

Research Article



Underlining Small Farmers' Home Gardening Need in District Tank, Khyber Pakhtunkhwa, Pakistan

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Abstract | Home gardening has many socio-economic benefits for small farmers. Home gardening also called kitchen or homestead gardening. Home gardening study is necessary not only due to its social, food security and economic contribution, but its consideration's negligence in development agendas. Home gardening data provide complete agricultural input in a nation's domestic treasure. Therefore, the current study was carried out with the objective to assess small farmers' involvement in home gardening at district Tank, Khyber Pakhtunkhwa- Pakistan. Three hundred and twenty (320) small farmers were selected randomly on the basis of their involvement in home gardening via a pre-tested close ended interview schedule. Data were analyzed by SPSS. Results showed least small farmers involvement in home gardening might be due to lesser awareness and water scarcity. Small farmers' involvement in home gardening was significantly associated to nursery preparation, water management and manure composting training needs. Trainings for small farmers and women were recommended to create awareness for home gardening and water management at the garden.

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Introduction

Home gardening have different names and types like mixed, kitchen, backyard, compound or homestead gardening. Home gardening denotes the insignificant parcel's farming. That may be round or indoors of a home. The gardening at walking distance from home may also refer the subject (Galhena et al., 2013; Ajah et al., 2013). Home based botanical gardens make available benefits to small farmers. Their presence in development agendas perceived equally unimportant and complicated. Kitchen gardens data is important to record due to their contribution in sustenance, farming and productivity. This data provides complete agricultural input share

in a nation's domestic treasure (APCAS, 2010). Poor cereals' centered individuals have the chance to consume healthier food by rising short period vegetables in a home garden. Surplus produce can be stocked for family consumption or else vended for charitable more returns all over the time. It brings a speedy doorstep market to improve urban poor's livelihoods by vending their vegetables to make extra income. Selling to neighbors and at local market does not assume unnecessary marketing hurdles and post-harvest expenses. Vegetables line of work offers striking living's perfection chance to the disadvantaged adherents of a populace. This can add to avoid rural occupants' migration to metropolitan centers by increasing their incomes, refining living

standards and giving an incentive (FAO, 2009). Simple cooked things, fruits as well as vegetables' expenses nonstop upsurge has reduced the poor and static wages groups' current earnings and buying control. Little money individuals' earnings minimal upturn is the present-day need to empower them to get food and nutrition perfection. But, home gardening offers life demanding calories as well as micronutrients according to their quantity and need to the poor throughout the year equally in rural, peri-urban and metropolitan (Awasthi et al., 2016). Home gardening has positive financial and environmental influences on the people even in developing countries. So, home gardening consideration in the research is necessary (Galhena et al., 2013). Small farmers may often be asked about their involvement in home gardening due to its societal and environmental significance (Pritchard et al., 2017). Because, home gardening is the present time necessity for small farmers due to their poor earnings and market access (Awasthi et al., 2016).

In December 2017, the United Nations offered a surprising chance for the global public to holistically talk about the family farming and announced the United Nations Decade of Family Farming (2019-2028) to accommodate changes in the current food systems and to achieve the 2030 Agenda for Sustainable Development (FAO and IFAD, 2019).

Major portion of small farmers in the study area are living below the national poverty level (GoKP, 2012). Home gardening is a viable income's need for poor people which may provide them nutrients/calorie and money (Chayal et al., 2013). But, small farmers' involvement in home gardening is predictably near to the ground (Adekunle, 2013; Pritchard et al., 2017). Therefore, the current study was driven to know the small farmers' involvement in home gardening and to formulate recommendations for such a beneficial activity development in the study area.

Materials and Methods

Study area

Current study was conducted during 2015-16 in district Tank, the drier and hottest region of Khyber Pakhtunkhwa-Pakistan. Majority small farmers were dependent on agriculture for income and over 60% population was living under national poverty line (GoKP, 2012).

Sample size

Three hundred and twenty male small farmers were randomly selected from four union councils. Because, women's participation avoided in economic activities due to traditional and social set up (GoKP, 2012). Four villages out of each union council were selected on convenience basis. Then, equally twenty (20) small farmers were interviewed from each village about their involvement in home gardening (Adekunle, 2013).

Data collection

The appraised respondents were generally quizzed (Sajeev et al., 2012) at their fields, from time to time in hujras (common place) and villages' shops. Problem probed by using local dialects usually in Pashto and hardly ever Sariaki. Data was recorded on structured and pre-tested interview schedule.

Interview instrument validity

The board of three specialists' in agricultural extension discipline validated the instrument for appearance weight. Changes were made according to experts' recommendations. Content validity was measured for desired data generation by five experts after a long discussion using question's clarity regarding study's objectives. About 70-100% judges were agreed to retain the question in final instrument.

Data analysis

Data was analyzed by Statistical Package for Social Sciences (SPSS) for simple percentages (Adekunle, 2013; Mohsin et al., 2017). Chi-square test was used for association among small farmer's involvement in home gardening and training types by following formula:

$$\chi^2 = \sum_{i=1}^r \sum_{j=1}^c \frac{(O_{ij} - e_{ij})^2}{e_{ij}} \dots (1.1)$$

Results are tabulated and presented in Tables 1 and 2.

Results and Discussion

Table 1 shows that only 6.6% small farmers were involved in home gardening although the widely held 93.4% were not. Adekunle (2013) attributed the small farmers' low involvement in home gardening mainly to property unavailability, water scarcity and unawareness about the payback significance. Pritchard et al. (2017) reported dissimilar results 21% rural people involvement in home gardening and attributed this low association to living requirements, settlement

structure, bio-physical means as well as native clashes. Adekunle (2013) reported low involvement as a suggestion for executive and informal organizations to start home gardening for increasing pastoral households' food security.

Table 1: *Sampled respondents' distribution regarding their involvement in home gardening.*

Home gardening	f	% age
Yes	21	6.6
No	299	93.4
Total	320	100.0

Source: *Field survey (Small Farmers' Need Assessment in district Tank, Khyber Pakhtunkhwa, Pakistan 2015-16); % age: Percentage; f: Frequency.*

FAO (2009) recommended for small farmers to use home gardens or communal village land's small parcels for growing profitable vegetables. Carney et al. (2012) reported significant increase in grownups and adolescents' vegetables consumption for numerous intervals per day after community gardening than before adoption. Family workers use for gardens, profited them in physical, psychological and family health and economic terms. Galhena et al. (2013) confirmed home gardening encouraging influences on poor families' food security and nutrition supply, income upsurge and pleasant living environment. Therefore, Carney et al. (2012) recommended community gardening package to reduce food uncertainty and develop nutritional consumption as well as to make stronger household relations.

Awasthi et al. (2016) reported home gardening special need in rural areas due to inadequate earnings opportunities and market's poor access. Ajah et al. (2013) also reported home gardening helpful role in financial growth, foodstuff safety by various nutrients and sufficient produce. Chayal et al. (2013) reported rural households' higher vegetables production, sharing among relatives and friends, consumption with important nutrients like vitamins (A and C) and calcium and reduce buying from market after kitchen gardening intervention in Rajasthan, India. GoKP (2012) reported majority small farmers' dwelling in large houses in the study area. Thus, Ajah et al. (2013) recommended for designers to specify kitchen garden location while a house construction planning either in urban or rural area. Therefore, Awasthi et al. (2016) recommended kitchen garden in uninhabited part at the courtyard. After home gardening possible

intervention, Ajah et al. (2013) reported food security and friendly environment for gardener and nation. Adekunle (2013) reported maize, cabbage, and carrot, onion, butternut, tomato, potato, spinach, lettuce and green pepper major cultivation in home gardens mainly for household consumption to reduce purchase from market, but extra profit from cabbage and spinach. But, FAO (2009) reported less vegetable farming in water scarce areas, which may be triggered by dint of irrigation. Santos et al. (2010) reported domestic vertical soilless or bottle grow system's method and recommended it for vegetables and small fruits production. Bushamuka et al. (2005) reported home gardening project participants' higher vegetables production and earnings. Mohsin et al. (2017) reported gardeners' pleasure with home gardening scheme by supplying garden-fresh vegetables and recommended scheme expansion. But, FAO (2009) reported vegetable production training support need for small farmers concerning sowing time, water requirements, fertilizer use and quantities, etc. Specialized production techniques were easy to understand after minimal experience. After experience, growing vegetables would move away small farmers from subsistence farming to start producing cash crops for market. In such case, small producers would require marketing research regarding consumers' want, location, and willing paid price, produce price, transportation facilities for produce.

Pritchard et al. (2017) reported home gardening significant association to landless households more food and nutrients supply with expectations to counterbalance periodic famines and financial compensation for new practices by resolving complications. Therefore, investigators and specialists were recommended to create home gardening wisdom by ideal organizational strategies' impositions. Islam (2004) tried to promote rooftop gardening and recommended socio-economic, formal situations and barriers' study to implement policies concerning agriculture integration into urban atmosphere. Adekunle (2013) recommended family unit enablement and encouragement to expand home gardening for small farmers' food security in the rural areas by formal funding and guideline, workshops and trainings, set-up improvement, inputs facility and extension officers' official visit to homes. Awasthi et al. (2016) also reported kitchen gardening share in living prosperities as improved well-being and food, income, employment, food security.

Table 2: Association between small farmers' involvement in home gardening and training types need.

Training type	Involvement status	Priority scale					Total	Chi-square	p-value
		1=SDA	2=DA	3=N	4=A	5=SA			
Nursery preparation	Yes	0.3	-	0.6	1.2	4.4	6.6	40.072 ^a	.000***
	No	40.0	2.2	-	15.6	35.6	93.4		
On farm water management	Yes	-	-	0.3	0.9	5.3	6.6	15.164 ^a	.002***
	No	1.2	-	-	8.8	83.4	93.4		
Manure composting	Yes	0.6	-	0.3	1.9	3.8	6.6	15.036 ^a	.005***
	No	12.8	1.2	-	31.2	48.1	93.4		

Source: Field Survey (Small Farmers Need Assessment in district Tank, Khyber Pakhtunkhwa- Pakistan 2015-16); SDA: Strongly disagree; DA: Disagree; N: Neutral; A: Agree; SA: Strongly agree; Values in columns (from 3-8) are percentages.

Adekunle (2013) reported home gardening major governance by women due to spending more time at home than men. Bushamuka et al. (2005) reported women participants in home gardening schemes high economic and decision making contribution in the household. That's why, Awasthi et al. (2016) recommended for women to select joint place in a home for growing favorite vegetables, fruits or cereal for self and societal welfare.

FAO and IFAD (2019) reported that women growers need to achieve sustainable food system and recommended gender's equal access to improved resources, technology, and opportunity in making decision. Sajeew et al. (2012) reported women's kitchen gardening training need for food security. CIRD (2011) reported to contact women by associations in the rural areas to educate them about home gardening through lectures and training. FAO and IFAD (2019) recommended exchange of ideas for policy founding and political commitment inspiration by high level governmental speeches and civil society mobilizations at national and regional levels to highlight family farming significance in developed and developing countries.

Table 2 Shows significant association between small farmers' involvement in home gardening and need for nursery preparation, on-farm water management and manure composting training. Generally, small farmers were asked about the training types which they need on priority for agricultural development. These asked training types were about animals' husbandry, chemical fertilizers/pesticide, nursery preparation, on-farm water management and manure composting. But, significant association was found among small farmers' involvement in home gardening and nursery preparation, on-farm water management and manure

composting training need. These results may mean that small farmers' involvement increase or decrease in home gardening will increase or decrease need for nursery preparation, on-farm water management and manure composting training. These results may mean that small farmers need nursery preparation, on-farm water management and manure composting trainings to improve their involvement in home gardening.

Conclusions and Recommendations

Small farms and kitchen gardens data was important to record due to their contribution in sustenance in addition to farming, and totality. It brings a speedy doorstep market to improve urban poor's livelihood by vending their vegetables to make extra income. After deep investigation, results concluded on least small farmers' involvement in home gardening in the study area. This low involvement might be mainly attributed to property unavailability, water scarcity and unawareness about the home gardening payback significance, living requirements, settlement structure, bio-physical means as well as native clashes. Previous research review reported home gardening contribution in food security by higher vegetables production, social relationships strengthening by sharing among relatives and friends, healthy living by important nutrients' provision, buying reduction from market for rural households and recommended its special need for rural areas due to inadequate earnings opportunities and market's poor access.

The following recommendations were formulated on study results, research area visual observation and review for home gardening development in the study area:

1. Small farmers may be awakened about home gardening economic, food security and

environmental importance to build their interest for action initiation.

2. Small farmers may be supported and motivated by formal funding and guideline; workshops and trainings concerning nursery preparation, water management, manure composting, set-up improvement, inputs facility and extension officers' official visit to expand home gardening.
3. Special plans may be developed to train women to include them in home gardening extension effort because they pass maximum time at home than men. It would increase their economic and decision making contribution in the household and society.

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Novelty Statement

The current research highlights home gardening and its contribution to social, food security and economic input in a nation's domestic treasure. Therefore, the study proved small farmers' involvement in home gardening is significant in regards to nursery preparation, water management and manure composting training.

Author's Contribution

MN designed the research, collected the data and wrote the manuscript. MI supervised the research and helped in data analysis and write-up.

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