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SUMMARY OF THE ONLINE DISCUSSION

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[↗ www.fao.org/fsnforum/Integrating_nutrition](http://www.fao.org/fsnforum/Integrating_nutrition)

Integrating nutrition into the curricula of agriculture education institutions: Strengthening human capacity to promote nutrition-sensitive agriculture

About this online discussion

This document summarizes the online discussion. *Integrating nutrition into the curricula of agriculture education institutions: Strengthening human capacity to promote nutrition-sensitive agriculture* held on FAO's Global Forum on Food Security and Nutrition (FSN Forum) from 10 to 27 November 2015.

Over the three weeks of discussion, 36 contributions were shared by participants from 18 countries. The topic introduction and questions proposed as well as all contributions received are available on the discussion page:

www.fao.org/fsnforum/forum/discussions/integrating_nutrition

Introduction and general issues raised

The purpose of this on-line discussion was to share views and experiences on how to integrate nutrition into the curriculum of agricultural training institutions, and how to strengthen pre-service education for agriculture students so as to develop a competent workforce that is capable of promoting nutrition-sensitive agriculture.

Recently the term “nutrition-sensitive agriculture” has emerged as a way to define agriculture investments made with the purpose of improving nutrition. The overall objective of nutrition-sensitive agriculture is to make the global food system better equipped to produce good nutritional outcomes as increases in food production alone do not necessarily guarantee to improve diets or nutrition.

Participants strongly agreed on the importance of integrating nutrition in agriculture, sharing a range of perspectives and points of view on how to move forward. The reasons for a strong link between agriculture and nutrition have been discussed passionately, arguing that “*there is no agriculture without nutrition and no nutrition without agriculture*”. (Ghady Chedrawi)

Further, many comments stressed that food, nutrition, health and the environment cannot be dissociated and these links should be at the forefront of the training in all relevant disciplines and beyond higher education or academic curricula.

The need to re-establish connections between nutrition, traditional agricultural and food practices of communities was also voiced by participants: *“unless the agricultural practices of a community are guided by its actual nutritional needs, it would be impossible to avoid either malnutrition or obesity”*. (Lal Manavado) Indeed, nutrition is a matter of culture and therefore influenced by the eating habits and the level of knowledge of those concerned. (Emile Hounngo)

Often, agriculture diverted from traditional practices causing negative impacts on nutrition; an example is peanut production for export in the 1980 in West Africa which greatly diminished the crop’s availability to the local people, for whom it had been a major source of protein for generations. Likewise, in many Asian and South American countries, undue emphasis on cash crops rather than on food crops and livestock has led to a similar result, or to the rising cost of wholesome food. (Lal Manavado)

The role of agricultural colleges and higher education institutions to promote nutrition sensitive agriculture

Colleges and higher education institutions

Institutions of higher education provide a key entry point where nutrition-sensitive agriculture can be incorporated into curricula and into the training of agronomists and agricultural extension agents. Agricultural colleges are critical to not only building capacity but also to designing programs that incorporate nutrition interventions tailored to goals and outcomes. Agricultural Institutions of higher education are also responsible in promoting nutrition-sensitive agriculture through policy-relevant research, dissemination of results, and rigorous impact evaluations. University graduates pursuing education in agricultural extension are able to close the gap between agronomists and nutritionists. (Michelle DeFreese)

Inclusion of the entire food system

Participants noted that while both agriculture and nutrition relate to food, yet training institutions rarely cover the continuum from production to nourishment, leading trainees to “master” one aspect (e.g. soil fertility, postharvest handling, infant & young child feeding) without having a strong understanding of how their expertise relates to the entire food system. Agricultural colleges should aim to train graduates to understand the complexity of food systems, including health and ecological implications.

In this context participants highlighted that:

- One way to start to bridge the gap would be by integrating basic nutrition information into core agricultural classes. (Edye Kuyper)
- The curriculum needs to contain detailed information on all stages of the nutritional chain: food production, processing, storage, preparation, to consumption. (Eileen Omosa)
- People involved in agriculture should be able to appreciate the impact of the food system on the food consumed and the nutrition and health of the population, while also considering its environmental impact. (Hélène Delisle)

- Medical studies often do not include nutrition and this reinforces the need for a general approach to nutrition at food production level (Manuel Moya)

Beyond higher education

Many participants called for a broader inclusion of nutrition into education and training and for a much stronger linkage between academic science and practices at the community levels:

- In order to increase interest in nutrition-sensitive agriculture, schools should organize visits for their young students to farms, agro-industries, food supply chains, and to their own school cafeterias to show them how agriculture and nutrition are combined, and why this combination is essential. Such initiatives would encourage college students to pursue agriculture studies and enrich the agricultural sector. (Ghady Chedrawi)
- FAO developed the "Farmer Field Schools" approach which could be valuable to promote nutrition-sensitive agriculture in farming communities. At the moment, there have been only a few pilot experiences introducing the promotion of dietary diversity for improved nutrition in Farmer Field Schools. (Marie Claude Dop)

What is meant by "integrating nutrition into the curriculum" and the essential competencies of "nutrition" to include in the training of agricultural workers

Tensions between formal and informal education to increase food literacy

Incorporating nutrition education in the curricula of agricultural colleges and higher education institutes is important, but this does not guarantee increased dietary diversity and improved nutrition among farming families.

Food literacy of farming communities is a key aspect often overlooked by decision makers. Food literacy is the understanding of nutritional information and acting on the knowledge in ways consistent with promoting nutritional goals and food wellbeing. Especially in rural communities, the community-based informal education and curriculum-based formal education are two intersecting knowledge spheres, which can become important components to increase food literacy; therefore, local knowledge on nutrition and agriculture should be integrated in the formal education system. (Hom Guartmala)

Nutrition Core Competencies to be included in the curriculum

Participants identified both basic knowledge competencies to be included in the curricula and modalities of delivering them in order to achieve the competencies required.

- **Practice-based learning:** for those active in agriculture, nutrition must be an applied subject to have any effect on dietary practices. Its content should be designed with practical knowledge and hands-on training suited to students so they know how to produce and access nutritious foods, improve eating behavior, enhance nutritional status and prevent chronic diseases with better nutrition and food consumption. (Jane Sherman, Eileen Omosa)

- **Education component:** since “nutrition” in the work of the Agriculture Extension System largely refers to educational activities such as enquiring, communicating, explaining, advising and demonstrating, the syllabus must also aim to build working competences (task-based) relating to behavior change and maintenance. (Jane Sherman)
- **Not only the science of growing crops in isolation:** students need to be exposed to all the areas connected and concerned with the science of growing food and its consumption (Nyla Coelho). Beyond techniques to increase production and productivity, techniques for quality improvement should be taught more and more, such as techniques for optimizing the quality of local agro-pastoral resources and methods of using the locally available food for the development of balanced food diets adapted to local conditions. (Eloundou Tsanga Germain Grégoire)
- **Avoid a fragmented approach:** “integration across the curriculum”, i.e. distribution across existing core subjects generally means fragmentation, loss of coherence and importance, especially if the subject is not allowed its own staff, exams and assessments. (Jane Sherman)
- **Country and culture specificity:** contents of teaching curricula should be country or region-specific and aligned with the country **nutrition strategy and policies.**
- **Climatic and geographic conditions and food culture:** nutrition varies according to age, activity level, and climatic conditions. Agricultural communities have developed the art with reference to their peculiar conditions so that they may meet their nutritional needs as well as possible. Unfortunately, this very important aspect of a community’s food culture is often neglected by nutritionists and in agricultural education. (Lal Manavado)
- **Postharvest losses and food waste reduction:** agricultural education curricula should include topics on how to 1) protect foods from damage and deterioration after the harvest, 2) prevent physical loss, loss of quality and nutritional value, and 3) protect foods from contamination and pests during the postharvest period (handling, storage, processing, and marketing). (Lisa Kitinoja)
- **Food system approach:** the curricula have to include detailed information on all stages of the nutritional chain: food production, processing, storage, preparation, consumption.
- **Notions on biodiversity and its relationship to nutrition:** it is also important to encourage and support studies on food composition and the relationship between biodiversity and nutrition-sensitive agriculture. (Rekia Belahsen)
- **Stimulating behavioral change:** after deciding where to deliver the content of the curriculum then it is possible to define an approach with the greatest impact in terms of behaviour change to embrace nutrition sensitive agriculture. The process helps avoiding situations where there is a big disconnect between the curricula and practice of households where decisions on food are taken. A suggested approach is awareness

creation on interlinkages: good nutrition, costs at the household level in terms of ailments (diabetes, high blood pressures, heart diseases, some cancers) and money. People are more likely to buy into practices that help them avoid ill health and economic costs. (Eileen Omosa)

- **Involvement of stakeholders:** all relevant actors should be consulted to identify nutrition core competencies as well integration of nutrition in to the curricula of agriculture education. This is particularly relevant for decision makers in agriculture, who are often not aware of the importance of nutrition and the linkages between agriculture and nutrition. (Georges Bazongo)

What is expected to result from this extra curriculum element?

Expected results of including nutrition

- **A new class of policy makers:** promoting nutrition sensitive agriculture in agricultural higher education institutions helps to prepare a new class of policy makers able to improve the awareness of the role diet and a better life style play in terms of nutrition and wellbeing. (Alexandrina Sirbu)
- **Improvements at community level:** integrating nutrition core competencies in undergraduate agricultural programs will have a high potential for promoting nutrition-sensitive production at the community level. (Mebit Kebede)
- **To include nutrition in the schools' agricultural training programmes** is to add a new skill enabling the students to tabulate the nutritional value of cultivated plants in a particular location. On the basis of these value tabulations the farmer could also produce comprehensive, rich and nutritious diets for the inhabitants of his agricultural zone. (Eloundou Tsanga Germain Grégoire)

Experiences of integrating nutrition in to the curricula of agricultural higher institution

Women education

Nutrition security has become a national policy issue in India. Self-sufficiency in nutritious food is promoted by encouraging nutrition gardens/kitchen gardens/backyard gardens/vertical farming, integrating poultry-fishery-horticulture in farming system has become a necessity. Women play a major role in nutrition security. A number of training courses are offered to illiterate women by informal education institutions. (Kuruppacharil V.Peter)

Introducing postharvest nutrient loss issues

In several countries nutrition is already part of curriculum in agriculture and allied branches. In India some courses such as home science, food science and nutrition extensively deal with almost all possible related topics of nutrition in detail, while other related courses have basic topics of nutrition in the curriculum. With the rising concern for postharvest losses alleviation

there is need to add topics related to “reduction of postharvest nutrient losses and food processing” into curricula. These would ensure considerable difference with work capacity of agricultural workers in enhancing nutritional. (Vijay Yadava Tokala)

Investing in human capacity in Tanzania

In Tanzania, a number of projects are underway and involve universities as critical stakeholders in achieving nutrition-sensitive agriculture programs. At the Innovative Agricultural Research Initiative (iAGRI), a USAID funded partnership of American, Tanzanian, and Africa-wide institutions, emphasis is placed on strengthening the training, collaborative research, and extension capacities of Sokoine University of Agriculture (SUA) and the Tanzanian National Agricultural Research System. The project aims to improve Tanzania’s ability to produce the leaders, researchers, and applied scientists it needs to achieve sustainable food security and reduce poverty. (Michelle DeFreese)

Recommendations and further challenges

Other recommendations and steps forward mentioned during this discussion and which may call for further debate include the following:

- **The need to build evidence of nutrition impact in normative agricultural extension activities:** it may be important to be able to produce evidence, cases and models of successful action, a strong rationale and a promotional plan when arguing for a proper place for nutrition in the agriculture curriculum. (Jane Sherman)
- **Need to break the “silo effect”:** despite growing interest in transdisciplinary research and training, a strong system of rewards either for institutions or academics who work in these spaces seems to lack. Journals, academic awards, and even institutional awards are still largely slanted toward expertise of a very narrow sort instead of systems approaches, although there are examples of where this is changing. (Edye Kuyper).
- **Integrating nutrition into forestry education:** understanding of the role of forests in food security and nutrition is often overlooked, including in the field of forestry education. It would be of paramount importance for the forestry students and extension workers to receive relevant trainings on food security and nutrition as part of their forestry education curricula (FAO Forestry Department)

Resources shared by participants

- Bread for the World and Helen Keller International. 2013. *Strengthening Human Capacity to Scale Up Nutrition*
http://www.fao.org/fsnforum/sites/default/files/resources/strengthening-human-capacity-FINAL_June%202013.pdf
- World Bank. 2015. *Fostering Agriculture–Nutrition Links. Recommendations for Agriculture Extension Curriculum Reforms in India*

http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2015/05/14/090224b082e7cf7f/1_0/Rendered/PDF/Fostering0agri0lum0reforms0in0India.pdf

- Post Harvest Education Foundation website: www.postharvest.org
- Block, L. 2011. *From nutrients to nurturance: A conceptual introduction to food well-being*. *Journal of Public Policy and Marketing*
<http://journals.ama.org/doi/abs/10.1509/jppm.30.1.5>
- Global Research.2015. *Poisoned Food, Poisoned Agriculture: Getting off the Chemical Treadmill* <http://www.globalresearch.ca/poisoned-food-poisoned-agriculture-getting-off-the-chemical-treadmill/5485076>
- Hawkes, C., Ruel.M.2011. *Value Chains for Nutrition*
<http://www.fao.org/fsnforum/sites/default/files/resources/Value-Chains-for-Nutrition.pdf>
- FAO, FIDA & PAM .2015. *L'état de l'insécurité alimentaire dans le monde 2015. Objectifs internationaux 2015 de réduction de la faim: des progrès inégaux*. Rome, FAO, 66 p.
- Glob Health Action. 2014. *Region-wide assessment of the capacity for human nutrition training in West Africa: current situation, challenges, and way forward*, Roger Sodjinou et al. <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3888908/>
- Fanzo et al. 2013, *Diversifying Food and Diets. Using agricultural biodiversity to improve nutrition and health*.
https://www.researchgate.net/publication/236605246_Diversifying_Food_and_Diets_Using_Agricultural_Biodiversity_to_Improve_Nutrition_and_Health

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