

# Policy-relevant research and integrative indicators in the conversion to organic farming

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## ABSTRACT

Council Regulation 2092/91 specifies the general standards for the production methods of organic products in Europe. The criteria for the conversion process assessment, though, are largely defined by the national Certification Bodies. Assessment indicators mostly used are (a) type of agricultural practices (whether within organic standards or not) and (b) pollution in soil or produce. However, the conversion process is complex and its aims go beyond the achievement of soil fertility as indicated by these indicators. Soil health and socio-economic indicators need to be essential elements in the organic farming regulation policy. The research reported here (partial result of a four-years Ph.D. research) applies policy-relevant research to identifying conversion process aims within a systems perspective, as well as integrative indicators to assess and monitor soil health. In this paper, only the research on soil health indicators is shown.

*Keywords: organic farming; policy-relevant research; soil health indicators*

## POLICY-RELEVANT RESEARCH AND INDICATORS

Policy-relevant research aims to use and provide scientific information within the context of decision-making and policy-relevant interests, by designing investigations which are both scientifically valid and achieve an understanding of what processes are socially, economically and technically feasible. Successful policies build on such an understanding.

This type of research obtains information from different scientific and social sources (here, using soil science techniques and social enquiry methods) and integrates its disciplinary research in order to understand and determine the feasibility of changes. This integration stems from a process of knowledge translation between the different levels at play, in this case between the policy, the farming and the soil levels. The research needs to be relevant at the level of the policy implementation, which is in this case at the farming level.

Essential attributes of policy-relevant research are: taking systems complexity into consideration, integration of top-down and bottom-up approaches, interdisciplinarity, collaboration with the field decision-makers and focus on remediation alternatives as well as vulnerability studies.

Indicators are a form of communication between the policy design and implementation levels and scientists, in which scientific concepts are made more available and acceptable to wider audiences. Indicators are used to describe, represent, monitor, assess or model complex world processes, components or properties, both qualitatively and quantitatively, to be used in decision-making processes. Indicators identified and developed from a policy-relevant framework are called *integrative indicators*.

## **INTEGRATIVE INDICATORS FOR THE CONVERSION ASSESSMENT**

The aims of the conversion process to organic farming go beyond the achievement of soil fertility as indicated by type of practices or soil/produce pollution. When the soil ecosystem is understood as a living, dynamic, complex organism embedded within a bigger system (agricultural practices, farm, social system, agri-environmental policy, etc.) and being formed by a variety of sub-systems such as the microbiological and particles sub-systems, then those indicators represent a static and isolated model of the reality. The policy regulation based on them will therefore only provide a static and isolated view. Complementary integrative indicators of the conversion process at the soil level are needed, in which the conversion process and soil health are assessed from a policy-relevant framework.

Two integrative indicators for the assessment and monitoring of soil health have been identified from this type of framework, using a translation process between: knowledge gained at the level of the soil ecosystem (where data and information are drawn from scientific disciplines) and agricultural practices and indicators that are feasible for use by farmers, agronomists, etc. (i.e. field decision-makers).

### **Soil biostructure and field capacity as indicators of soil health**

A well developed (soil type dependant) soil biostructure (the complex matrix of pores and aggregates) is necessary for a high degree of soil health. Field decision-makers would indicate a healthy soil as “crumbly” and “spongy”. A high degree of field capacity, in turn, indicates a high degree of soil biostructure.

## **SOME CONCLUSIONS**

This research proposes that the conversion process is considered finished when the degree of soil health, as indicated by soil biostructure, has reached a certain minimum level. Subsidies need to encourage the conversion throughout the whole process, as a support for the improvement of soil ecosystem health within the agro-ecosystem.

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