

IMPACT ASSESSMENT OF KITCHEN GARDENING TRAINING UNDER WATERSHED PROGRAMME

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ABSTRACTS

Kitchen Gardening Project is the revolutionary step to increase vegetables production as well as provision of cheap vegetables to the consumers. The main focus of the study was to assess the impact of kitchen gardening training given by Water Resources Research Institute (WRRI) under watershed project in Arokas and Ghoragali. Capacity building of rural women in Kitchen Gardening was the focus and twenty trainees of kitchen gardening were selected randomly from each location to assess the impact of their livelihood. The study finding reveals that Kitchen gardening had increase environmental beauty and income of the growers to some extent in the targeted area. It was recommended that longer-term interventions required to support livelihoods with links to the market and to make strategies with communities to improve access to products and services.

Key words: Kitchen Gardening; Gender; livelihood; Training.

INTRODUCTION

The study was conducted in the hilly areas of Arokas and Ghoragali nearby Muree. Actually, the soil of Muree was considered the best in the tehsil. It was deep and earthy. High-return crops could be grown in it with the help of ample rainfall and a lot of hill manure. It was observed during research of kitchen gardening activity conducted in the targeted area, social benefits that have emerged from kitchen gardening practices are; better health and nutrition, increased income, employment, food security within the household, and community social life. Households and small communities take advantage of vacant land and contribute not only to their household food needs but also the needs of their resident city.

Kitchen gardening contributes to household food security by providing direct access to food that can be harvested, prepared and fed to family members, often on a daily basis. Even very poor, landless or near landless people practice gardening on small patches of homestead land, vacant lots, roadsides or edges of a field, or in containers. Gardening may be done with virtually no economic resources, using locally available planting materials, green manures, “live” fencing and indigenous methods of pest control. Thus, home gardening at some level is a production system that the poor can easily enter (Marsh and Talukder., 1994).

Today, creating a kitchen garden have different aims. It may be a means to stretch the budget by growing food at home that then need to be purchased at a grocery store. Usually the most expensive year for the kitchen garden is the first one, when

things like soil or different things may need to be purchased and thereafter, food produced in a kitchen garden usually does save money and tends to taste better than grocery store purchased fruit and vegetables (Christensen. T. E, 2011).

Kitchen gardening is a technology which enables us to grow bacteria free vegetables at home providing a good use of empty tins, old utensils and clay flower pots. This activity can not only save our money and time but also can provide a healthy, useful and environment friendly hobby for whole family (Cheema. K. J, 2011). Research shows that gardening is a preferred form of exercise across age, gender, and ethnicity (Krems et al., 2004). In order to preserve health and prevent malnutrition; we should develop a kitchen garden; grow fresh and clean vegetables and make them a part of our daily diet (Krishna. M, 2010).

A number of rural household-based productive activities, such as kitchen gardens, livestock rearing and micro enterprises, are dependent on adequate supplies of domestic water to operate. The evidence suggests that these enterprises may be better supported by a household-level water supply infrastructure, such as well pumps and rainwater catchment tanks, rather than by piped systems in rural areas (Noel. S. *et al.*, 2010). The DRWH (Domestic rooftop rainwater harvesting) programmes have positive impact on the productivity, employment and income of the rural poor households and the investment in DRWH is economically viable (Gotur.P.S. *et al.*, 2009).

Effective transfer of technology, supply of inputs on subsidized rates on soil and water conservation works should be taken up effectively and regularly for adoption of watershed development technology (Rao S., 1996). Major suggestions as made by the watershed beneficiaries were tree plantation and terracing activities on cultivators' fields may be taken up on priority basis in the remaining part of watershed (80.00%), organization of training programme on the aspects of agriculture and allied enterprises was also suggested by 75.98 percent of the beneficiaries of the programme (Khalache. *et al.*,1994). Properly managed home gardens can improve rural people's livelihoods and quality of life and foster economic growth that can reduce poverty into the future on a sustainable basis. Research shows that gardening is a preferred form of exercise across age, gender, and ethnicity (Krems *et al.*, 2004).

SSRI, NARC recognizes the importance of agricultural sector in terms of its potential to address the key challenges of unemployment and poverty in the country. Very high proportion of the population in the state is dependent on agriculture. Any improvement in this sector has potential to reduce poverty. NARC has many interventions aimed at improving agriculture.

The WRRRI has conducted training on kitchen gardening to improve the agricultural and poverty situation under Rawal Watershed Project. Social Sciences

Research Institute wishes to understand and assess the impact the existing situation and prospects after the training of home gardening in the sampled area. The study was aim to see the impact kitchen gardening training for food security and economic empowerment of the poor households especially the women with the following objectives: (i) To study the impact of technical demonstration for efficient utilization of water resources; (ii) To study the impact of watershed management through means of kitchen gardening activity; (iii) To suggest policy recommendations for better utilization of water resources.

MATERIAL AND METHODS

This will be a collaborative research initiative with the Watershed Project Component of SSRI. The watershed project extended kitchen gardening trainings in the project area and this study was an effort to evaluate the impacts of these trainings on the households and community. Data was collected through a well developed interview schedule to elicit information from the kitchen gardening trainees. Simple descriptive statistics was employed in order to have a summary description of the data collected. This involved the use of percentages, means and frequency distributions to describe parameters as socioeconomic characteristics. We use Chi-Square model for the interpretation of the results.

The chi-square test provides a method for testing the association between the row and column variables in a two-way table. The null hypothesis H_0 assumes that there is no association between the variables (in other words, one variable does not vary according to the other variable), while the alternative hypothesis H_a claims that some association does exist. The alternative hypothesis does not specify the type of association, so close attention to the data is required to interpret the information provided by the test.

The chi-square test is based on a test statistic that measures the divergence of the observed data from the values that would be expected under the null hypothesis of no association. This requires calculation of the expected values based on the data. The expected value for each cell in a two-way table is equal to (row total*column total)/n, where n is the total number of observations included in the table.

Once the expected values have been computed (done automatically in most software packages), the chi-square test statistic is computed as

$$\chi^2 = \sum \frac{(\text{observed} - \text{expected})^2}{\text{expected}}$$

where the square of the differences between the observed and expected values in each cell, divided by the expected value, are added across all of the cells in the table.

The distribution of the statistic χ^2 is **chi-square** with $(r-1)(c-1)$ degrees of freedom, where r represents the number of rows in the two-way table and c represents the number of columns. The distribution is denoted χ^2 (df), where df is the number of degrees of freedom.

The chi-square distribution is defined for all positive values. The *P-value* for the chi-square test is $P(\chi^2 \geq X^2)$, the probability of observing a value at least as extreme as the test statistic for a chi-square distribution with $(r-1)(c-1)$ degrees of freedom (Chase, M.A and Dummer, G.M., 1992).

RESULTS AND DISCUSSION

Kitchen gardens are indigenous livelihood practices, especially among women; scientific approach in provision and promotion of these livelihoods through training sessions aims to make these livelihoods sustainable. Most of the beneficiaries valued livelihood assistance. The results were especially visible in the poor households. Kitchen gardening training has benefited the target community to practice alternative livelihoods. Still, a follow up plan is needed to ensure that such techniques are practiced on a large scale with market links to assist ecological and economical development in the project area.

From the survey it was reported that the potential land availability of kitchen gardening in court yards was 55% while cultivated around house and fields was 23% similarly existing area under fruits and vegetables was 42.86% in field followed by 38.10% was around house as clearly shows in Table 1. Majority of the trainees were of the view that drip irrigation is more efficient in using water.

Table 1. Land availability for Kitchen Gardening

Characteristics	Court yard	Cultivated area around house	Cultivated area fields
Potential land availability for Kitchen Gardening	55%	23%	23%
Existing area under Fruits & Vegetables	19.05 %	38.10 %	42.86 %
Make water use efficient	Drip irrigation	Water tanks	Roof top water harvesting
	40.00 %	30.00 %	30.00 %

Table 2 reveals the impact kitchen gardening on rural communities. Economically, kitchen gardening improved the livelihood of local community after starting kitchen gardening in the targeted area. It was acknowledged that after the training, all the participants were taking more interest. The practice of kitchen gardening increase from 53% to 87%, similarly the cultivated land were also increase after the kitchen gardening training. It was also accredited that water source for kitchen gardening and water conservation technology were also improved after starting kitchen gardening. There were some constraints and shortcoming of kitchen gardening given by the respondents i.e. Water shortage for kitchen gardening, pest attacks & less awareness, which were tried to compensate through roof top water harvesting system, water tanks and capacity building of the trainees.

Impact	Before Training	After Training
Practice of Kitchen Gardening	52.3%	85.7 %
Cultivated Land area	1 Marlas	3 Marlas
Time allocation for Kitchen Gardening	0.5 hour	2 hours
Impact on livelihood	Buy costly vegetables, health issues	Cost/saving, improvement in physical health (fitness)
Water source for Kitchen Gardening	Streams, & Rainfall	Roof Top Water Harvesting System & Water Tanks
Water Conservation technology	Lack of water Conservation technology	Fulfill water requirement for Kitchen garden & fields
Major constraints	Water shortage for Kitchen gardening, pest attacks & less awareness	Roof Top Water Harvesting System, Water Tanks and Capacity Building

Table 2. Impact of Kitchen gardening on rural communities

The evaluation aimed to gauge whether the training activities in the sampled area had functioned effectively and more specifically, whether trainees had been able to get socio-economic benefits. The evaluation sought to understand the constraints and challenges to achieving the training objectives. The study result shows the kitchen gardening training effectiveness. Capacity building of rural women in kitchen gardening was the focus.

Results of the study analyzed by using Chi-square model (Table 3) which shows significant difference between organizers satisfaction level with respect to the training topics because chi-square value (Chi-Sq = 14.213) is large having a P value (P-Value = 0.076) less than 10% level of significant. In the case of training effectiveness, it is clearly observed in the data that there is a high significant difference between effectiveness responses and training topics because chi-square value (Chi-Sq = 54.265) is large having a P value (P-Value = 0.000) less than 1% level of significant. So that organizer satisfaction levels were quite satisfied in each training curriculum, similarly the effectiveness of the training was quite enormous in each topic of the study except of the Intercultural practices of the trainees. Greater differences between expected and actual data produce a larger Chi-square value. The larger the Chi-square value, the greater the probability that there really is a significant difference. If, the Chi-square value is greater than or equal to the critical value. There is a significant difference between the groups. That is, the difference between actual data and the expected data (that assumes the groups aren't different) is probably too great to be attributed to chance. So we conclude that our sample supports the hypothesis of a difference.

Table 3. Kitchen Gardening Training Effectiveness

Type/Topic of training (list of topics)	Organizers satisfaction level (%)			Effectiveness (%)		
	Satisfied	Fully satisfied	Partially satisfied	Trained	Fully trained	Partially trained
Introduction & importance of kitchen gardening	50	40	10	25	65	10
	54.00*	40.00	6.00	20.00	62.00	18.00
	0.296*	0.000	2.667	1.250	0.145	3.556
Preparation & uses of soil	60	40	00	25	60	15
	54.00	40.00	6.00	20.00	62.00	18.00
	0.667	0.000	6.000	1.250	0.065	0.500
Methods of vegetable cultivation	50	45	05	25	70	05
	54.00	40.00	6.00	20.00	62.00	18.00
	0.296	0.625	0.167	1.250	1.032	9.389
Intercultural practices	55	35	10	10	50	40
	54.00	40.00	6.00	20.00	62.00	18.00
	0.019	0.625	2.667	5.000	2.323	26.889
Seed & Seed varieties	55	40	05	15	65	20
	54.00	40.00	6.00	20.00	62.00	18.00
	0.019	0.000	0.167	1.250	0.145	0.222
Total	270	200	30	100	310	90
Chi-Sq = 14.213, DF = 8, P-Value = 0.076				Chi-Sq = 54.265, DF = 8, P-Value = 0.000		

*Expected counts are printed below

observed counts

**Chi-Square contributions are printed below

expected counts

Community gardens provide active participants with significant physical and psychological health benefits. The research presented here also shows that community gardens have a significant role to play in building social capital. But there were some issues in practical application of kitchen gardening .i.e. Water shortage in Ghora Gali, Transfer of package of technology, Crop management, Non availability of inputs/tools, and Sustainability issue of the project were identified. As results shows many other constraints (listed below) but some suggestion were also highlights e.g. Promotion Rooftop water harvesting system can solve the water shortage problem in community, and arranging seminar and some productive trainings for the capacity building on pest management, crop management is also needed. A concern have voiced for the provision of specifically high efficiency irrigation system, and provision of tools (gender specific tools).

Table 4. Issues Faced in the Practical Application of Kitchen Gardening

Issues	Possible Suggestions
Water shortage in Ghora Gali	Promotion Rooftop water harvesting system in community
Transfer of package of technology	Capacity building /FFS of community on pest/dise identification and management
Crop management	More training s on crop management
Non availability of inputs/tools	Provide improved seeds & establish seed points in area
Proper tool kit for kitchen gardening	Provision of tools (gender specific tools)
Water harvesting (wells, tanks, Rooftop water harvesting)	Participatory development on shared bases
Linkages with other projects	Specifically high efficiency irrigation system
Sustainability issue after project	Local skill transfer to service provider/ market linkages

CONCLUSION

According to the evaluation the following realized impact were identified after kitchen gardening training. Here are some proven results in the community of kitchen gardening training.

- ☞ Increase awareness to the kitchen gardening;
- ☞ Decrease expenditure for vegetable;
- ☞ Increase supply variety of vegetables;
- ☞ Increase crop diversity area of kitchen gardening;
- ☞ Increase the practice of kitchen gardening;
- ☞ Improved self esteemed and motivation;
- ☞ Increase community connection after starting kitchen gardening activity;
- ☞ Improved social environment.

SUGGESTIONS AND RECOMMENDATIONS

Following suggestions and recommendation were made to promote kitchen gardening as hobby.

- ☞ Longer-term interventions required to support livelihoods in target area;
- ☞ Explore joint agency collaboration at the community level;
- ☞ Strategies with communities to improve access to products and services;
- ☞ Provide gender specific tool kits at community level to improve food sustainability;
- ☞ Establish improved seed sale point in community;
- ☞ To conduct different more productive training and seminars to encourage the community.

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