

Research application summary

Characteristics of effective nutrition-agricultural extension interventions: lessons from civil society extension organizations in Uganda

Sitenda, T.¹, Mangheni, N. M.¹, Walekhwa, P.² & Kabahenda, M.K.³

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

²Department of Agribusiness and Natural Resource Economics, Makerere University, P. O. Box 7062, Kampala, Uganda,

³Department of Food Technology and Nutrition, Makerere University, P. O. Box 7062, Kampala, Uganda

Corresponding author: sitendatonney@gmail.com

Abstract

Conventional agricultural extension interventions have focused on production objectives with limited attention on nutrition. Recently, there has been a new thrust by the international and regional organizations as well as national governments to adopt extension interventions that engage farmers to improve their dietary practices and achieve nutrition outcomes. However, little has been documented on how these extension interventions can effectively facilitate the desired changes. The objective of the study was to identify characteristics of extension interventions that facilitate changes in farmers' dietary practices. The study was conducted in Kihihi and Nyamirama sub-counties of Kanungu District in South-western, Uganda. These communities are served by two civil society extension organizations; Africa2000Network (A2N) and Community Connector (CC). Nine in-depth Focus Group Discussions (FGDs) with 98 farmers were conducted to collect qualitative data about the interventions and their effect on farmers' dietary practices. Two FGDs were conducted with extension workers to complement the farmers' opinions. Results show that interventions that involve both men and women for trainings facilitated positive changes in dietary practices. Messages that go beyond food production and intake to include hygiene fostered positive change in the dietary practices. Furthermore, methods that were considered effective engaged farmers beyond formal training settings and included entertainment by incorporating drama, songs, and radio talk shows during their leisure time. Drama was pointed out as the most effective method. Conversely, individual methods mainly farmer-to-farmer visits and individual-learning through reading nutrition books were not well rated by farmers. Thus, the extension interventions that mix a variety of methods, more especially those that target men and women; reach farmers during their leisure time; train farmers on food production, food in-take, household hygiene and savings; conduct activities in accessible venues; and partner with universities to incorporate research findings to inform their design; facilitate positive changes in farmers' dietary practices.

Keywords: Dietary practices, drama, focus groups discussions, nutrition-sensitive agricultural extension interventions, Uganda

Résumé

Les interventions conventionnelles de vulgarisation agricole se sont concentrées sur des objectifs de production avec peu d'attention sur la nutrition. Récemment, les organisations internationales et régionales ainsi que les gouvernements nationaux ont adopté une nouvelle orientation pour adopter des interventions de vulgarisation qui encouragent les agriculteurs à améliorer leurs pratiques alimentaires et à obtenir des résultats nutritionnels. Cependant, il existe très peu de documentation sur la façon dont ces interventions de vulgarisation peuvent effectivement faciliter les changements souhaités. L'objectif de l'étude était d'identifier les caractéristiques des interventions de vulgarisation qui facilitent les changements dans les pratiques alimentaires des agriculteurs. L'étude a été menée dans les sous-comtés de Kihihi et Nyamirama du district de Kanungu, dans le sud-ouest de l'Ouganda. Ces communautés sont desservies par deux organisations de vulgarisation de la société civile; Africa2000Network (A2N) et Community Connector (CC). Neuf discussions de groupes approfondies (DGA) auprès de 98 agriculteurs ont été menées afin de recueillir des données qualitatives sur les interventions et leurs effets sur les pratiques alimentaires des agriculteurs. Deux DGAs ont été menées avec des vulgarisateurs pour compléter les opinions des agriculteurs. Les résultats montrent que les interventions qui impliquent à la fois des hommes et des femmes pour des formations ont facilité les changements positifs dans les pratiques alimentaires. Les messages qui vont au-delà de la production et de la consommation d'aliments pour inclure l'hygiène favorisent un changement positif dans les pratiques alimentaires. De plus, les méthodes qui ont été considérées comme efficaces ont incité les agriculteurs à se déplacer au-delà des milieux formels de formation. Elles incluent des divertissements en intégrant des émissions dramatiques, des chansons et des émissions radiophoniques pendant les loisirs. Le drame a été souligné comme la méthode la plus efficace. À l'inverse, les méthodes individuelles, principalement les visites d'agriculteurs à agriculteurs et l'apprentissage individuel par la lecture de livres nutritionnels n'ont pas été bien cotées par les agriculteurs. Ainsi, les interventions de vulgarisation qui combinent une variété de méthodes, plus particulièrement celles qui ciblent les hommes et les femmes; visent à atteindre les agriculteurs pendant leurs temps de loisirs, à former les agriculteurs à la production alimentaire, aux prises de nourriture, à l'hygiène et à l'épargne des ménages; à mener des activités dans des lieux accessibles; à collaborer avec les universités pour intégrer les résultats de la recherche pour éclairer leur conception; et à favoriser des changements positifs dans les pratiques alimentaires des agriculteurs.

Mots-clés: Pratiques alimentaires, drames, discussions de groupes, interventions de vulgarisation agricole sensibles à la nutrition, Ouganda

Background

Nutrition-agricultural extension interventions (NSAEI) aimed at achieving agriculture and nutrition outcomes are increasingly being embraced at global and national levels (World Bank, 2014). This trend is informed by growing evidence that optimizing the link between agriculture and nutrition has great potential to fight malnutrition and poverty

(Charlotte, 2016). However, despite numerous efforts, malnutrition (both over and under nutrition) is still a key issue in many countries (Thomas *et al.*, 2015) since 1.5 billion people are overweight, 2 billion suffer from micronutrient deficiencies and 795 million are undernourished (FAO/IFAD/WFP, 2015).

In Uganda, malnutrition is mainly caused by low availability and access to food, cultural and social beliefs, lack of dietary diversity and high poverty levels (USAID, 2014). Africa 2000 Network (A2N) and Community Connector (CC) have been implementing nutrition- projects in the south western part of the country since 2012. The goal is to achieve improved nutrition of children under two (2) years and mothers of reproductive age. However, despite the program interventions, the South western region of Uganda has one of the highest prevalence rates of stunting in children under five (USAID, 2014). Also, micronutrient deficiencies particularly lack of vitamin A and iron, continue to be highly prevalent among women and children (USAID, 2014) despite the emphasis of both projects on promoting production and consumption of vitamin A and iron rich foods. While causes of malnutrition are linked to inappropriate dietary practices at household level (Uganda Nutrition Action Plan, 2011), interventions for achieving appropriate dietary practices have not been adequately studied (Fanzo, 2013). It is therefore not clear which characteristics of nutrition sensitive agricultural extension interventions such as the ones used by A2N and CC facilitate or hinder positive changes in dietary diversity.

Literature Summary

Literature suggests a range of factors that should characterize effective nutrition-agricultural extension interventions. These interventions should promote increased household incomes and adequate food production levels (Herforth *et al.*, 2012; Gillespie *et al.*, 2015), nutritionally rich foods, and dietary diversity (World Bank, 2014). They should also target training on both men and women so as to promote conducive gender relations (Herforth *et al.*, 2012), and should aim at improving nutrition of vulnerable people mainly pregnant women, lactating mothers, and children less than two (2) years (DFID, 2014). However, empirically tested information on effective NSEI is still scanty pointing to the need for in-depth case studies aimed at generating context specific lessons.

Study description

The study was conducted in Kihhi, Nyamirama, Kirima, and Rugyeyo sub-counties of Kanungu District in South-western, Uganda, where A2N and CC have been implementing nutrition-agricultural extension projects since 2012 (Table 1). The region has the highest number of stunted children with stunting levels of 23% (FANTA-2, 2010). The children also exhibited levels of underweight (19%) and wasting (9%) (FANTA-2, 2010). Focus group discussions were used to collect the qualitative data on perceptions of farmers and extension workers regarding extension methods that facilitated or hindered the uptake of dietary practices. Eleven focus groups (nine for farmers and two

Table 1: Characteristics of Africa 2000 Network and Community Connector interventions in Uganda.

Characteristics of the approach	Characteristics of the interventions	
	Community Connector	Africa2000Network
Funder	USAID's Feed the Future's (FTF) program	USAID's Harvest plus program
Project goal	To reduce under-nutrition among women and children and improve livelihoods of vulnerable communities in 15 districts in northern and southwestern Uganda, through integrated nutrition, gender equity and agriculture activities.	To reduce micronutrient deficiencies and improve dietary intakes of vitamin A and iron for target households
Target districts	Kabale, Kisoro, Kanungu, Ibanda and Kamwenge	Kabale, Kisoro and Kanungu
Extension methods used	Family life schools; where mothers are trained under different categories which include; Mama class-for pregnant women, Baby class-for mothers with babies between 0 and 6 months of age and Family class-for mothers with babies between 6 and 24 months of age.	Radio drama
Engagement of farmers' structures	Farmers are organized in groups of 8-12. These farmer groups also organize to form village fora. Their village fora meetings gather at a Parish level to select a Community knowledge worker (CKW), who must be an active farmer. The cardinal roles of the CKW are to mobilize farmers for trainings, training fellow farmers on different dietary practices as well as supervising them and providing advice. CKWs are trained at the District level so that they in turn transfer the information to fellow farmers. They are given smart phones and trained on how to use them to collect data in form of recorded voices from farmers, and photos in the field which they send to CC offices.	-A2N officers select the most active farmers to be the Community Based Facilitators (CBF) in the area. CBFs are provided with training materials to use during training of fellow farmers.
Partners	Partners and their roles: Grameen Foundation: strengthening farmer structures. It provides CKWs with mobile smart phones; and conducts monitoring and evaluation of the project; <i>Self-Help Africa</i> : Finances the agricultural component; It establishes and coordinates demonstration learning sites. <i>Universities</i> : Mbarara University of Science and Technology (MUST) conducts action research in Western Uganda that analyses the interventions and distils lessons that are used to refine the methods for enhanced effectiveness. Gulu University conducts similar research in northern Uganda. Communication Development Foundation Uganda (CDFU): designs and broadcasts nutrition messages on radio talk shows. Kinkizi Diocese: Conducts the Family life schools for pregnant and lactating mothers. <i>BRAC</i> Uganda: trains on village savings and loans associations to enable farmers save money for food and other needs.	No partnership in the design with other actors
Crops promoted	Paw-paws, pumpkins, avocado and amaranths	Orange flesh sweet potatoes and iron-rich beans.
Messages promoted	Focuses on the "CC see 10" 1) Women/family are saving (Saving with a Purpose); 2) Water, sanitation and hygiene (WASH) facilities	Focuses on; seed systems and extension, products

(like a toilet, washing facility with flowing water) exist; 3. Home development and marketing stand compound is clean and neat; 4) Pumpkin and amaranth, or and demand creation other traditional vegetables are planted near the homestead; 5) At least one pawpaw tree, an avocado tree or other fruit trees is seen near the homestead; 6. Family has chicken, and goats; 7) Family has an agricultural income generating activity; 8) Production assets (e.g. hoes, and wheelbarrows) have recently been acquired; 9) Signs of family having enough food stocks to last three months, e.g., in the garden or a store; 10) Signs that family members support each

Input support The focus was on advisory service without input support to individual Farmers were supported farmers. The support that is extended to farmers is during when they with inputs in form of seeds are setting up demonstration sites as farmer groups and advisory services

Research application

Perceptions of farmers (for both A2N and CC) revealed that there were several changes in dietary practices in the area. The most commonly cited change under both interventions was increased focus on balanced diet and improved meal frequencies in the target communities. However, there were perceived changes unique for farmers under specific intervention. Farmers from CC supported communities reported increased family cohesion (men and women work together in production and marketing); improved saving culture; increased growing of fruits; rearing of local chicken and goats. On the other hand, A2N farmers reported increased focus on value addition to foods grown and production of nutritious foods.

Farmers and extension workers felt that the following characteristics of the interventions contributed to the observed changes in household dietary practices: nutrition messages promoted, clientele targeted, use of farmer structures, training frequency and venue, partnership with other actors, and methods used to interface with farmers. Table two (2) summarizes the key themes.

Table 2: Characteristics of the interventions that facilitated or hindered positive change in dietary practices.

Characteristic of the approach	Farmers perceptions on how characteristic facilitates/hinders change in farmers' dietary practices			
	Facilitating aspect		Hindering aspect	
	CC	A2N	CC	A2N
Messages promoted	<p>- <i>Benefits from message clearly evident:</i> The Water, hygiene and sanitation (WASH) messages focused on innovative practices (such as use of tippy taps for washing of hands after toilet use) that control diseases at household level. Farmers hastily adopted these messages since they realized the health benefits of these messages.</p> <p>- <i>Nutrition message complemented with income generation:</i> Promotion of saving boxes enabled farmers to cultivate saving culture which facilitated them to invest in profitable ventures as well as purchasing nutritious foods.</p>	<p>- <i>Message accompanied with provision of access to inputs:</i> Farmers were supported with seeds of improved varieties which enabled their uptake of promoted food crops</p> <p>- <i>Nutrition message complemented with income generation:</i> Promotion of varieties (more especially OFSP) that fetch premium market price due to size, and palatability.</p>	<p>- Messages promoted were not accompanied with mechanisms to enable farmers access the inputs required to practice the desired nutritional changes; for example seeds of nutritious food crops not availed to farmers.</p> <p>-The pumpkin variety promoted required much land, yet land is limited in the area (average land size is 2acres/household).</p>	<p>- Theft of tippy taps impeded technology uptake since they were constructed in open space.</p>
Target clientele for nutrition trainings	<p>- Targeting both men and women for trainings was effective because men and women shared roles in production of promoted foods and purchase of food using jointly owned household resources.</p>	<p>Also targeted men and women</p>	<p>Some messages were female specific yet they were delivered to both men and women. As one male farmer asserted: In one training, we trained on positioning of a baby during breastfeeding, but this was not okay for us (men). It was appropriate for only women.</p>	-
Training frequency and venues	<p>- Farmers were trained twice a month. This enabled them to apply learnt concepts before the next training.</p>	<p>- Farmers were also trained twice a month - A2N trains farmers at a village level which is nearer for farmers (200 to 500M)</p>	<p>Extension workers often conduct trainings at Sub-county and Parish headquarters which are far (2 to 5Kms) for farmers more especially pregnant and lactating mother.</p>	-
Methods: (Those methods that target farmers in “off-class” settings during ‘leisure time’ fostered changes in dietary practices. These methods included: Drama, songs and radios as explained)	<p>- Drama: This method was the most effective since it enabled farmers’ learning through entertainment in different settings such as market places, trading centers and churches.</p> <p>- Songs; These were played on community radios, megaphones and public address systems which enabled farmers to access the message from different settings such as bars, and local functions.</p> <p>- Use of local radio stations; This motivated farmers to listen from wherever they are without having to move to training venues</p>	<p>- Drama: Farmers who are involved in acting these messages understand the practices they act; while the audience learn by observing and offering feedback about the play.</p> <p>- Radio drama scripts that were aired every Monday at 8:30 - 9Pm informed farmers in an entertaining way.</p> <p>- Daily DJ mentions (2-5times) remind farmers about OFSP and iron rich beans</p>	<p>Nutrition booklets used by CC were too complex for illiterate farmers with no formal education. The booklets were also reported to have been lost by some farmers.</p>	<p>Farmer-to-farmer method: This method was perceived to be ineffective since it was associated with limited farmer interactions and sharing of experiences since it is mainly individual farmers visiting each other.</p>

Characteristic(s) of the approach	Extension workers' perceptions on how characteristic facilitates/hinders change in farmers' dietary practices			
	Facilitating aspects		Hindering aspect	
	CC	A2N	CC	A2N
Messages promoted	<ul style="list-style-type: none"> - Training farmers on three core areas; food production, food intake and WASH helped farmers to improve their dietary practices since they received a holistic package. - Training farmers on balanced diet enabled them appreciate the value of different foods. - Training farmers on saving skills improved farmers' incomes enabling them to buy food not produced on their farms 	<ul style="list-style-type: none"> - Supporting farmers with seed facilitated adoption of practices given the challenges associated with access to improved seeds in the area 	<ul style="list-style-type: none"> -Farmers were taught the food values to eat for a balanced diet but not how much of each to consume in a given time period 	<ul style="list-style-type: none"> -The training package was limited in scope. It only included; seed systems, product development and creating demand for OFSP and iron-rich beans. There was less focus on promotion of indigenous foods.
Target beneficiaries for nutrition outcomes	<ul style="list-style-type: none"> -Pregnant/lactating mothers and children less than two years were targeted. This improves the health status of human beings in the first 1000 days of life (from conception to two years of age) 	<ul style="list-style-type: none"> -Also target Pregnant/lactating mothers and children less than two years. 	-	<ul style="list-style-type: none"> -Given the weak physiological status of pregnant mothers, their participation in trainings is low.
Partnerships	<ul style="list-style-type: none"> - Partners brought numerous expertise on board. For example, research findings generated by Gulu university and Mbarara university of science and technology, informed the project phases to incorporate innovative technologies and adaptive learning. 	<ul style="list-style-type: none"> No partners in the design 	-	<ul style="list-style-type: none"> - Partnerships are informal. They are not monitored since they are not in the project design.
Methods	<ul style="list-style-type: none"> Drama: After every play, the actors request for feedback from the audience for improvement. This motivates farmers in the audience to feel the importance of their attendance in watching the show. Likewise, it provides quick feed back to actors. 	<ul style="list-style-type: none"> - Radio talk shows that were conducted at the beginning of the season trained farmers on agronomic practices which increased food production. - Talk shows that trained farmers during harvesting period created high demand for OFSP and iron rich beans. 	<ul style="list-style-type: none"> - With radio talk shows, messages cannot be controlled from reaching unintended audiences 	<ul style="list-style-type: none"> - Difficult in developing radio messages that suit all types of audiences served by the radio.

CC = Community Connector; A2N = Africa 2000 Network

Discussion

The CC and A2N interventions promote holistic messages in food production, nutrient intake, saving and water, hygiene and sanitation (WASH). They are mainly promoting production and consumption of nutrient dense foods biofortified for vitamin A and iron with a health benefit of fighting micronutrient deficiencies a “hidden hunger problem” in the area. Similar findings were reported by Uganda Nutrition Action Plan (2011) and Herforth *et al.* (2012) that recommended increased consumption of vitamin A and iron since they are the leading causes of maternal and children deaths. Findings also agree with another study that was conducted in Mozambique by Low *et al.* (2007), which indicated that consumption of orange fleshed sweet potatoes (rich in vitamin A) greatly improve children’s nutrition status in areas where micronutrient deficiency was prevalent.

Findings further revealed that, extension methods that do not require farmers to move to training venues to receive nutrition messages, but target them during their “leisure” time facilitated positive changes in dietary practices. These methods were; radio, drama and songs. This finding agree with De fossade *et al.* (2008), who indicated that “entertainment-education” extension methods that engage emotions to inform audiences, encouraged people to live healthier lives through change of attitudes, behavior and social norms, since they relate with the same situation as the characters, and stories in the play. Their study further revealed that drama is a method that easily persuades audiences since they show characters which change behavior to improve their lives. Findings also agree with another study of Romero-Gwynn *et al.* (1990), who found out that radio was a very effective tool in delivering nutrition information to low-income Hispanic mothers.

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