



Organic World  
Congress 2020

FRANCE

SEPTEMBER 21<sup>ST</sup> TO 27<sup>TH</sup>, 2020 IN RENNES

AT THE COUVENT DES JACOBINS • RENNES MÉTROPOLE CONFERENCE CENTRE

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## OWC 2020 Paper Submission - Science Forum

*Topic 3 - Transition towards organic and sustainable food systems*

OWC2020-SCI-397

**MEASURING EFFICIENCY OF ABOVEFARM SUSTAINABILITY RATING SYSTEM FOR ORGANIC FARMING. A CASE STUDY OF TEN CROP PRODUCTION ORGANIC FARMS IN CHINA, EAST-ASIA AND EUROPE.**

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**Preferred Presentation Method:** Oral or poster presentation

**Full Paper Publication:** Yes

**Abstract:** In the last decades a broad number of tools have been developed to assess farms sustainability performance though their application had scarce influence on farmers' and consumers' decision-making toward sustainability. Limitations lay mainly in evaluation tools' efficiency. Moreover, little attention was paid on evaluating organic agriculture and enhancement of best practices. Abovefarm sustainability rating system for organic farming aims at overcoming these limitations. The rating system: (i) translates IFOAM principles of "fairness", "ecology", "care" and "health" into sustainability indicators; (ii) measures through thresholds the level of farms' sustainability; (iii) provides an independent and free of charge tool; (iv) promotes best practices by selecting farmers who engage in sustainable practices. The aim of this study is to design and test Abovefarm rating system for its efficiency, in order to boost organic 3.0 at global level.

**Introduction:** Organic standards are a good set of requirements to improve farming sustainability, but they do not assure high target achievements [1; 2]. IFOAM's vision sees a transition from a system relying on organic certifications (Organic 2.0) to one embracing a "truly sustainable farming system" (Organic 3.0) [1; p.2]. Sustainability assessment supports on-farm decision-making toward sustainability. Nowadays, though, the adoption of sustainability assessments is limited [3]. Sustainability evaluations are not considered efficient due to a series of shortcomings: e.g. inability to reflect all sustainability dimensions [4]; balance between global and local perspectives [16]; lack of scientific procedures [4]; affordability (money-time) [3]. Specifically, there is no such an evaluation system designed following organic principles which values best practices [5]. This study aims to answer the demand for a more efficient sustainability rating tool for organic farming best practices.

**Material and methods:** Abovefarm is a non-profit organization founded in Shanghai in 2016. Building upon organic principles, Abovefarm works for a deep agroecological transition in China and at global level. One of Abovefarm primary goals is to promote a way of thinking agriculture positioned "above" the current standards of sustainability.

This study develops in 4 phases: (i) creation of a new evaluation framework; (ii) design of indicators to evaluate each sustainability dimensions; (iii) application of Abovefarm rating system to 10 farms; (iv) measurement of the tool efficiency. IFOAM 'Best practice guidelines for agriculture & value chain' [7]. offers a holistic overview of sustainable practices for organic agriculture divided in five dimensions (Ecology, Culture, Society, Accountability, Economy) and 20 sub-themes. This study attempts to operationalize IFOAM definition of sustainability in measurable indicators.

70 sustainability evaluation systems were reviewed [e.g. 4, 5, 7, 9,10, 11, 12]. Indicators were selected with the aim of creating an efficient tool for organic farms sustainability assessment. Therefore, indicators selected had the following features: i) covering all aspects of sustainability; ii) adaptable to the local context; iii) based on scientific or traditional knowledge; iv) simple to implement and cost and time efficient.

The selected indicator list comprises two kinds of indicators: (i) performance-based indicators; and (ii) practice indicators [11]. For each indicator a five-scale rating performance was defined [11]. Farms scoring three points and above are considered as “Examples of sustainability” (Image 2).

In order to narrow the scope of this study, crop production farms are considered the unit of analysis. Farm-level evaluation can better shed light on sustainability-related decision-making processes [3]. This analysis does not cover other supply chain levels, but focus on production. Crop production farms have been chosen to allow a meaningful comparison. Within the sample are comprised both certified and non-certified farms; small- and large-holders; annual and perennials crop productions.

Since this study seeks to enhance best practices in organic farming, a purposive sampling strategy was applied to select positive deviant, i.e. those farms reaching optimum results in a context where the majority struggle [13]. To identify positive deviants, inclusion criteria defining “successful farmers engaged in sustainable organic agriculture” were defined from literature and after visiting the farm r). Farm selection is based on Abovefarm field work experience started in 2016. More than 200 organic farms in Asia and Europe have been visited and catalogued before conducting the selection for this study. Final aim of this study is to understand how to overcome previous limitations of existing tools. Both implementers and research participants will answer a questionnaire in order to collect individuals' perception on the efficiency of the tool [4].

**Results:** This study seeks to test Abovefarm rating system which (i) translates the IFOAM principles of “fairness”, “ecology”, “care” and “health” into indicators to evaluate environmental, economic and social sustainability (Image 1); (ii) measures through thresholds the level of sustainability of the farm for each of those criteria (Image 2); (iii) provides an independent and free of charge tool; (iv) promotes best practices by selecting farmers who succeed in their effort towards sustainability.

A tool that permits to compare agricultural practices between similar organic systems, allows to differentiate the “*farmers practising 'organic light' and those that go 'beyond organic'*” [4; p.79]. Such a difference, that has not been made yet by existing tools, could permit to promote farm models who overcome basic organic standards to inspire “above” practices (see rating system in Image 2).

Data collection is ongoing and it will end in May 2020. Five Chinese organic farms were selected for this study. This study seeks to shed light on best practices in terms of sustainability in the under-researched Chinese organic sector. Nonetheless, Abovefarm wishes to develop a rating system that can offer meaningful comparisons at global scale. For this reason, Abovefarm sustainability rating system is going to be implemented in four strategic European and East-Asian countries for a total of 5 farms (South Korea, Italy, France and Germany).

To firstly test the assessment tool, a pilot study was conducted in an organic farm in Shanghai area. The pilot farm was selected based on the vicinity of the study area to Abovefarm office and the availability of the farmer. This allowed researchers to conduct multiple visits to the farm. The feedback obtained after this first test was considered a base for a first tool improvement (Image 2). Then, ten organic farms specialized in crop production (excluding the pilot) were selected based on the above-mentioned criteria, and are being under assessment.

Data are collected by analyzing soil health [5; 14, 15]; extracting secondary data from farm records (e.g. productivity, energy consumption, crop rotation, economic values etc.) and interviewing farm managers and employees.

The semi-structured interviews have the main scope of measuring practice indicators. Interviews are conducted in the local language, recorded, and then transcribed to English by the translator.

Participation in this research is voluntary. Farmers are provided with clear information about the purpose and contents of the study. Guarantees of confidentiality and anonymity are given prior to each interview.

Data will be displayed using an AMOEBA Diagram. This diagram gives a clear overview of the extent to which farms scored for each dimension in relation with the optimum indicator value [8] (Image 2).

**Discussion:** The organic market rapid growth led to conventionalisation of organic agriculture. This study wishes to contribute to the global effort of raising the bar of agricultural sustainability. It does so by developing a new holistic and integrated tool which may provide useful information for improving practices and policies at different scales [5, 6]. Results of this study will be ready to be presented at the OWC 2020. During the presentation, Abovefarm rating system will be outlined for the first time to a broader audience. The implementation of the tool among Chinese farms offers new data on the national agriculture sustainability. Moreover, findings will showcase organic excellence both in Europe and in Asia. Additionally, these results may represent an interesting starting point for further discuss current challenges for achieving Organic 3.0. In conclusion, Abovefarm sees the opportunity to present these results in front of a variety of experts as a unique learning opportunity.

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The study is funded by Abovefarm as part of the Abovefarm research programme 2019. Abovefarm funding will be acknowledged in all publications, papers or reports that follow from this study.

**Image 1:**

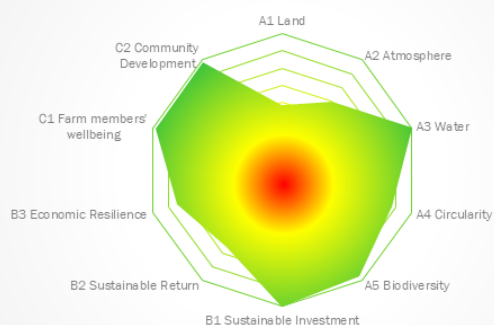
## Abovefarm Sustainability Rating System©



Sustainability Dimension A: Ecology	
A1 Land	A 1.1 Soil Health
	A 1.2 Land Conservation
A2 Atmosphere	A 2.1 Air Quality
A3 Water	A 3.1 Water Management
A4 Circularity	A 4.1 Inputs and Waste
	A 4.2 Energy Use
A5 Biodiversity	A 5.1 Species diversity
	A 5.2 Synergies
Sustainability Dimension B: Economy	
B1 Sustainable Investment	B 1.1 Internal Investment
	B 1.2 External Investment
B2 Sustainable Return	B 2.1 Productivity
	B 2.2 Product Quality
	B 2.3 Value creation
B3 Economic Resilience	B 3.1 Stability of Production
	B 3.2 Stability of Supply
	B 3.3 Circular Economy
	B 3.4 Risk Management
	B 3.5 Holistic management
Sustainability Dimension C: Society	
C1 Farm members' wellbeing	C 1.1 Quality of Life
	C 1.2 Capacity Development
	C 1.3 Employment Relations
	C 1.4 Workplace Safety and Health
C2 Community Development	C 2.1 Gender and Equity
	C 2.2 Social impact
	C 2.3 Food and Health

**Image 2:**

## Abovefarm Sustainability Rating System© Results Pilot Farm



**Total Score** 3.46

Efficiency Indicators	Results
Preparation time	1:00
Assessment time	12:00
Calculation and reporting time	00:30
Data availability	Moderate
Data correctness	Moderate
Complexity	Low
Relevance	High
Understanding the tool	Moderate

Themes	Sumproduct
A1 Land	1.90
A2 Atmosphere	2.50
A3 Water	4.00
A4 Circularity	3.40
A5 Biodiversity	3.83
B1 Sustainable Investment	4.00
B2 Sustainable Return	2.80
B3 Economic Resilience	3.24
C1 Farm members' wellbeing	3.89
C2 Community Development	3.93
A Ecology	3.13
B Economy	3.35
C Society	3.91

Score	Meaning
5	Example of sustainability at global level
4	Example of sustainability at continental level
3	Example of sustainability at national level
2	Working towards sustainability
1	Low level of sustainability

**Disclosure of Interest:** None Declared

**Keywords:** Abovefarm, Best practices, China, Organic 3.0, Organic agriculture, Sustainability evaluation