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Backyard kitchen gardening for nutritional security in tribal areas of Adilabad district, India

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Abstract

Many backyard areas from small to large farmers of tribal families remain fallow or unutilized, which is a common phenomenon in tribal areas of Adilabad district. There is a chance to bring these backyards under diverse vegetable production through kitchen gardening round the year including growing and management of quick growing vegetables in a scientific way. This ultimately will play a vital role in ensuring of food and nutritional security and also can provide supplementing income to the tribal families. Based on socioeconomic level of tribal women farmers, who are interested and having backyard space were chosen for backyard kitchen gardening intervention in the adopted tribal villages of KVK, Adilabad and other tribal hamlets. From 2016-2017 to 2018-19 around 130 Kitchen Garden kits have been distributed among 150 tribal women beneficiaries from 18 villages, under Tribal Sub Plan (TSP) programme of KVK, Adilabad. Each kitchen garden kit contains 12 different vegetable seeds. It can be concluded from the study that backyard kitchen gardening in tribal areas decreases expenditure on vegetables, increase the availability of varied vegetables and green leafy vegetables in the diet, increase community connection after starting kitchen gardening activity and earned Rs. 1500 to 2500 per annum.

Keywords: Backyard, kitchen garden kit, per capita consumption, nutritional security and supplementing income

Introduction

Adilabad is one of the districts inhabited by highest number of tribal people in India with more than 75% rural population and among them 35% of people are tribes (Poshadri *et al.*, 2019) [6]. Vitamin and mineral deficiencies in tribal areas are the "hidden hunger" which strikes the health and vitality of the tribal rural people. In tribal areas among children between the ages of 6 and 59 months, a majority (70.2%) are anemic. Nearly two third (65%) of women in Adilabad district are anemic, with the prevalence of moderate to severe anemia being highest (50%) among pregnant women (NFHS-4 data, 2015-16). It is estimated that nutritional anemia contributes to about 24% of maternal deaths every year and is one of the important causes of low birth weight. It adversely affects work output among adults and learning ability in children. Apart from anaemic, malnutrition is also a major concern in Adilabad district especially in infants, young children and nursing mothers in tribal areas (Poshadri *et al.*, 2019) [6]. About 35.8% children below 5 years under weight (weight for age), 38.3% children below 5 years under stunted (Height for age). As per ICMR, Recommended Dietary Allowances (RDA) for vegetable consumption is 300g/day (NNMB, 2006) [5] including roots and tubers, green leafy and green vegetables while it was very low in tribal areas of the district. One of the easiest ways of ensuring affordability, easy access and availability to a healthy diet that contains adequate macro- and micronutrients is to produce diverse kinds of nutritious vegetables in the kitchen garden (Chadha *et al.*, 2012) [1].

Many backyard areas from small to large farmers of tribal families remain fallow or unutilized, which is a common phenomenon. There is a chance to bring these backyards under diverse vegetable production through kitchen gardening round the year including growing and/or management of quick growing vegetables in a scientific way. This ultimately will play a vital role in ensuring of food and nutritional security and also can provide supplementing income to the tribal families. Backyard kitchen gardening is cultivation of diverse vegetables, enable people to grow pesticide-free vegetables in backyard space and provide cheap and organic vegetables to the households (Simrat Pal and Ravinder Kaur, 2019) [7]. Backyard kitchen gardening may be done with virtually no economic resources, using locally available seeds and

planting materials, domestic waste as manures and indigenous methods of pest control. Thus, kitchen gardening at some level is a production system that the tribal farmers can easily enter (Chawla *et al.*, 2016) [2]. Therefore, little attention is given to cultivating vegetables, though these are a significant source of human nutrition. The vegetables and leaf vegetables produced in the backyard can contribute more by providing increased opportunities for supplementing income, household food security, and access to nutrition round the year and conservation of the natural environment (Shaheb *et al.*, 2014) [8]. Under these circumstances, the research work was undertaken with the objectives i) to utilize homestead resources in scientific way for producing fresh vegetables over backyard space and time, ii) to meet up the food security and nutritional requirements of the tribal farmer's family and their livelihood improvement and iii) to create supplementing income for tribal women and children.

Materials and Methods

Based on socioeconomic level of tribal women farmers, who are interested and having backyard space were chosen for backyard kitchen gardening intervention in the adopted tribal villages and other tribal hamlets. The Krishi Vigyan Kendra, Adilabad organized off and on campus training and demonstrations for tribal women on scientific way of production of diverse vegetables in backyard space. From 2016-2017 to 2018-19 more 130 Kitchen Garden kits have been distributed among 150 tribal women beneficiaries from 18 villages, under Tribal Sub Plan (TSP) programme of KVK, Adilabad. Each kitchen garden kit contains 12 different vegetable seeds purchased from the research farm of Sri Konda Laxman Telangana State Horticultural University, Hyderabad.

Table 1: Details of adopted villages and other villages selected for study

S. No	Year	Village	Mandal	No of Beneficiaries
1	2016-17	Pataguda	Indravelly	5
2	2016-17	Gourapur	Indravelly	5
3	2016-17	Ambugoan	Thamsi	5
4	2016-17	Girigoam	Thamsi	5
5	2016-17	Sirikonda	Sirikonda	5
6	2016-17	Shaikguda	Thalamadugu	5
7		Shareguda	Thalamadugu	5
8	2017-19	Markaguda	Indravelly	5
9	2017-19	Dhamanaguda	Gudihathnoor	12
10	2017-19	Telangarao guda	Indravelly	12
11	2017-19	Shaikguda	Thalamadugu	5
12	2017-19	Soyam guda	Indravelly	10
13	2017-19	Raghapur	Gudihathnoor	9
14	2017-19	Saleguda	Indravelly	10
15	2018-19	Heerapur	Utnoor	6
16	2017-18	Sakera	Utnoor	10
17	2017-18	Narasapur-B	Utnoor	10
18	2017-18	Narasapur-J	Utnoor	6
Total				130

The KVK, Adilabad horticulture scientist suggested model with layout and planning of 6 × 6 m Backyard Nutrition Garden. Further made several modifications over the conventional Kitchen Garden and model given by SKLTS Horticulture University. The new demonstrated model can fit in tribal households where limited space is available for growing varied vegetables. The vegetable crop sequences are selected in such a way that the garden remains occupied

throughout the year. The kitchen garden kit having varied vegetables scientifically selected for their rich nutrient contents and least pest and disease problems, thus minimizing the use of pesticides. Spacing requirement of vegetables recommended for the garden is given in Table 2. The model produces about 300 kg of vegetables annually, enough to meet dietary allowance of an average sized family consisting of two adults and two children.

Table 3: Package of Practices for production of Kitchen Gardening Vegetables

S. No	Vegetable	Spacing
1	Tomato	80 × 30
2	Brinjal	45 × 30
3	Ridge Guard	80 × 45
4	Cluster bean	45 × 15
5	Lady's finger	45 × 15
6	Bottle guard	80 × 45
7	Field bean	45 × 15
8	Green chillies	60 × 45
9	Amaranth leaves	45 × 30
10	Gogu leaves	45 × 30
11	Spinach	15 × 5
12	Fenugreek leaves	15 × 10
14	Drumstick leaves	Boarder crop

Table 3: Nutritional Information of Kitchen Gardening Vegetables

S.No	Vegetable	Energy (kcal)	Moisture (%) (wb)	Protein (%)	Fat (%)	Total CHO's (%)	Dietary Fibre (%)	Minerals (%)
1	Tomato	18.67	93.62	0.9	0.47	2.71	1.77	0.52
2	Brinjal	22.88	90	1.48	0.32	3.52	3.98	0.7
3	Ridge Guard	11.78	94.99	0.91	0.14	1.72	1.81	0.44
4	Cluster bean	37.17	84.65	3.55	0.37	4.91	4.83	1.68
5	Lady's finger	24.78	89.06	2.08	0.22	3.62	4.02	0.94
6	Bottle guard	10.01	95.17	0.53	0.13	1.68	2.12	0.36
7	Field bean	31.64	85.57	3.71	0.6	2.85	6.19	1.08
8	Green chillies	14.86	93.89	1.11	0.34	1.84	2.06	0.76
9	Amaranth leaves	28.13	86.85	3.29	0.65	2.28	4.41	2.52
10	Gogu leaves	33.49	87.42	1.86	1.09	4.06	4.59	0.98
11	Spinach	22.52	90.31	2.14	0.64	2.05	2.38	2.47
12	Fenugreek leaves	30.87	86.73	3.68	0.83	2.17	4.9	1.69
14	Drumstick leaves	62.88	75.65	6.41	1.64	5.62	8.21	2.46

Source: Longvah *et al.*, (2017)^[3]

Results and Discussion

The average production of vegetables in the backyard kitchen garden is presented in Table 4. Among the vegetables Tomato produced the highest yield (58.5±0.7kg) followed by Brinjal (44.5±0.9 kg) and Green chillies (32.5±0.2kg). It was observed that an average of 36.8 kg of green leafy vegetables produced in backyard spaces. An average of 54 kg of cucurbitaceous vegetables produced in the backyard kitchen garden. Backyard kitchen gardening at tribal areas of the district increased the per-capita consumption of varied vegetables and also regular cash flow to the tribal women farmers. Kitchen gardening created the awareness on importance of varied vegetables in regular diet. Also adopting kitchen gardening, one can use efficiently backyard space and also ensures regular vegetables to the family which are highly nutritious. The expenditure on vegetables procurement per week has come down and now they no need to go to village haats, which are far away from the tribal villages. Per capita availability and consumption of leaf vegetables per week has been increased, further, it helped to combat against nutritional disorders among tribes.

Table 4: Production of Kitchen Gardening Vegetables per annum

S. No	Vegetable	Yield in kg
1	Tomato	58.5±0.7
2	Brinjal	44.5±0.9
3	Ridge Gouard	29.0±0.2
4	Cluster bean	15.7±0.4
5	Lady's finger	18.5±0.2
6	Bottle guard	25.0±0.7
7	Field bean	19.0±0.8
8	Green chillies	32.5±0.2
9	Amaranth leaves	6.8±0.5
10	Gogu leaves	10.5±0.9
11	Spinach	9.5±0.7
12	Fenugreek leaves	7.5±0.6
14	Drumstick leaves	2.5±0.8

Conclusion

Backyard kitchen gardening is one of the best practices for the tribal women farmers in the district for the self consumption of varied vegetables and it can generate subsidiary income, utilizes family labour and provides year round nutritious vegetables to the tribal family. It can be concluded from the study that backyard kitchen gardening in tribal areas decreases expenditure for vegetables, increase the availability of varied vegetables and green leafy vegetables, increase community connection after starting kitchen gardening activity and earned Rs. 1500 to 2500 per annum.

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