



## UPS 10: Household centered nutrition training and kitchen gardens of green leafy vegetables for improved dietary diversity and family health

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**KEY OBJECTIVE** The main objective of this UPS was to improve the food consumption patterns, nutrient intake, and dietary diversity of rural household family members.

**FVC COMPONENT(S):** Production

### KEY CONSTRAINTS ADDRESSED

Rural areas in Tanzania face a number of nutrition problems, including poor nutritional knowledge, inadequate consumption of micronutrient green leafy vegetables, stereotypes about vegetables, low dietary diversity, inadequate domestication efforts for vegetables, as well as the low use of vegetable cultivation during off-season.

### DESCRIPTION

The implementation were done in semi arid (Ilolo and Idifu) and sub humid (Ilakala and Changarawe) villages. A baseline survey assessed needs in order to identify the nutritional needs of the population. Nutritional training materials were developed based

on the knowledge gap and needs identified from the baseline survey. Household nutritional training was provided to both male and female household members. In rural areas where water is scarce, the introduction of pocket/bag gardens is feasible because they require very little water compared to conventional ground gardens. Typically pocket gardens are on the doorstep, thus ensuring the immediate availability of vegetables. Pocket bag demonstrations were conducted at one central household close to the seedling nursery bed. Materials required to start pocket gardens include: manure, sand, soil, pebbles, pocket bag, water, spade, and buckets. Another type of gardening that was implemented was the 'tray' garden, where a plastic material is inserted into a square hole then filled with pebbles, dry grass and a mixture of soil, sand, and manure. Crops are planted on top. These types of kitchen



Figure 1: A Nutrition training session taking place in Idifu village



Figure 2: Pocket/bag making demonstration in progress at Ilolo





garden do not need any additional economic resources, using only locally available planting materials and own labor. It can grow year round, thus ensuring a sustainable supply of vegetables, providing direct access to high quality vegetables that can be harvested, prepared and fed to household members, often daily.



Figure 3: A Flourished spinach pocket garden in Ilolo village

## PROVEN SUCCESS IN TZ AND BEYOND

Nutrition education provides a considerable advantage in escalating nutritional knowledge and improving the nutritional status of children (Ladzani et al., 2000; Ilett and Freeman, 2004). Locally adapted community nutrition education is found to improve food practices in Africa (Codjia, 2001). In India, nutrition education was effective at improving iron status among adolescent girls (Kaur et al., 2011).

Homestead production of fruits and vegetables has been reported to provide households with direct access to important nutrients that may not otherwise be readily available or within their economic reach.

Kitchen gardens address household malnutrition by promoting increased consumption of the available diverse, nutrition (Pudasaini, Sthapit, Suwal, & Sthapit, 2010). In addition, as home gardens are predominantly managed by women, they can also play an important role in ensuring proper diets of women and children, especially in rural areas (Suwal et al., 2008).

## TRANS-SEC FINDINGS

Some of the key research findings so far include the establishment and increased consumption of green leafy vegetable consumption at the household level, especially in project villages in the semi-arid Chamwino district, but also in sub-humid project villages in Kilosa district. In semi-arid Ilolo and Idifu villages all UPS households have pocket and tray gardens, while there are 24 and 20 adopters in Ilolo and Idifu villages, respectively. Households now consume green leafy vegetables daily. They also produce a surplus that they sell to neighbors, thus obtaining a small income that is used to buy other household needs, including salt and cooking oil. In Kilosa, the implementation has not been as vigorous: only about half of the UPS households have implemented kitchen gardens.

Table 1: Scope of the kitchen garden implementation in the case study sites for the period of July 2015 to April, 2016.

	Kilosa		Chamwino	
	Changarawe	Ilakala	Ilolo	Idifu
Implemented	14	15	27	34
Adopters	6	7	24	20
Droppers	-	-	4	7

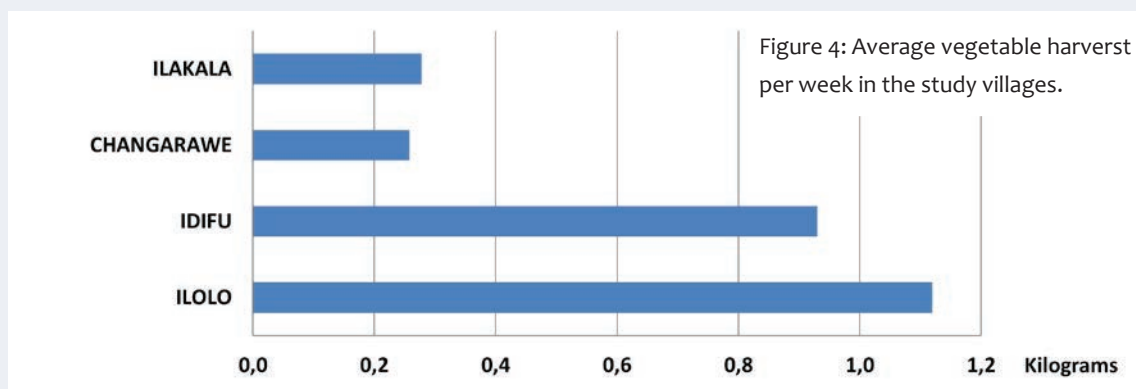


Figure 4: Average vegetable harvest per week in the study villages.







Figure 4 above indicates average vegetable harvest per week in the case study sites for the period between September and December, 2015. The types of vegetables involved included Chinese cabbage, collard greens, spinach, and amaranth.

## TYPE OF FOOD CROPS APPLICABLE

Food crops applicable include micronutrient rich green leafy vegetables such as Chinese cabbage, spinach, collard greens, swiss chard, amaranth, sweet potato leaves, pumpkin leaves, African eggplants, hot pepper, etc. The nutrition training covers a wide range of nutrient rich foods that need to be consumed.

## TECHNICAL SPECIFICS, DIMENSIONS

Formation of UPS groups with members (N=120) includes 30 households in each village. Demonstration and training was done at a center (village office/ dispensary). Participatory training using appropriate training material that had been developed. Impact is assessed via a nutrition survey. Comparison of the nutrition before and after UPS intervention will be used to quantify the impact.

Implementing pocket/bag gardens; watering using clean or waste water; lower cost of production/input, increase area of cultivation; suitable to dry environments; variety selection, using a group approach and group leaders for technical training. Impact is assessed with a 24 hour dietary diversity questionnaire and interviews that include special questions about self-cultivation of vegetables and the collection/consumption of indigenous vegetables before and after UPS intervention. Cooking demonstrations/best preparation practices are being carried out.

A constructed pocket bag can last up to 6-9 months then wears out, meaning a new bag is needed.

Any available size of pocket/bag can be used for this purpose, but the ones implemented in our CSS are 90-100 kg bags with dimension of 122 cm x 71 cm (48" x 28"). For a 48" x 28" bag the cost of preparation is approximately 3 USD. Time for preparation of one ranges between 2-4 hours depending on the number of people collaborating together.

## IMPLEMENTATION CONSTRAINTS

Water is scarce in the CSS: Water sources are located far away, which may affect the weekly watering of the gardens as water has to be carried. Some other vegetable seedlings are very sensitive to transplanting, typically drying up after transplanting. Other problems include pests and diseases, poor training attendance, destructive animals such as chicken and pigs, as well as the need for intensive labor.





## LINKAGE TO OTHER FVC COMPONENTS

**PRODUCTION:** Better knowledge about the nutritional value of different crops and indigenous vegetables in farmer households can increase the production/collection and the supply of nutrient-rich foods. Hence the diversification will be improved and the household's source of income will be extended. Well cooked food enhances human nutrition as opposed to poorly cooked food that children may not want to eat, resulting in diseases related to malnutrition.

**NATURAL RESOURCES:** Gardens require water, soil, sand, and manure.

**MARKET:** Selling surplus vegetables to neighbors results in increased income.



Figure 5: A happy farmer showing her Chinese cabbage pocket garden in Ilolo

## CONSIDERATIONS & CRITERIA FOR UPS OUTSCALING

- Public/village sensitization training campaigns. As the process of constructing pocket bags involves technical specifics, intensive trainings and demonstrations need to be carried out for people to learn.
- Training of trainers (TOT) for sustainability purposes.
- Materials required should be available: pocket bags, pebbles, sand, manure, buckets, seeds and water.

## KEY LESSONS LEARNED

- This UPS recognizes positive impacts of home gardens on addressing inadequate food diversity and under-nutrition.
- Additional benefits, such as increased small income and livelihood opportunities for resource-poor families, are also provided.
- There is a need for local governments to promote kitchen gardens and nutritional education to ensure that the community achieves the dietary diversity necessary to improve family health and income.

## REFERENCES

- Codjia, G. (2001). Food sources of vitamin A and pro-vitamin A specific to Africa: An FAO perspective. *Food and Nutrition Bulletin* 22(4): 357 – 360.
- Ilett, S. and Freeman, A. (2004). Improving the diet of toddlers of Pakistani origin: a study of intensive dietary health education. *Journal of Family Health Care* 14(1): 16 – 19.
- Kaur, M., Bassi, R. and Sharma, S. (2011). Impact of nutrition education in reducing iron deficiency anemia in adolescent girls. *Indian Journal of Fundamental and Applied Life Sciences* 1(4): 222 – 228.
- Ladzani, R., Steyn, N. P. and Nel, J. H. (2000). An evaluation of the effectiveness of nutrition advisers in three rural areas of Northern Province. *The South African Medical Journal* 90: 811 – 816.
- Suwal, R., Gautam, R., Sunwar, S., Basnet, S.B. & Subedi, A. (2005). Enhancing the contribution of home gardens to on-farm management of plant genetic resources and to improvement of the livelihoods of Nepalese farmers. Site Selection Report, Local Initiatives for Biodiversity, Research and Development, Pokhara, Nepal.

