

Research Application Summary

**Nutrition education competences needed by agricultural extension workers:  
perceptions of farmers and field extension workers in Uganda**

Mangheni, M. N.,<sup>1</sup> Shimali, F.<sup>1</sup> & Kabahenda, M.<sup>2</sup>

<sup>1</sup>Department of Extension and Innovation Studies, Makerere University, P. O. Box 7062, Kampala, Uganda

<sup>2</sup>Department of Food Technology and Nutrition, Makerere University, P. O. Box 7062, Kampala, Uganda

**Corresponding author:** [mnmangheni@gmail.com](mailto:mnmangheni@gmail.com)

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**Abstract**

Multi-sectoral nutrition education approaches espoused by Uganda and other countries call for active involvement of agricultural extension workers in education and guidance of farmers on household nutrition. However, there is inadequate understanding regarding what competences are needed for effective integration of nutrition education into conventional agricultural extension roles. The objective of the study was to determine competences needed by agricultural extension workers to integrate nutrition education into agricultural extension services. Data collected from Kihhihi and Nyamirama sub-counties of Kanungu District in south-western, Uganda, in communities served by two civil society extension organizations: Africa2000Network (A2N) and Community Connector (CC). In-depth Focus Group Discussions (FGDs) were conducted with 108 farmers and extension workers to collect qualitative data. The findings showed that extension workers were a viable mechanism for strengthening nutrition education. Farmers felt that nutrition sensitive extension should promote crops that have both market and consumption value, are compatible with changing climate conditions, and suited to cultural food habits of the community. In order to undertake this role, extension workers should possess knowledge on dietary needs of different age groups in a household, nutritious foods and their food values; symptoms of malnutrition; post-harvest handling and agronomic practices for nutritious livestock and crops. Skills and competence should include communication, interpersonal, conflict resolution and other soft skills; technical skills including demonstration of food processing and post harvest handling technologies; and gender analysis. In addition, extension workers should have mindsets and attitudes of empathy and respect for the farmers within their cultural context in order to facilitate changes in nutrition practices. This competence profile should inform curriculum design in Universities and other vocational institutions to enable them produce extension workers equipped to facilitate inclusive, climate smart, nutrition sensitive, and sustainable rural transformation within a multi-sectoral approach.

**Key words:** Agricultural extension workers, competencies, dietary, focus group discussions, nutrition education, skills, Uganda

## Résumé

Les approches multisectorielles de l'éducation nutritionnelle adoptées par l'Ouganda et d'autres pays exigent une implication active des vulgarisateurs agricoles dans l'éducation et l'orientation des agriculteurs sur la nutrition des ménages. Cependant, on ne comprend pas bien quelles sont les compétences nécessaires pour intégrer efficacement l'éducation nutritionnelle aux rôles de vulgarisation agricole conventionnelle. L'objectif de l'étude était de déterminer les compétences requises par les vulgarisateurs agricoles pour intégrer l'éducation nutritionnelle dans les services de vulgarisation agricole. Les données ont été recueillies dans les sous-comtés de Kihihi et Nyamirama du district de Kanungu, dans le sud-ouest de l'Ouganda, dans des communautés desservies par deux organisations de vulgarisation: Africa2000Network (A2N) et Community Connector (CC). Des discussions approfondies ont été menées avec 108 agriculteurs et agents de vulgarisation pour recueillir des données qualitatives. Les résultats ont montré que les vulgarisateurs constituaient un mécanisme viable pour renforcer l'éducation nutritionnelle. Les agriculteurs ont estimé qu'une extension sensible à la nutrition devrait promouvoir des cultures qui ont à la fois une valeur marchande et une valeur de consommation, compatibles avec les conditions climatiques changeantes et adaptées aux habitudes alimentaires culturelles de la communauté. Pour exercer ce rôle, les agents de vulgarisation devraient posséder des connaissances sur les besoins alimentaires des différents groupes d'âge dans un ménage, des aliments nutritifs et leurs valeurs alimentaires; les symptômes de malnutrition; la manutention post-récolte et les pratiques agronomiques pour le bétail et les cultures nutritifs. La connaissance et les compétences doivent inclure la communication, les relations interpersonnelles, la résolution de conflits et d'autres compétences non techniques; les compétences techniques y compris la démonstration de la transformation des aliments et des technologies de manipulation post-récolte; et l'analyse comparative entre les sexes. En outre, les vulgarisateurs doivent avoir des mentalités et des attitudes d'empathie et de respect pour les agriculteurs dans leur contexte culturel afin de faciliter les changements dans les pratiques nutritionnelles. Ce profil de compétence devrait éclairer la conception des programmes d'études dans les universités et autres institutions professionnelles pour leur permettre de produire des vulgarisateurs équipés pour faciliter une transformation rurale inclusive, intelligente, sensible à la nutrition et durable dans une approche multisectorielle.

Mots clés: agents de vulgarisation agricole, compétences, diététique, groupes de discussion, éducation nutritionnelle, Ouganda

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## Background

Malnutrition is a serious global challenge that contributes to high rates of morbidity and mortality in most developing countries (FAO, 2012). Although nutrition is important for purposes of physical growth, cognitive development and improved health (FAO, 2008), close to one billion people go to bed hungry and one third of the developing world's population suffers micronutrient deficiencies (FAO, 2012). In sub-Saharan Africa,

Uganda is among countries with the highest levels of malnutrition especially among children under five years (FANTA-II, 2010; Kikafunda, 2014). Uganda's food and nutrition policy calls for a multi-sectoral approach to dealing with nutrition issues and key sectors include health, education and agricultural sectors.

Agricultural extension agents have been identified as promising behavioral change agents of dietary practices in farming households because they reach and interact with many farming communities within different settings (Fanzo *et al.*, 2013). Although the traditional main role of extension has been to achieve production objectives, due to the push for agriculture to contribute to health and nutrition outcomes, it was recommended that food and nutrition security become part of the agenda of extension workers (Garforth and Lawrence, 1997). This is because while a range of factors influence dietary practices of farming households, there are aspects that can be directly influenced by extension such as the range and quality of crop and animal enterprises produced on the farm and access to nutrition information. Through education and communication, extension interventions can address key causes of poor nutrition namely, attitudes and practices such as food taboos, long established dietary habits, agricultural production decisions, household food distribution patterns; feeding frequency for children and other household members; sanitation and food hygiene; and negative attitudes about nutritious foods such as fruits and vegetables. Agricultural extension workers are well positioned to influence all these factors since they work directly with the farming households and their mandate includes education and dissemination of information to smallhold farming households.

Competencies are one of the key variables that explain performance of agricultural extension workers (Ali *et al.*, 2008). However, there is inadequate understanding of the competences needed for effective integration of nutrition education into conventional agricultural extension roles in developing countries (Issahaku, 2014). In addition, it is not clear what model works best in using extension to impart nutrition knowledge and skills to rural farming households. There is still debate as to whether extension workers' competence should be at a level of being experts in nutrition vis-à-vis equipping them with lower level nutrition competence complemented by technical backstopping from nutrition specialists (Fanzo *et al.*, 2013). Understanding the competence profile would inform design of in-service and pre-service training curricula at universities and vocational training institutions that train agricultural extension personnel. The perception of key stakeholders, notably, farmers and field extension staff on this matter has rarely been sought, yet this is critical in informing development of the appropriate competency profile for extension service providers. This study was conducted to determine the perceptions of farmers and extension workers on possible roles of extension in nutrition education and the competences needed by extension workers to integrate nutrition into agricultural extension education.

### **Literature summary**

Until recently, development policies and programs in most countries have aimed at achieving household incomes and food security through increased agricultural production. However, while targeting yields and income has some benefits, there is

growing evidence that higher income and more food in the households do not automatically improve nutrition (Herforth *et al.*, 2012). There is a need to consciously adopt nutrition sensitive extension approaches which promote nutrition –sensitive agriculture involving production and consumption of diverse, nutrient-dense foods; and gender sensitive and nutrition education suited to the local context. According to FAO (2008), desirable dietary practices expected after exposure to nutrition education range from knowledge and skills on selection of right foods, beginning to grow and eat fruits and vegetables, consumption of diverse diets, to storing foods more safely to reduce nutrient losses. Extension workers should be empowered with necessary core competencies to enable them develop farmer capacity in these specified areas (Zwane *et al.*, 2015).

### **Study description**

The study was conducted in Kihihi and Nyamirama sub-counties of Kanungu District located in south-western Uganda where A2N and CC respectively, have been implementing nutrition extension projects since 2012. The region has the highest number of stunted children in Uganda with stunting levels of 23% (FANTA -II, 2010). Focus group discussions were used to collect qualitative data from the farmers and extension workers. This enabled the researchers to get rich in-depth insights about perceptions on roles of extension in nutrition education and the required competences for effective performance. Eight focus group discussions (FGD) including four for each organization were conducted with 108 farmers who had participated in the project activities. Each FGD had 12 farmers. Data were collected from the extension workers using a modified Delphi technique within the focus group discussion context. Each extension worker was given a card and asked to write down his/her perception regarding what the role of agricultural extension workers should be in nutrition education. All the cards were then pinned on a chart on the wall. After reading through the cards together, the researcher asked whether there were more relevant issues to be included on the list. Upon satisfactory exhaustion of the roles from participants, each point was read out and discussed. Similar cards were merged to avoid duplication while those that were considered out of place were dropped through consensus. The ‘Delphi’ procedure was used to identify desired competences.

### **Research application**

The findings show that both farmers and extension workers agreed that agricultural extension workers should play a key role in promoting nutrition of rural households. Both agreed that extension workers should promote production and consumption of nutritious food crops through farmer training on improved agronomic practices, knowledge on symptoms of malnutrition; the concept of a balanced diet; hygiene and sanitation; and the importance of family cohesion and intra-household gender relations in nutrition and overall household welfare.

However, their conceptualization of the nature of support needed to promote nutritious foods differed. Whereas extension workers perceived their role narrowly in terms of promotion of production of nutritious food crops; the farmers wanted a broader package

of interventions and specified the desired attributes that should characterize the food crops promoted by extension. They were of the view that extension workers and agents should train farmers on nutritious food crops that are early maturing, drought resistant, culturally acceptable and can also be marketed. The extension package should also include training on simple irrigation technologies and distribution of water tanks, intercropping, value addition and processing of food crops, and linking farmers to market. The farmers' perceptions underline the need for nutrition sensitive agricultural extension programs to promote crops that have both market and consumption value, are compatible with the changed climate conditions, and suited to cultural food habits of the community.

Regarding the desired competencies, farmers pointed out that besides the technical skills needed to perform the identified roles, extension workers need mentorship skills for building a cadre of community based nutritionists selected from within communities who can train other farmers, presentation and time management skills. The desired competences are summarized in the Table below:

Table 1: Knowledge and skills needed by extension workers to integrate nutrition into agricultural extension programs

Knowledge	Skills
<p><b>Dietary requirements:</b></p> <ul style="list-style-type: none"> <li>• For different groups of people (women of reproductive age, pregnant women, the sick, elderly, children during the first 1000 days of life from conception to 2 years and beyond)</li> <li>• Symptoms of a malnourished person</li> <li>• Feeding frequency for children under five years</li> </ul> <p><b>Hygiene and sanitation:</b></p> <ul style="list-style-type: none"> <li>• Food hygiene</li> <li>• Home sanitation (kitchen, latrines, rubbish disposal, compound clearing)</li> <li>• Hand washing before and after eating food and after visiting the pit latrines</li> <li>• Boiling drinking water</li> </ul> <p><b>Nutritious food crops</b></p> <ul style="list-style-type: none"> <li>• Nutritious food crops for example fruits and vegetables</li> <li>• Food groups</li> <li>• Nutritious livestock breeds</li> <li>• Nutrition value in food crops and animal breeds</li> <li>• Culture and norms around food</li> </ul> <p><b>Context analysis</b></p> <ul style="list-style-type: none"> <li>• Methods of identifying households with malnutrition in the community</li> </ul>	<p><b>Technical skills:</b></p> <ul style="list-style-type: none"> <li>• Demonstration skills-- Being able to set up learning centers/ demonstration sites where the farmers can see and also practice the technologies being promoted. For example how to grow and prepare/cook nutritious food crops.</li> <li>• Food processing and post harvest handling technologies that reduce on wastage and nutrient loss during post harvest handling.</li> </ul> <p><b>Soft skills:</b></p> <ul style="list-style-type: none"> <li>• Listening skills to help them get information from farmers</li> <li>• Mobilization skills which involve challenging farmers get into groups</li> <li>• Interpersonal skills when relating with others as an extension worker</li> <li>• Lobbying and advocacy skills to attain support for the farmers from different actors</li> <li>• Creativity and interpretation skills. They ought to understand, adopt and adjust accordingly in response to the prevailing situation in their area of operation.</li> <li>• Entrepreneurial and decision making skills so as to be able to guide farmers on choice of enterprises that would help them either earn money for food or access it directly</li> <li>• Motivational skills to facilitate learning amongst the farmers</li> </ul>

**Partnerships**

- How to identify and work with partners from government and non government systems

Saving to ensure continual food supply within households

**Attitudes**

The following are the attitudes that an extension worker needs to have in order for him or her to build a good relationship with farmers and impact their lives:

- Willingness to learn from farmers.
- Positive thinking.
- Accepting positive criticism from the farmers
- Self respect and respect for clients.
- Trust worthiness.
- Being reliable and fulfilling promises to farmers.
- Empathy, tolerance and commitment to work.

- Conflict resolution skills since they work in communities where the clients may have conflicts that require their intervention.
- Communication skills to help them interact with farmers and get adequate information and feedback from them.
- Social skills e.g. people management skills to create working relations.

**Gender analysis skills:**

- How to conduct gender analysis to understand access to and control of household resources; roles in production, marketing of farm produce, food provisioning; who eats what in the household.
- How to sensitise communities for nutrition sensitive gender transformation

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The findings imply that in-service and pre-service training for extension personnel should adopt an interdisciplinary approach that integrates subject matter from nutrition; agronomy and livestock management; gender and social sciences; extension and communication; as well as social skills and personal mastery. An all round extension worker possessing technical agriculture and applied nutrition knowledge and skills, coupled with social and cultural sensitivity would be more suited to the complex rural context in Uganda as opposed to nutrition experts. This competence profile should inform curriculum design in Universities and other vocational institutions to enable them produce extension workers equipped to facilitate inclusive, climate smart, nutrition sensitive, and sustainable rural transformation within a multi-sectoral approach. Training methods and approaches should aim at changing mindsets and attitudes of extension workers in addition to equipping them with requisite knowledge and skills. Research should develop and promote nutritious crops with farmer preferred attributes, namely early maturing, pest and disease resistance, drought resistance, market and cultural acceptability as food.

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## References

- Ali, H.O.K., Maimunah, I., Turiman, S. and Abu-Daud, S. 2008. Extension worker as a leader to farmers: Influence of extension leadership competencies and organizational commitment on extension workers' performance in Yemen. *J. Int. Res.* 1: 368-387.
- FANTA-II. 2010. The analysis of the nutrition situation in Uganda. Food and Nutrition Technical Assistance II Project (FANTA-2), Washington, DC: AED, 2010, 94pp. Available from: [chrome-extension://oemmndcblldboiebfnladdacbdmfmadm/http://www.fantaproject.org/sites/default/files/resources/Uganda\\_NSA\\_May2010.pdf](chrome-extension://oemmndcblldboiebfnladdacbdmfmadm/http://www.fantaproject.org/sites/default/files/resources/Uganda_NSA_May2010.pdf)
- Fanzo, J., Marshall, Q., Wong, J., Jaber, M., Souza, A. and Verjee, N. 2013. The integration of nutrition into extension and advisory services: A synthesis of experiences, lessons and recommendations. Lindau, Switzerland: Global Forum for Rural Advisory Services, pp98. Available from: [chrome-extension://oemmndcblldboiebfnladdacbdmfmadm/http://www.fsnnetwork.org/sites/default/files/gfras\\_nutrition\\_report.pdf](chrome-extension://oemmndcblldboiebfnladdacbdmfmadm/http://www.fsnnetwork.org/sites/default/files/gfras_nutrition_report.pdf)
- FAO. 2008. Agriculture, food and nutrition for Africa: A resource book for teachers of Agriculture. Rome: Food and Agriculture Organisation. Available from: <http://www.fao.org/docrep/w0078e/w0078e00.htm>
- FAO. 2012. Sustainable nutrition security. Restoring the bridge between agriculture and health. Food and Agriculture Organization, Rome, 40pp. Available from: <chrome-extension://oemmndcblldboiebfnladdacbdmfmadm/http://www.fao.org/docrep/017/me785e/me785e.pdf>
- Garforth, C. and Lawrence, A. 1997. Supporting Sustainable Agriculture through Extension in Asia. London, UK: Overseas Development Institute, 10pp. Available from: <chrome-extension://oemmndcblldboiebfnladdacbdmfmadm/https://www.odi.org/sites/odi.org.uk/files/odi-assets/publications-opinion-files/2927.pdf>
- Herforth, A., Jones, A. and Pinstup-Andersen, P. 2012. Prioritizing nutrition in agriculture and rural development: Guiding Principles for Operational Investments. World Bank, Washington, DC. Retrieved from <https://www.wdronline.worldbank.org/handle/10986/13571> License: CC BY 3.0 Unported.
- Issahaku, A. 2014. Perceived competencies of agriculture extension workers in extension services delivery in Northern Region of Ghana, Perspective from Literature. *Developing Country Studies* 4 (15): 107-114.
- Zwane, E. M., Igodan, C., Agunga, R. and Van Niekerk, J. A. 2015. Changing demands of clients of extension: What Kind of competency is needed to meet the new demand? *S.Afr. Tydskr. Landbouvoorl./S. Afr. J. Agric. Ext.* 43 (2): 52 – 65.