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# Kitchen garden: An approach to enhance the household nutritional security for scheduled caste farmers

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**Abstract**

The kitchen garden falls under bio intensive and participatory innovation which can provide year around availability of vegetables and access to adequate amount of food and varieties which supply not only calorific demand but also micro micronutrients meeting household food needs. In Khammam district the Scheduled caste selected farmers, kitchen gardening trial resulted in increase in production, consumption and distribution of excess vegetables to neighbours, relatives & market. Before intervention farmers were traditional practices; they used to grow only one or two seasonal vegetables. To fulfil their daily consumption they had to depend on the market. After the establishment of Kitchen garden, observed noticeable change in food consumption pattern from one to two varieties of vegetables to diversified vegetables. It was also seen that apart from economic saving on vegetable consumption, kitchen gardening also provided them a livelihood support enterprise for fighting against malnutrition. Likewise, intake of energy, protein and dietary fibre increased significantly after introduction of kitchen garden.

**Keywords:** Food consumption pattern, nutrition, kitchen garden

## Introduction

Gardening provides a diversity of fresh foods that improve the quantity and quality of nutrients available to the family. Households with gardens typically source over 50% of their vegetables, fruits, medicinal plants, and herbs from them. Those with animal-raising garden systems often get their primary source of animal protein as well (Marsh and Talukder, 1994) [1]. Home gardening contributes to household food security and nutrition by providing direct access to diverse foods that can be harvested, prepared and fed to family members, often on a daily basis. Even very poor and landless people can practice gardening since it may be done with virtually no economic resources. Homestead production is also an important source of supplementary income for poor rural and urban households around the world. The garden may become the principal source of household food and income during periods of stress (Marsh R, 1998) [1]. In rural areas of India, malnutrition and poor health status is a common problem. It retards growth, increases the risk and duration of illness, reduces work output and slows social and mental development. For poor households, vegetables and fruits are often the only sources of micronutrients in the family diet. Home gardening is one of the world's most ancient food production practices and is practiced throughout the world. Furthermore, decreases in food availability due to climate change will almost certainly result in higher food costs. This would have an effect on both urban and rural communities, as they spend considerably more of their capital on food. Poor landowner farmers, the major parts of them are net food buyer, would also be affected.

Balanced nutrition is very important during all the stages of life for hale and healthy life which cannot be sustained without adequate nourishment. Nutritional deficiencies are more prevalent in rural areas where habitual diets lack variety and they cannot afford to diversify their diets due to lower purchasing power the sustainable solution to their problems lies in improvement and diversification of household diet by growing kitchen gardening.

As the vegetable prices fluctuate or at times the prices goes high, farmers are compelled to resist from buying the vegetables and replace the vegetables with pickles (mango, Red Chillies, tomato) or chilli powder along with onion which sometimes leads to acidity or health issues. According to the 1996 World Food Summit, food security exists "when every person has physical and economic access to healthy and nutritious food at all times in sufficient quantity to cover the needs of their daily ration and food preferences, in order to live a healthy and active life." The nutritional dimension is an integral part of the food security, in its simplest form, food security means that all people have enough to eat at all times to be healthy and active, and that people do not have to fear that the situation will change in the future

Kitchen gardens are found in many humid and sub-humid parts of the world. They are sometimes called backyard or home gardens. These gardens have an established tradition and offer great potential for improving household food

security and eliminating micronutrient deficiencies. Gardening can enhance food security in several ways, most importantly through: 1) direct access to a diversity of nutritionally-rich foods, 2) increased purchasing power from savings on food bills and income from sales of garden products, and 3) fall-back food provision during seasonal lean periods. As per the survey conducted by PJTSAU, the per capita consumption of vegetables including onion is 250 gms/per day as against ICMR recommendations of 325 gms per day. Hence Krishi Vigyan Kendra, Wyra supplied kitchen garden kit that would provide fresh and diverse vegetables while also meeting the nutritional needs. Schedule caste women farmers who are interested and having backyard space chosen for backyard kitchen gardening in the SC SP village in the year 2022 around 100 kitchen garden kits have been distributed among the farmers of Khammam district. The study highlights the transformative power of kitchen gardening in empowering small women farmers ensuring nutrition food security and health.

## Methodology

The current study was conducted using a multi stage random sampling method adopted in the scheming sampling frame. In the initial phase Telangana state was selected purposively in the next stage Khammam district was selected and finally SC farmers were chosen randomly based on the potentiality interest for home grown vegetables. The farmers have access to resources like land water but lacking scientific knowledge and dietary value of vegetables that are easily grown. The data was composed through pre tested questionnaire by personal interview method total 50 families were selected from different villages of common district based on age education and other occupation, the vegetable seeds plants were provided to grow on the back yard and farm bunds though the knowledge on growing vegetables was there but due to lack of knowledge on treating the vegetables such as families were not cleaning the vegetables with soaking in water and they cut the green leafy vegetables and soak them in water due to which the nutrients get wash off hence the families were trained on usage of vegetables such as washing their vegetables and as well as washing them before chopping. KVK, Wyra provided with kitchen garden kit that included amaranthus, okra, bottle gourd, sponge gourd, brinjal, tomato, spinach, fenugreek, Cluster beans, Malabar Spinach. To assess the impact of establishing nutrition and kitchen garden in the rural households average yield per unit was obtained order to access their food consumption pattern before and after establishment of kitchen garden using 24 hours write recall method the nutrition availability to every individual member of the household was calculated using food consumption composition tables given (Gopalan etal) they then nutrition availability was compared with recommended dietary allowances given by ICMR for Indians

## Results and Discussion

**Table 1:** Socio factors and practices followed by the Scheduled caste farmers;

| | | |
|---|---|---|
| Family Size | 3-5 members | 70% |
| | More than 5 members | 30% |
| Education | 10 th and below | 35% |
| | Inter | 42% |
| | Degree and above | 32% |
| Income | Rs 6000/- to 7000/- | 20% |
| | Rs 8000/- to Rs 10,000/- | 48% |
| Owner of agriculture land | Yes | 72% |
| | No | 28% |
| Occupation | Daily Wager | 80% |
| | Subsidiary occupation (tailoring, working in shops etc.,) | 20% |
| Drinking Water | Municipal water | 76% |
| | Bottled water | 18% |
| Cleaning of fruits and vegetables by soaking in water | Yes | 82% |
| | No | 18% |
| Washing of leafy vegetables after cutting | Yes | 100% |
| | No | Nil |

In the present study from the table 1 reveals that the education status of the women is analysed in three categories where, 35% of the women's were 10$^{th}$ class and below 42% for having the intermediate education and remaining 23% women are graduates. As the sample consist of all categories of women and nonformal approach of nutrition education and intervention was more suitable.

**Occupation:** All were engaged in agriculture and allied occupation which fell under the category of moderate work. Subsidiary occupation like working in shops, tailoring and agricultural labourer.

**Monthly family income:** The selected participants were from low income group variations were observed among the subjects in their monthly earnings *viz*., 32 percent of the respondents were earning monthly income of 6000/- to 7000/-, 20% of the family were earning income between 8000 to 10,000/-. Majority of the families that is 50% of the families are earning above 10,000/-.

**Table 2:** Average yield, duration harvests and quantity obtained from different crops

| Name of the crop | No of plants grown | Duration of the crop in days | No of harvests | First harvesting | Quantity obtained in Kgs |
|---|---|---|---|---|---|
| Bhendi | 15-20 | 120-150 | 10-12 | 50- 60 days | 12-14 kgs |
| Brinjal | 5-6 | 90-130 | 15-18 | 40- 50 days | 15- 20 kgs |
| Ridge Gourd | 5-8 | 120-140 | 6-8 | 45-50 days | 150 kgs |
| Bottle Gourd | 5-8 | 120-150 | 8-10 | 65-70 days | 30 fruits |
| Bitter Gourd | 2-3 | 120-140 | 7-10 | 55-60 days | 60-70 kgs |
| Cluster Beans | 5-6 | 90-130 | 5-6 | 60-90 days | 3-5 kgs |
| Gogu | 30-35 | 40-60 | 10-15 | 30-32 days | 3-4 kgs |
| Palak | 45-65 | 40-75 | 3-4 | 30-35 days | 3-4 kgs |
| Fenugreek | 100-120 | 20-30 | Once | 20 days | 2-2.5 kgs |

**Table 3:** Nutritional Information of kitchen garden vegetables for 100gms

| S. No | Vegetable | Energy (kcal) | Protein (%) | Fat (%) | Dietary Fibre (%) | Minerals (%) | Rich source |
|---|---|---|---|---|---|---|---|
| 1 | Tomato | 18.67 | 0.9 | 0.2 | 1.2 | 0.52 | Good source of lycopene, folate, vit k, Vit C |
| 2 | Brinjal | 35 | 0.83 | 0.23 | 2.5 | 0.7 | Potassium, Magnesium, Phosporous |
| 3 | Cluster bean | 37.17 | 1.8 | 0.2 | 4.83 | 1.68 | Folate, Vit K, |
| 4 | Okra | 24.78 | 2.08 | 0.22 | 4.02 | 0.94 | Vit C, Vit E Vit K, |
| 5 | Spinach | 22.52 | 2.14 | 0.64 | 2.05 | 2.38 | Iron, Vit C, Vit B 16, |
| 6 | Amaranathus leaves | 28.13 | 3.29 | 0.65 | 2.28 | 4.41 | Vit A, C, calcium, potassium, magnesium |
| 7 | Gogu Leaves | 33.49 | 1.86 | 1.09 | 4.59 | 0.98 | Calcium, iron, B- carotene, Vit C and anti-oxidant contents |
| 8 | Fenugreek Leaves | 13 | 1.23 | 0.25 | 1.1 | 1.69 | Rich source of Vit B1, Vit B2, Vit B3, Excellent source of Vit K |
| 9 | Bottle gourd | 15 | 0.6 | 0.13 | 1.3 | 0.36 | Good source of Potassium, Sodium, Calcium |
| 10 | Ridge Gourd | 13 | 0.91 | 0.14 | 1.81 | 0.44 | Good source of Iron, Magnesium, Zinc, Oxalates |
| | Source: Longvah *et al*., (2017) | | | | | | |

**Table 4:** Food consumption pattern of Schedule caste farmers and after Introduction of kitchen garden

| Food groups | Frequency of consumption | |
|---|---|---|
| | Before growing of kitchen garden | After growing of Kitchen garden |
| Cereals | Daily | Daily |
| Pulses | 2- 3 times | 3 times |
| Roots and tubers Green leafy vegetables | Once in a week | Twice in week |
| Green leafy vegetables | Once in week as chutneys | Twice in week as whole curry |
| Other vegetables | 2-3 times in week | 4-5 times I a week |
| Seasonal Fruits | Once in a week | 2-3 times in a week |
| Milk and milk products | Daily | Daily |
| Nuts and oil seeds | 0-1 time in week | |
| Oil | Daily | Daily |
| Non vegetarian foods | Once in fortnight | Once in week (mostly on Sundays) |
| Pickles | 5-6 times a week | 2-3 times a week |
| Pickles are replaced by spinach chutney, tomato chutney, brinjal chutney, | | |

**Table 5:** Economic analysis of kitchen gardening

| Before | After | Saving per week |
|---|---|---|
| Expenditure on purchasing vegetable (Kgs/Week) | Expenditure on purchasing vegetable (Kgs/Week) | |
| Rs 320/- | Rs 190/- | Rs 130 /- |

**Source:** Author

From the table 4 The food consumption pattern of the farmers before and after growing kitchen garden are discussed, It was observed that the farmers are non-Vegetarian by habit and consume non vegetarian food one in fortnight, after the establishment of kitchen garden boosting to once a week. The selected beneficiaries are taking monotonous diet, and consuming in bulk rather than quality lacking in variety with 2-3 types of vegetables, after the initiation of kitchen gardening consumption is diversified with 10 types of vegetables. The farmers are consuming more of vegetables and green leavy vegetables. The pickles are replaced with vegetable chutneys as side dish and intake of non-vegetarian food has increased. The farmer buys root and tuber vegetables from the market but the consumption is less when compared to other vegetables. From the table 5 it can be said that the expenditure on purchasing vegetable has decreased from Rs 320/- per week to Rs 190/- per week subsequently saving Rs 130/- per week. The expenditure on vegetable procurement is decreased and buying is confined to root vegetables, onions and chillies. It was observed that after the establishment of kitchen gardening their food consumption of vegetables have increased. The produce from kitchen gardens is a source of income which generates improved livelihood opportunities, imparts rural development and entrepreneurship (Trinh *et al*. 2003) [2].

Also the commercially available vegetables are contaminated with pesticides beyond MRL and continued excess intake of these can lead to neurological effects persistent development disorders and autoimmune disorders. As the availability of vegetables in the kitchen garden increase the consumption and hence mitigate malnutrition. Beyond the obvious hunger resulting from insufficient food the hidden hunger of micro nutrients deficiency that leads to vulnerability to infectious diseases physical and mental impairment that leads to low productivity in addition to reduce life expectancy.

## Conclusion

Nutritive garden or kitchen gardening is one of the notable interventions for adding to the food security of rural households and it should be considered as a strategy at the national level. Nutrition gardens also enhance household dietary diversity by providing essential micronutrients through the constant supply of vegetables and fruits. The complex phenomenon of food availability and accessibility could be addressed through an integrated approach to solving food insecurity issues in the longer run. Kitchen garden or nutrition gardens also builds self-reliance and reduce dependence on subsidies and fortification schemes.

The study suggests suitable policy measures for encouraging the agricultural farmers and labour to scale kitchen garden

as a model for a resilient food system. Further research could be done to assess the impact of kitchen gardening on savings, improvement in nutritive value and change in food consumption pattern.

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