic principles. Farmers who gave higher scores for ecological aspects of the farming system also had more satisfaction with the cropping plan and overall functioning of their group. Similar studies with more farmers may reveal more of the dynamics of this relationship.

The study indicates that measuring the organic principles is possible. However, the current survey can only serve as a starter. Quantifying concepts that are holistic is problematic but it may act as a benchmark for determining the functioning of a farming system in a less mechanistic way. Uniform measurement is necessary and we propose this as a general outline and springboard for future studies into the measurement of the organic principles.

Suggestions

Organic agriculture has a unique approach to more than just agricultural production. It is a movement and a way of life (as in e.g. Gross National Happiness). With a quantifiable measurement of the functioning of organic systems, from the point of view of the farmer at the center of these systems, we may find more ways to promote and help shape the future of the movement according to the principles of organic agriculture and as a challenge to existing dominant and damaging paradigms.

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