Coming to terms with terminology in agriculture-nutrition research projects: an interactive glossary

Irmgard Jordan, Eleonore Heil, Gudrun Keding

Abstract

Research projects on food and nutrition security and food systems require multidisciplinary approaches. A different understanding of supposedly 'well-defined' technical terms, can complicate collaboration. On the basis of several workshops with participants of different disciplines with relevance to nutrition and subsequent research in already existing (partial) glossaries, this work is the first draft of a glossary with currently 145 terms, ranging from 'acceptance of food' to 'Z-score'. The glossary in English language contains definitions from different databases and scientific sources. To facilitate communication within the food and agriculture community, a „living" glossary has been created that is regularly updated and supplemented as needed.

Keywords: agricultural science, definitions, nutrition research, technical terms, agriculture-nutrition glossary, interdisciplinary collaboration, food security

Background

When working in research projects on food and nutrition security and food systems, it seems to be only natural to apply a holistic approach to understand the various connections and linkages between and within the disciplines and its actors [1–3], and to find balanced solutions for food and nutrition security challenges [4]. Alongside inter-disciplinary projects, multi- and trans-disciplinary projects in conducting food systems research have recently evolved. These are perceived as important for establishing more sustainable food systems that improve food and nutrition security for the global population [2,5,6].

We noticed that, when presenting results at conferences or when findings were prepared for publication, multi-, inter- or trans-disciplinary projects, each used technical terms and indicators in a specific way, assuming that they would be universally understood. At the same time, researchers from other disciplines heard the same term or indicator but understood it in a completely different way. This was not always immediately clear and therefore misunderstandings and confusions occurred which delayed the research process or even hampered the collaboration [7].

This begins when speaking about micro- and macronutrients. We noticed that soil scientists were puzzled when nutritionists talked about 'macronutrients', and vice versa. The nutritionists had carbohydrates, protein and fat in mind, while the soil scientists associated the term 'macronutrients' with the elements nitrogen, phosphorus, potassium, calcium, magnesium and sulphur. Misunderstandings also happened with the term 'processing', which agriculturalists interpreted only as processes done in the field, such as threshing, yet not to food processing for preservation at kitchen level – as the nutritionists understood. Assessing dietary diversity requires that, for example, nutritionists classify tomatoes as

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vegetables and not as fruits, which would be botanically correct. This confusion regarding food groups sometimes results in misclassification and thus in data bias. Last but not least, nutritionists assess food variety scores by counting the different foods consumed, whereas in agriculture the term 'variety' means different varieties of one crop species.

There are also terms that are clearly defined, such as the different forms of malnutrition. However, there is a high risk that these terms and indicators are not correctly applied by researchers outside their subject area where the context is not clearly described.

Through experience of other programmes and our own research projects we learned that there is a need for clarification on terms and indicators used to avoid misunderstandings and unnecessary delays in the execution of activities. Although there are various glossaries available on the internet, we did not find a comprehensive list including the various disciplinary perspectives. The objective of this paper is therefore to show the need for a living glossary focussing on terms used in agriculture-nutrition projects.

Methodology

With a group of 22 researchers from six international BMEL/BLE-funded projects working on agriculture-nutrition linkages in Sub-Saharan Africa or South-East-Asia [8], a two-full-day workshop was held in Giessen, Germany in November 2019. The aim of the workshop was to discuss and compile a list of technical terms and indicators which were frequently used in nutrition-agriculture research projects. The participants' expertise covered several disciplines (◆ Overview 1).

Through a brainstorming exercise a list of terms which were widely used in the projects of workshop participants was compiled. As a next step an internet-based search for definitions was done in intra- as well as interdisciplinary teams. The overall aim was to collect definitions from the different disciplines and points of view. The workshop participants searched for definitions published by organisations, institutions like FAO, WHO and UNICEF, different CGIAR centres such as IFPRI and Bioversity International, CFS, EFSA, European Commission and online dictionaries like Cambridge Dictionary, and Merriam Webster Dictionary (explanation of abbreviations ◆ Table 1).

Overview 1: **Disciplines involved in the selection of terms**

- food sciences
- agricultural economics
- agroecology
- agricultural production
- sociology of agriculture
- soil sciences
- food safety
- nutritional sciences and home economics
- paediatrics

Scientific peer-reviewed publications were searched via search engines like PubMed, Web of Science, Livivo, Google Scholar and Google. Online encyclopaedias, glossaries and term collections were reviewed and referenced if they included new aspects for the interpretation of the listed terms which were not found elsewhere in the literature of the respective disciplines. During the two-day workshop an extensive list of terms was compiled, yet not all terms were defined satisfactorily in this short time and the list was apparently not exhaustive. The teams at the Justus Liebig University Giessen and Georg August University Goettingen, Germany, therefore added terms and definitions, reviewed the references and edited the list.

In February 2020 we presented the first draft of the glossary to the participants of an international symposium on sustainable food systems at the University of Giessen, Germany. They were asked to name terms and indicators from their work which they thought were missing. The research teams from the Universities of Giessen and Goettingen continued compiling the glossary during the year 2020, and in addition to adding more terms and updating definitions, the linking of terms with hyperlinks was undertaken.

Finally, we shared a second draft of the glossary from January to February 2021 with members of ongoing BMEL/BLE-funded projects working on agriculture-nutrition linkages in Sub-Sahara Africa or South-East-Asia. We used a wiki platform, and asked for feedback. In a short survey with wiki members, the overall usefulness of the glossary was stressed and one additional term was suggested for addition to the glossary. Thereafter the glossary was used for searching terms, yet not actively worked on, by e.g., adding definitions. The whole process of compiling the glossary is visualised in ◆ Figure 1.

Results

The workshop participants, who all already worked in agriculture-nutrition projects, confirmed that it is important to "provide a *definition of terms* section in the project documentation to facilitate joined learning" and "to harmonise the usage of terms". They agreed that more interaction is needed to clarify terms which are used by the different disci-

plines in order to improve the understanding of the perspective of the "other discipline" using the same words, e.g., macronutrients, in a different context.

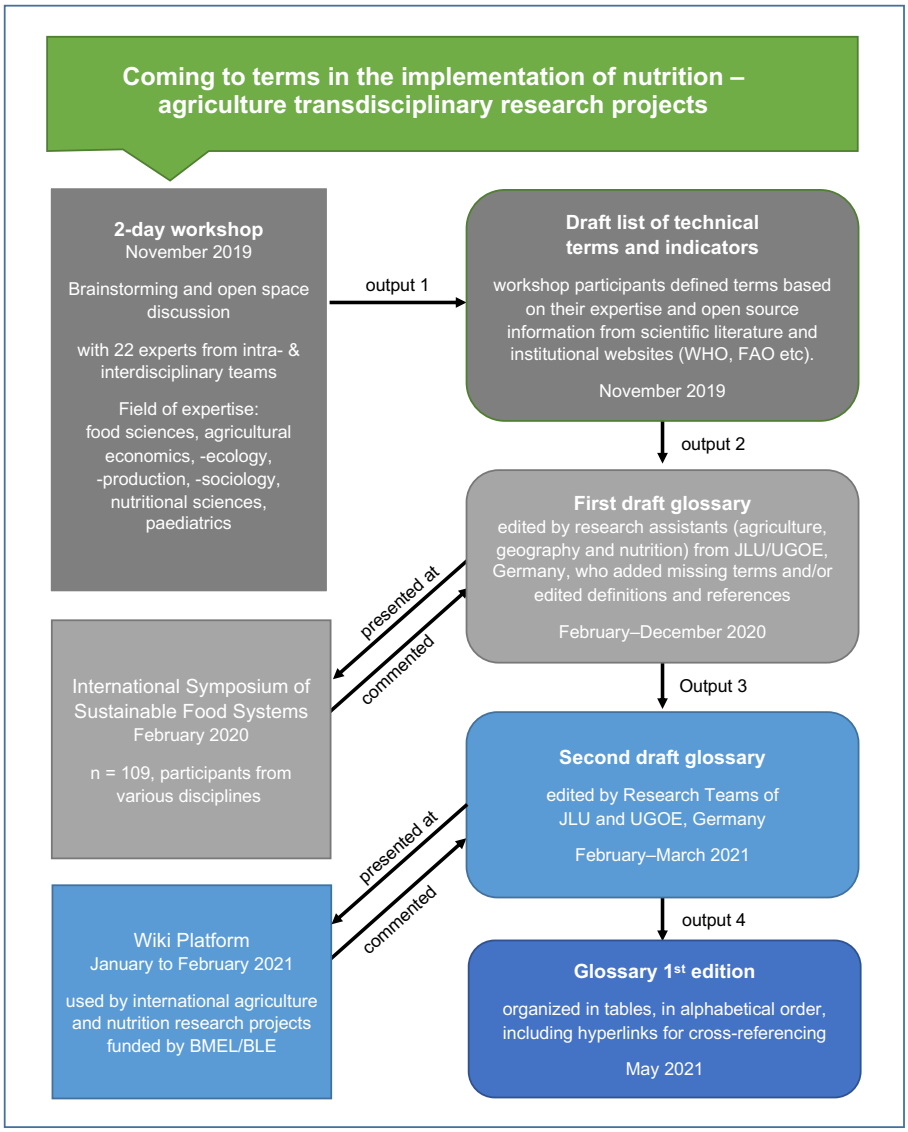
One important suggestion was made by the workshop participants in regard to different project phases, namely that developing a common language needed to take place at the beginning of the planning stage when ideas are formed, and again at the implementation phase.

At the start of our internet-based search, already existing (multi-) disciplinary glossaries and encyclopaedias were sought. These are listed in ◆ Table 2. Not all glossaries and/or encyclopaedias are available as open-source literature, which limits access to the respective information. We also learned from the existing glossaries that no comprehensive glossary exists that fulfils the needs of agriculture-nutrition projects, presenting definitions of terms from both agriculture and nutrition perspectives as well as closely related fields, including indicators and concepts needed for research and research-for-development projects.

Our agriculture-nutrition glossary (Online Supplement to this article), comprising at the moment 145 terms, lists in alphabetical order as many definitions as were found in the named sources for each term, starting from 'Acceptability of food' down to 'Z-score'. Direct links are provided so that it will be quick and easy to find related terms such as 'diversity' and 'variety', 'ecosystems', 'food systems' and 'systems in general', or 'nutritious food' and 'right to food'.

The glossary is used by the workshop participants to create awareness of the different usage of identical terms in their respective institutions. The participants also confirmed that the glossary contrasting the definitions of terms from their various disciplines would be helpful for their future work. More care would in future be taken to explain their own perspective to the partners coming from other disciplines to improve the comparability, compatibility and discussion of findings.

One limitation of this glossary is that it is only in the English language. Misunderstandings of different terms in other languages – and especially between languages, e.g., when translating questionnaires into local languages – were recalled by all workshop participants as a further major concern. We would encourage people to work on similar lists of terms in other languages and would be grateful if other groups would notify us if they have already established a similar list in a language other than English. Linking inter-, multi- and trans-disciplinary glossaries of different languages would help multi-lingual projects such as multicentre projects between French and English-speaking Africa. Eurovoc [9] is an impressive example for a multilingual and multidisciplinary thesaurus and could serve as a model for a multi-lingual agriculture-nutrition glossary.



BLE: German Federal Office for Agriculture and Food; BMEL: German Federal Ministry of Food and Agriculture; FAO: Food and Agriculture Organization of the United Nations; JLU: Justus Liebig University Giessen, Germany; UGOE: Georg August University Goettingen, Germany; WHO: World Health Organization

Figure 1: **Different steps and review loops during compilation of glossary**

Call for action for a living ag-nut glossary

The currently available list with 145 terms (Online Supplement to this article) might be not exhaustive. New terms may become relevant with time, so we are keen to get any feedback and input with further terms and

Abbreviation	Organisation
A4NH	Agriculture for Nutrition and Health
BLE	Federal Office for Agriculture and Food
BMEL	German Federal Ministry of Food and Agriculture
CFS	Committee on Food Security
CGIAR	Consultative Group on International Agricultural Research
EFSA	European Food Safety Authority
EU	European Union
Eurovoc	European Union Vocabularies
FAO	Food and Agriculture Organization of the United Nations
IFPRI	International Food Policy Research Institute
INGENAES	Integrating Gender and Nutrition within Agricultural Extension Services
JLU	Justus Liebig University Giessen, Germany
Livivo	The Search Portal for Life Sciences
ptble	*Projektträger Bundesanstalt für Landwirtschaft und Ernährung*/Federal Office for Agriculture and Food
PubMed	Search Portal for Biomedical and Life Sciences Literature
UGOE	Georg August University Goettingen, Germany
UNICEF	United Nations Children's Fund
WHO	World Health Organization

Table 1: **List of abbreviations**

up-to-date definitions to construct a "living" glossary" which gets updated regularly, so as to support communication within the agriculture-nutrition community.

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Conflict of Interest
The authors declare no conflict of interest.

Name	Author/editor/ organisation	Objective	Assessment	Open access
EuroVoc [9]	European Commission	The EU's multilingual and multi-disciplinary thesaurus covering the activities of the EU, the European Parliament in particular, containing terms in 24 EU languages plus three languages of countries which are candidates for EU accession	very comprehensive, not going into depth regarding technical terms and indicators	+
A Glossary of Terms Related to Integrating Nutrition into Agricultural Extension Services [10]	INGENAES - Integrating Gender and Nutrition within Agricultural Extension Services, Feed the Future	definitions of commonly-used nutrition-related terms for non-technical users	comprises 40 terms, focus on nutrition terms only	+
FAO Term Portal [11]	Food and Agriculture Organization of the United Nations	can be searched for concepts, terms and definitions related to the various fields of FAO's activities, (...) to enhance the exchange of information and facilitate communication	partly even available in several languages, focus on agriculture and related fields, only some nutrition terms available	+
Glossary on "Sustainable agriculture, food security and nutrition" [12]	Biovision/Millenium Institute	aims at providing decision-makers and stakeholders with technical background information, definitions, references and sources for further reading on some of the terms and concepts related to sustainable agriculture, food security and nutrition	defines 34 terms and gives several references; well-founded, yet, only a small number of terms	+
Glossary: Food Systems [13]	CGIAR Research Programme A4NH – Agriculture for Nutrition and Health	a collection of definitions of key terms to help create a common understanding of the many elements that food systems are made up from	defines 32 terms very detailed and with several references, yet limited to a small number of terms	+
Encyclopedia of Global Archaeology [14]	Claire Smith, Flinders University, Australia (Editor)	contains among others a section on "Agriculture and Domestication" which in turn hosts the article on "Agriculture: Definition and Overview"	no information on nutrition in general (only one chapter on "Bone chemistry and ancient diet")	–
Encyclopedia of Food Sciences and Nutrition, Second Edition [15]	Benjamin Caballero, Johns Hopkins University, Maryland, U.S.A. (Editor-in-Chief)	comprising ten volumes, this new edition provides a comprehensive coverage of the fields of food science, food technology, and nutrition	difficult to access, limited on terms used in agriculture	–
National Geographic Website, Resource Library, Encyclopedic Entries [16]	National Geographic Society	education - in particular for teaching kids about the world and how it works	many terms defined but in general from natural sciences and mostly for kids	+
Encyclopedia of Agriculture and Food Systems [17]	Van Alfen	examine topics of global agriculture and food systems that are key to understanding the challenges we face	200 chapters with background information; includes glossaries for each "topic"	–
Glossary – British Nutrition Foundation [18]	British Nutrition Foundation	explanations of some of the terms used on the British Nutrition Foundation website	40 items defined, no references provided, nutrition only	+
Physical Geography - Glossary of Terms [19]	Michael Pidwirny & Scott Jones University of British Columbia Okanagan	contains the definitions for about 2,000 terms commonly used in Physical Geography (and Earth Science); part of the online textbook on Physical Geography in which important key terms are linked to the interactive glossary	an impressive number of terms are described, however, no further references for the definitions and only partly overlapping with agriculture and nutrition terms	+

Table 2: **Currently available multi-disciplinary glossaries in English language published online**

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Dr. Gudrun Keding[3]
[1]Center for international Development and Environmental Research
Justus Liebig University Giessen/Germany
[2]Working Group Nutrition Ecology
Justus Liebig University Giessen/Germany
[3]Division of Quality of Plant Products
Department of Crop Sciences
Georg August University Goettingen/Germany

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