

ECONOMIC BENEFIT FROM NUTRIGARDEN TO FARMWOMEN OF WANAPARTHY DISTRICT, TELANGANA

ABSTRACT

Nutri-garden is an important concept that helps to combat malnutrition by producing diverse kinds of vegetables for rural families. YFA-KVK, Mahabubnagar-I demonstrated the Nutrigarden concept amongst 100 families of three mandals namely Madanapuram Kothkota and Wanaparthi of Wanaparthi district. The present study was taken-up to analyze the economic impact of the Nutrigarden along with perceived constraints faced by the farmwomen. The demonstrations on Nutrigarden improved their understanding in success adoption of the concept. The results revealed that there was total income of Rs. 30592.09/- from kharif vegetables and Rs. 26604.78/- from rabi vegetables. The total vegetable income was Rs. 57196.87/- from an area of 1000Sq.feet in both the seasons. Besides, there are few perceived constraints in successful adoption of Nutrigarden. Overall analysis revealed that Time consuming, lack of backyard and front yard space availability for Nutrigarden, Unaware of the economic advantage of Nutrigarden and lack of knowledge on pest and disease management were amongst the major constraints as perceived by farmwomen.

Keywords: Nutrigarden, Demonstration, Economic analysis, Income increase, Constraints,

INTRODUCTION

“The right to adequate food is realized when every man, woman and child, alone and in community with others, has physical and economic access at all times to adequate food or means for its procurement” (CESCR General Comment No. 12, 1999). Rural India is starving hard to get proper nutritive food. Even if they spent all their income on food, 63.3% of the rural population or more than 52 crore Indians would not be able to afford that nutritious meal (Kalyani Raghunathan,2020 *et al*). Significant

increase in food prices of basic kitchen items like fruits and vegetables, the poor and fixed income groups are suffering from the decreasing real incomes and purchasing power (Gurdarshan Singh and R.K. Singh, 2017). The prices of vegetables have increased quite significantly with retail prices of almost all kinds rising from 25 per cent to 200 per cent (Business Standard.,2020). As the cost of fruits and vegetables increases, the availability of fruits and vegetables in the home decreases (Jamy, D 2007 et al). As a result, if we look into the statistics “Between National Family Health Survey (NFHS)-4 and NFHS-5, the percentage of underweight children went up from 26.6 to 28.9. The percentage of anemic children went up from 60.7 to 70 and at the same time women percentage suffering from anemia rose from 56.6 to 57.6 percent in Telangana (Times of India, 2021). Therefore, it is need of the hour to reduce the effect of poor diet and to meet the requirements of nutritive food with improvement in income, where should be an innovative practice in production and access of food items (vegetables and fruits), such a innovation can be a Nutri-Garden.

Nutrigarden is a method of planting and harvesting nutrient-rich crops in residential houses or in their vicinity to meet the requirements of the family all year round. It is primarily intended for continuous supply of fresh vegetables for family use, where in different types of vegetables are grown in available land. Nutrigarden one of the easiest ways to ensure nutritional security besides providing additional income and reduce the food expenditure as well.

The concept of Nutrigarden has come up as an agricultural intervention in India by Indian Council of Agricultural Research (ICAR) under the Division of Agricultural Extension, New Delhi, initiated special programmes like NARI (Nutri Sensitive Agri-resources & Innovations) through Krishi Vigyan Kendras’ (KVKs) across the country which aimed to sensitize farm women and others stakeholders on various aspects of nutrition to address malnutrition by bringing change in the food systems (Nutrigarden for food security and diet diversity (NARI), 2020).

The present study was carried out from Youth for Action KVK, Mahabubnagar-I of Wanaparthy district, Telangana. YFA-KVK introduced the concept of Nutrigarden in its adopted villages through different activities from 2018-2021 and still continuing the programme in the villages. During last three years, 100 demonstrations were conducted

at farmlevel for proper understanding and adoption of the concept by the farmwomen. Through this paper an effort was made to study the economic benefit from Nutri-garden to farmwomen besides emphasis was laid on identifying the major constraints in adoption of recommended Nutrigarden concept.

MATERIALS AND METHODS

Investigation for the study was carried-out in 10 villages of three mandals of Wanaparthy district, which were purposely selected based on demonstrations conducted by KVK for the last three years i.e., 2018-2019, 2019-20 and 2020-21.

The sample size of 100 (10 sample from each village) were selected to study the economic viability of kitchen gardens.

The respondents are farmwomen who were purposely selected based on taken up of Nutrigarden unit at their homes or farms.

Table 1. Selection of respondents

| S.No | Mandals | Villages | Sample size of the respondents |
|------|-------------|-----------------|--------------------------------|
| 1 | Madanapuram | Madanapuram | 10 |
| | | Kothapally | 10 |
| | | Nelvidi | 10 |
| | | Thirumalaipally | 10 |
| | | Shankarampet | 10 |
| | | Total | 50 |
| 2 | Kothakota | Nervein | 10 |
| | | Ranipet Thanda | 10 |
| | | Total | 20 |
| 3 | Wanaparthy | Metpally | 10 |
| | | Metpally Thanda | 10 |
| | | Nagamma Thanda | 10 |
| | | Total | 30 |

| | | | |
|--|--|--------------------|------------|
| | | Grand total | 100 |
|--|--|--------------------|------------|

These respondents were distributed with vegetable seed kits for both the Kharif and Rabi. The kits comprised of vegetable seeds of three category i.e., Vegetables viz., Tomato, Brinjal, Okra, Chilies, Beans and Cucurbits viz., Bitter guard, Ridge guard and Bottle guard and Leafy vegetables Coriander, Gogu, Methi, Spinach, Amaranthus, Ambhatichukka and Tubercrops viz., Carrot and Radish. Among 100 respondents 50 respondents were kharif season vegetable growers and other 50 respondents were from rabi season.

As part of the demonstration farmwomen (respondents) were advised to use organic manures, i.e., FYM to meet the fertilizer requirement of the crops and also advised them for hand hoeing for weed management besides chemical free pest and disease control was followed and chemical management was taken as least option.

As part of the analysis, vegetable yields were recorded to calculate economic returns from the units. In the present study, major constraints were also listed and categorized as input constraints technical, socio-cultural and general constraints and rank ordered them according to their preferences.

RESULTS AND DISCUSSION

The average yield and expenses were analysed by calculating the economics of the respondents obtained through Nutrigarden cultivation for both kharif and rabi. The data of average yields from both kharif and rabi crops were presented in Table 2.

It is clear from the data that from an area of 1000 square feet, from the selected respondents the average yield of kharif and rabi vegetables were 2139.31 kgs and

1629.80 kgs respectively. From the Table 2, the cumulative yield of vegetables from 100 sample was 3774.36 kgs included both kharif and rabi seasons.

UNDER PEER REVIEW

UNDER PEER REVIEW

Table 2 Average yield obtained from Nutrigarden in Kharif (Area: 1000 sq.feet)

| Resp. | Kharif | | | | | | | | | | | | | | |
|-------|--------|---------|--------|--------------|--------------|-------------|------|---------|------------|-----------|-------|------|----------------|-------|------------------|
| Veg. | Tomato | Brinjal | Chilli | Bottle guard | Bitter guard | Ridge guard | Okra | Spinach | Amaranthus | Coriander | Methi | Gogu | Ambhati Chukka | Beans | Cumulative yield |
| 1 | 307.2 | 576.6 | 302.4 | 288 | 40 | 288 | 168 | 60 | 30 | 30 | 30 | 30 | 30 | 108 | 2288.2 |
| 2 | 289 | 507.7 | 290 | 278 | 30 | 250 | 120 | 51 | 28 | 21 | 25 | 15 | 18 | 102 | 2024.7 |
| 3 | 300 | 540 | 260 | 268 | 28 | 240 | 120 | 52 | 26 | 24 | 26 | 16 | 18 | 100 | 2018 |
| 4 | 256 | 560 | 265 | 255 | 25 | 260 | 123 | 50 | 25 | 25 | 27 | 18 | 15 | 97 | 2001 |
| 5 | 233 | 500 | 240 | 248 | 30 | 230 | 124 | 54 | 23 | 21 | 26 | 17 | 18 | 98 | 1862 |
| 6 | 275 | 510 | 250 | 250 | 35 | 254 | 140 | 48 | 24 | 23 | 28 | 15 | 15 | 95 | 1962 |
| 7 | 305 | 520 | 230 | 200 | 34 | 255 | 143 | 47 | 21 | 24 | 24 | 21 | 16 | 90 | 2500 |
| 8 | 300 | 540 | 220 | 210 | 30 | 265 | 148 | 49 | 20 | 25 | 25 | 20 | 15 | 100 | 2537 |
| 9 | 265 | 530 | 230 | 220 | 28 | 276 | 156 | 50 | 18 | 26 | 26 | 22 | 21 | 91 | 2559 |
| 10 | 256 | 550 | 240 | 240 | 34 | 278 | 123 | 51 | 19 | 26 | 24 | 23 | 22 | 92 | 2666 |
| 11 | 270 | 560 | 250 | 250 | 35 | 284 | 150 | 52 | 20 | 28 | 25 | 24 | 23 | 93 | 2862 |
| 12 | 288 | 490 | 260 | 200 | 38 | 285 | 154 | 53 | 19 | 23 | 26 | 24 | 24 | 94 | 2776 |
| 13 | 267 | 500 | 270 | 210 | 32 | 265 | 156 | 56 | 26 | 25 | 24 | 25 | 20 | 95 | 2868 |
| 14 | 244 | 510 | 300 | 211 | 34 | 265 | 154 | 57 | 28 | 26 | 28 | 26 | 21 | 96 | 2678 |
| 15 | 250.4 | 515 | 280 | 230 | 29 | 267 | 160 | 54 | 26 | 21 | 24 | 21 | 19 | 97 | 2979.4 |
| 16 | 266.7 | 520 | 265 | 220 | 32 | 260 | 161 | 54 | 28 | 27 | 25 | 21 | 23 | 98 | 2000.7 |
| 17 | 266 | 540 | 270 | 236 | 34 | 254 | 162 | 53 | 25 | 23 | 26 | 20 | 24 | 99 | 2032 |
| 18 | 280.4 | 518 | 260 | 276 | 33 | 240 | 167 | 48 | 27 | 24 | 24 | 21 | 21 | 100 | 2039.4 |
| 19 | 275.3 | 512 | 269 | 230 | 28 | 281 | 154 | 48 | 29 | 23 | 25 | 24 | 23 | 102 | 2023.3 |
| 20 | 278 | 500 | 245 | 240 | 35 | 274 | 155 | 47 | 23 | 23 | 26 | 25 | 24 | 90 | 1985 |
| 21 | 209 | 528 | 256 | 250 | 34 | 272 | 156 | 45 | 22 | 24 | 24 | 26 | 24 | 91 | 1961 |
| 22 | 290 | 540 | 260 | 230 | 33 | 271 | 157 | 44 | 21 | 23 | 25 | 23 | 23 | 91 | 2031 |
| 23 | 300 | 530 | 270 | 239 | 32 | 275 | 154 | 43 | 24 | 25 | 26 | 24 | 22 | 92 | 2056 |
| 24 | 304 | 517 | 300 | 240 | 31 | 276 | 150 | 45 | 23 | 26 | 27 | 25 | 21 | 99 | 2084 |

| | | | | | | | | | | | | | | | |
|-------|--------|---------|---------|--------|-------|-------|--------|-------|------|------|-------|------|-------|-------|----------|
| 25 | 278 | 515 | 260 | 230 | 30 | 277 | 154 | 46 | 22 | 27 | 23 | 26 | 23 | 89 | 2000 |
| 26 | 287 | 520 | 270 | 210 | 30 | 287 | 160 | 47 | 21 | 28 | 24 | 26 | 23 | 90 | 2023 |
| 27 | 298 | 510 | 260 | 200 | 25 | 267 | 160 | 48 | 25 | 21 | 25 | 27 | 24 | 91 | 1981 |
| 28 | 300 | 511 | 290 | 210 | 26 | 276 | 161 | 49 | 24 | 24 | 26 | 21 | 25 | 90 | 2033 |
| 29 | 267 | 513 | 300 | 200 | 28 | 245 | 162 | 50 | 21 | 25 | 24 | 23 | 27 | 91 | 1976 |
| 30 | 240 | 543 | 245 | 219 | 27 | 250 | 163 | 51 | 25 | 21 | 27 | 23 | 21 | 90 | 1945 |
| 31 | 250 | 550 | 265 | 229 | 31 | 265 | 164 | 52 | 26 | 28 | 28 | 24 | 23 | 91 | 2026 |
| 32 | 256 | 545 | 267 | 230 | 32 | 267 | 165 | 54 | 27 | 29 | 28 | 27 | 24 | 90 | 2041 |
| 33 | 279 | 529 | 250 | 254 | 30 | 276 | 166 | 48 | 26 | 27 | 21 | 21 | 25 | 91 | 2043 |
| 34 | 289 | 515 | 240 | 276 | 27 | 261 | 167 | 48 | 21 | 28 | 24 | 23 | 21 | 92 | 2032 |
| 35 | 280.4 | 529 | 260 | 280 | 25 | 250 | 140 | 46 | 23 | 21 | 25 | 24 | 20 | 93 | 2016.4 |
| 36 | 257.3 | 520 | 270 | 210 | 28 | 246 | 143 | 47 | 24 | 18 | 26 | 21 | 23 | 94 | 1927.3 |
| 37 | 266.3 | 530 | 289 | 211 | 31 | 254 | 143 | 43 | 24 | 19 | 27 | 23 | 24 | 95 | 1979.3 |
| 38 | 278.3 | 540 | 290 | 230 | 32 | 245 | 142 | 43 | 25 | 17 | 23 | 29 | 25 | 100 | 2019.3 |
| 39 | 287 | 560 | 300 | 220 | 33 | 234 | 145 | 43 | 26 | 18 | 24 | 21 | 26 | 99 | 2036 |
| 40 | 243 | 540 | 270 | 210 | 32 | 243 | 146 | 44 | 27 | 21 | 25 | 22 | 27 | 98 | 1948 |
| 41 | 289 | 550 | 240 | 230 | 33 | 254 | 164 | 45 | 23 | 23 | 27 | 20 | 21 | 99 | 2018 |
| 42 | 234.3 | 570 | 260 | 240 | 32 | 251 | 155 | 46 | 24 | 24 | 24 | 24 | 23 | 100 | 2007.3 |
| 43 | 250.4 | 540 | 260 | 250 | 34 | 278 | 154 | 47 | 25 | 25 | 25 | 25 | 24 | 100 | 2037.4 |
| 44 | 270 | 504 | 270 | 240 | 32 | 267 | 165 | 48 | 26 | 25 | 27 | 26 | 20 | 89 | 2009 |
| 45 | 240 | 515 | 260 | 260 | 28 | 276 | 161 | 49 | 27 | 26 | 23 | 23 | 17 | 88 | 1993 |
| 46 | 230 | 520 | 300 | 240 | 27 | 266 | 163 | 50 | 23 | 27 | 24 | 23 | 18 | 90 | 2001 |
| 47 | 244 | 540 | 280 | 250 | 28 | 256 | 166 | 51 | 18 | 26 | 26 | 24 | 28 | 91 | 2028 |
| 48 | 259 | 550 | 270 | 260 | 28 | 255 | 154 | 52 | 18 | 28 | 23 | 25 | 25 | 98 | 2045 |
| 49 | 260 | 567 | 265 | 270 | 31 | 276 | 145 | 53 | 21 | 28 | 21 | 27 | 23 | 88 | 2075 |
| 50 | 230 | 540 | 270 | 210 | 32 | 243 | 151 | 56 | 23 | 25 | 18 | 21 | 24 | 89 | 1932 |
| Total | 13438 | 26480.3 | 13283.4 | 11788 | 1546 | 13130 | 7614 | 2467 | 1190 | 1215 | 1254 | 1145 | 1104 | 4726 | 106965.7 |
| Avg. | 268.76 | 529.606 | 265.668 | 235.76 | 30.92 | 262.6 | 152.28 | 49.34 | 23.8 | 24.3 | 25.08 | 22.9 | 22.08 | 94.52 | 2139.314 |

Table 3 Average yield obtained from Nutrigarden from Rabi season (Area: 1000sq.feet)

| Resp. | Tomato | Brinjal | Chilli | Bottle guard | Bitter guard | Ridge guard | Okra | Spinach | Amaranthus | Corinader | Methi | Gogu | Ambati Chukka | Beans | Cumulativ yield |
|-------|--------|---------|--------|--------------|--------------|-------------|------|---------|------------|-----------|-------|------|---------------|-------|-----------------|
| 51 | 278.9 | 534.5 | 274 | 231 | 28 | 231 | 144 | 42 | 30 | 28 | 29 | 33 | 31 | 74 | 1988.4 |
| 52 | 254.3 | 456.7 | 235 | 165 | 26 | 165 | 132 | 41 | 32 | 32 | 32 | 32 | 32 | 75 | 1710 |
| 53 | 223 | 342.5 | 245 | 187 | 21 | 187 | 122 | 44 | 32 | 32 | 32 | 32 | 32 | 72 | 1603.5 |
| 54 | 184.5 | 523.6 | 162 | 198 | 22 | 198 | 121 | 45 | 30 | 30 | 30 | 30 | 30 | 73 | 1677.1 |
| 55 | 192.5 | 445.7 | 163 | 187 | 23 | 187 | 112 | 44 | 29 | 29 | 29 | 29 | 29 | 75 | 1574.2 |
| 56 | 187.5 | 523.5 | 234 | 187 | 21 | 187 | 120 | 41 | 27 | 28 | 31 | 28 | 29 | 70 | 1719 |
| 57 | 210 | 324 | 265 | 167 | 18 | 167 | 128 | 42 | 23 | 21 | 24 | 31 | 27 | 69 | 1539 |
| 58 | 225.5 | 345 | 264 | 195 | 19 | 195 | 119 | 42 | 24 | 25 | 28 | 29 | 30 | 66 | 1618 |
| 59 | 243 | 423 | 231 | 221 | 16 | 221 | 132 | 38 | 31 | 31 | 31 | 31 | 31 | 67 | 1747 |
| 60 | 221 | 453 | 256 | 214 | 21 | 214 | 131 | 39 | 30 | 30 | 30 | 30 | 30 | 68 | 1767 |
| 61 | 192.2 | 432 | 221 | 210 | 23 | 210 | 132 | 38 | 30 | 30 | 30 | 30 | 30 | 63 | 1671.2 |
| 62 | 211 | 412 | 198 | 200 | 24 | 200 | 120 | 36 | 29 | 29 | 29 | 29 | 29 | 64 | 1610 |
| 63 | 265 | 389 | 187 | 221 | 27 | 221 | 124 | 36 | 28 | 28 | 28 | 28 | 28 | 62 | 1672 |
| 64 | 235 | 394 | 174 | 198 | 20 | 199 | 123 | 35 | 27 | 27 | 27 | 27 | 27 | 61 | 1556.6 |
| 65 | 272 | 387 | 187 | 198 | 18 | 198 | 123 | 38 | 30 | 30 | 30 | 30 | 30 | 60 | 1631 |
| 66 | 186 | 389 | 245 | 174 | 17 | 174 | 125 | 38 | 31 | 31 | 31 | 31 | 31 | 59 | 1562.9 |
| 67 | 194 | 386.6 | 234 | 167 | 20 | 167 | 118 | 36 | 28 | 28 | 28 | 28 | 28 | 74 | 1540.4 |
| 68 | 205 | 376.6 | 254 | 178 | 18 | 178 | 120 | 37 | 25 | 25 | 25 | 25 | 25 | 75 | 1565.9 |
| 69 | 223 | 345 | 268.6 | 170 | 21 | 160 | 123 | 37 | 26 | 26 | 26 | 26 | 26 | 72 | 1568.7 |
| 70 | 215.5 | 354 | 231.3 | 178 | 23 | 170 | 132 | 32 | 27 | 27 | 27 | 27 | 27 | 73 | 1593.2 |
| 71 | 234.7 | 367 | 231.7 | 198 | 21 | 187 | 131 | 36 | 27 | 27 | 27 | 27 | 27 | 75 | 1606.6 |
| 72 | 218 | 378 | 245 | 185 | 24 | 185 | 128 | 36 | 21 | 21 | 21 | 21 | 21 | 70 | 1574.3 |
| 73 | 194.5 | 369 | 187.5 | 174 | 21 | 174 | 123 | 26 | 22 | 22 | 22 | 22 | 22 | 71 | 1460.9 |
| 74 | 233 | 345 | 187 | 165 | 23 | 165 | 124 | 25 | 21 | 21 | 21 | 21 | 21 | 74 | 1456.6 |

| | | | | | | | | | | | | | | | |
|---------|-------|---------|---------|-------|-------|--------|--------|------|-------|-------|-------|-------|------|-------|---------|
| 75 | 242 | 344 | 194.5 | 171 | 24 | 171 | 126 | 33 | 30 | 30 | 30 | 30 | 30 | 73 | 1533.4 |
| 76 | 254 | 445 | 185.6 | 195 | 24 | 195 | 129 | 32 | 30 | 30 | 30 | 30 | 30 | 72 | 1688.6 |
| 77 | 264 | 423 | 187.9 | 203 | 21 | 203 | 132 | 38 | 30 | 30 | 30 | 30 | 30 | 70 | 1691.8 |
| 78 | 255.6 | 412 | 195 | 207 | 23 | 207 | 131 | 38 | 21 | 21 | 21 | 21 | 21 | 71 | 1644.6 |
| 79 | 247.5 | 417 | 234.5 | 209 | 20 | 209 | 130 | 39 | 30 | 30 | 30 | 30 | 30 | 75 | 1731 |
| 80 | 267.9 | 342 | 233.5 | 221 | 21 | 221 | 128 | 38 | 19 | 19 | 19 | 19 | 19 | 66 | 1633.4 |
| 81 | 244 | 367 | 245.6 | 203 | 19 | 203 | 114 | 32 | 21 | 21 | 21 | 21 | 21 | 67 | 1599.6 |
| 82 | 221.4 | 358 | 234.1 | 200 | 18 | 200 | 115 | 33 | 22 | 22 | 22 | 22 | 22 | 68 | 1557.5 |
| 83 | 234.5 | 398 | 212.7 | 198 | 17 | 143 | 118 | 33 | 24 | 24 | 24 | 24 | 24 | 63 | 1522.6 |
| 84 | 222.3 | 432 | 245.6 | 189 | 16 | 163 | 117 | 34 | 23 | 23 | 23 | 23 | 23 | 64 | 1643.5 |
| 85 | 215 | 456 | 212 | 154 | 17 | 197 | 113 | 36 | 25 | 25 | 25 | 25 | 25 | 62 | 1631 |
| 86 | 234 | 421 | 210 | 201 | 18 | 201 | 122 | 39 | 26 | 26 | 26 | 26 | 26 | 61 | 1637 |
| 87 | 239.6 | 324 | 203.3 | 214 | 18 | 214 | 125 | 40 | 27 | 27 | 27 | 27 | 27 | 60 | 1572.9 |
| 88 | 265 | 345 | 235 | 216 | 17 | 216 | 124 | 44 | 28 | 28 | 28 | 28 | 28 | 59 | 1661 |
| 89 | 243 | 367.7 | 236 | 208 | 21 | 208 | 120 | 41 | 29 | 29 | 29 | 29 | 29 | 74 | 1661.4 |
| 90 | 227.6 | 345.6 | 198 | 209 | 20 | 209 | 121 | 42 | 30 | 30 | 30 | 30 | 30 | 73 | 1594.7 |
| 91 | 235.4 | 345.8 | 174.3 | 212 | 19 | 212 | 112 | 41 | 30 | 30 | 30 | 30 | 30 | 72 | 1573 |
| 92 | 197 | 512 | 189.6 | 214 | 21 | 214 | 132 | 42 | 31 | 31 | 19 | 21 | 29 | 70 | 1744.1 |
| 93 | 193.5 | 498.8 | 198.8 | 231 | 22 | 231 | 122 | 41 | 26 | 30 | 20 | 29 | 31 | 71 | 1760.1 |
| 94 | 186.4 | 345.7 | 208.9 | 222 | 20 | 222 | 121 | 4 | 22 | 27 | 21 | 22 | 32 | 75 | 1559 |
| 95 | 210.5 | 511.2 | 210 | 221 | 23 | 221 | 112 | 41 | 23 | 30 | 30 | 30 | 30 | 63 | 1762.7 |
| 96 | 215 | 434 | 211 | 212 | 27 | 212 | 120 | 41 | 21 | 21 | 21 | 21 | 21 | 64 | 1641 |
| 97 | 235 | 411 | 205 | 210 | 21 | 210 | 128 | 40 | 20 | 20 | 20 | 20 | 20 | 62 | 1622 |
| 98 | 185.8 | 378.8 | 200 | 225 | 24 | 225 | 132 | 44 | 21 | 21 | 21 | 21 | 21 | 61 | 1580.6 |
| 99 | 274 | 431 | 210 | 227 | 25 | 217 | 131 | 43 | 22 | 22 | 22 | 22 | 17 | 62 | 1725 |
| 100 | 245.9 | 512 | 234.6 | 225 | 26 | 187 | 130 | 42 | 18 | 21 | 20 | 20 | 21 | 66 | 1768 |
| Total | 11355 | 20273.3 | 10885.6 | 9965 | 1057 | 9851 | 6212 | 1875 | 1309 | 1326 | 1307 | 1328 | 1340 | 3406 | 81753 |
| Average | 227.1 | 405.466 | 217.712 | 199.3 | 21.14 | 197.02 | 124.24 | 37.5 | 26.18 | 26.52 | 26.14 | 26.56 | 26.8 | 68.12 | 1629.80 |

Besides, from the Table 3, the expenses spent on the Nutrigarden cultivation for kharif and rabi were Rs. 27334/- and Rs. 20089/- were drawn respectively. Therefore, the net income earned after deducting the expenses were Rs. 30592.09/- from kharif vegetables and Rs. 26604.78/- from rabi vegetables. Hence, the total income earned from vegetables for both the season was Rs. 57,196/- from an area of 1000 square feet

Table 4 Economic analysis of vegetable production under Nutrigarden for Kharif &Rabi seasons

| Kharif | Crops | Average Yield | Market price per Kg | Average Gross Income | Expenses | Net income |
|--------|----------------|---------------|---------------------|----------------------|----------|------------|
| 1 | Tomato | 268.76 | 30 | 8062.8 | 3967 | 4095.8 |
| 2 | Brinjal | 529.606 | 25 | 13240.15 | 5340 | 7900.15 |
| 3 | Chilli | 265.668 | 30 | 7970.04 | 3562 | 4408.04 |
| 4 | Bottleguard | 235.76 | 20 | 4715.2 | 2370 | 2345.2 |
| 5 | Bitterguard | 30.92 | 60 | 1855.2 | 1023 | 832.2 |
| 6 | Ridgeguard | 262.6 | 25 | 6565 | 2578 | 3987 |
| 7 | Okra | 152.28 | 20 | 3045.6 | 2691 | 354.6 |
| 8 | Spinach | 49.34 | 30 | 1480.2 | 1058 | 422.2 |
| 9 | Amaranthus | 23.8 | 30 | 714 | 200 | 514 |
| 10 | Coriander | 24.3 | 30 | 729 | 110 | 619 |
| 11 | Methi | 25.08 | 30 | 752.4 | 150 | 602.4 |
| 12 | Gogu | 22.9 | 25 | 572.5 | 150 | 422.5 |
| 13 | AmabhatiChukka | 22.08 | 30 | 662.4 | 150 | 512.4 |
| 14 | Beans | 94.52 | 80 | 7561.6 | 3985 | 3576.6 |
| Total | | | | 57926.09 | 27334 | 30592.09 |
| Aveg. | | | | 1158.5218 | 546.68 | 611.8418 |
| Rabi | Crops | Average | Market | Average | Expense | Net |

| | | e Yield | price per Kg | Gross Income | s | income |
|-------|----------------|---------|-----------------|-----------------|--------|----------|
| 1 | Tomato | 227.1 | 30 | 6813 | 2890 | 3923 |
| 2 | Brinjal | 405.466 | 25 | 10136.65 | 3980 | 6156.65 |
| 3 | Chilli | 217.712 | 30 | 6531.36 | 2897 | 3634.36 |
| 4 | Bottleguard | 199.768 | 20 | 3995.36 | 1129 | 2866.36 |
| 5 | Bitterguard | 21.074 | 60 | 1264.44 | 789 | 475.44 |
| 6 | Ridgeguard | 198.808 | 25 | 4970.2 | 1897 | 3073.2 |
| 7 | Okra | 124.24 | 20 | 2484.8 | 2001 | 483.8 |
| 8 | Spinach | 38.322 | 30 | 1149.66 | 897 | 252.66 |
| 9 | Amaranthus | 26.868 | 30 | 806.04 | 200 | 606.04 |
| 10 | Coriander | 26.888 | 30 | 806.64 | 110 | 696.64 |
| 11 | Methi | 26.888 | 30 | 806.64 | 150 | 656.64 |
| 12 | Gogu | 26.958 | 25 | 673.95 | 150 | 523.95 |
| 13 | AmabhatiChukka | 26.848 | 30 | 805.44 | 150 | 655.44 |
| 14 | Beans | 68.12 | 80 | 5449.6 | 2849 | 2600.6 |
| Total | | | | 46693.78 | 20089 | 26604.78 |
| Aveg. | | | | 933.8756 | 401.78 | 532.0956 |

During cultivation of vegetables under Nutrigarden, respondents faced few constraints. As mentioned before the constraints were further divided in to four categories. The data was presented in Table 4. From the input constraints, lack of backyard or front yard space availability was ranked as major constraint (78.00 %) as perceived by the respondents followed by lack of availability of good quality soil (60.00 %). Under technical constraints, lack of knowledge on pests and diseases management (74.00%) followed by lack of knowledge on post-harvest management (63.00%) were ranked as 1st and 2nd major constraints respectively. Further, from Table 5, it was depicted that time consumption as one of the major constraints identified among the socio-cultural constraints (81.00 %). Most of the farmwomen and the family members saw Nutrigarden as burdensome and perceived it consumes lot of time, hence they lack interest to look after the Nutrigarden or to maintain (73.00%), hence this is been the

next major constraint perceived by the respondents. In the category of general constraints, 78 percent of the respondents were unaware of the economic advantage of Nutrigarden followed by 60 percent of the respondents are neglecting the nutritional benefit from vegetables.

Table 5 Perceived constraints faced by the respondents in the adoption of Nutrigarden

| S.No. | Constraints | Frequency and percentage | Rank |
|------------|--|--------------------------|------|
| I | Input constraints | | |
| 1 | Lack of water availability for irrigation | 35(35.00%) | 6 |
| 2 | Lack of backyard and front yard space availability for Nutrigarden | 78(78.00%) | 1 |
| 3 | Lack of manures availability in small packets | 36 (36.00%) | 5 |
| 4 | Lack of pesticides availability in small packets | 48 (48.00%) | 3 |
| 5 | Lack of availability of good quality soil | 60 (60.00%) | 2 |
| 6 | Lack of availability of quality seed | 40 (40.00%) | 4 |
| II | Technical Constraints | | |
| 1 | Lack of knowledge on pest and disease management | 74 (74.00%) | 1 |
| 2 | Lack of knowledge on time of sowing | 48 (48.00%) | 4 |
| 3 | Lack of knowledge on seed rate and spacing | 52 (52.00%) | 3 |
| 4 | Lack of knowledge on manure/FYM preparation | 40 (40.00%) | 5 |
| 5 | Lack of knowledge on identification and selection of good quality soil | 34 (34.00%) | 6 |
| 6 | Lack of knowledge on post-harvest management | 63 (63.00%) | 2 |
| III | Socio-Cultural Constraints | | |
| 1 | Lack of interest of family members in management Nutrigarden | 73 (73.00%) | 2 |
| 2 | Animal threat and Human theft | 46 (46.00%) | 3 |

| | | | |
|-----------|---|-------------|---|
| 3 | Time consuming | 81 (81.00%) | 1 |
| IV | General Constraints | | |
| 1 | Neglecting the nutritional benefit from vegetables. | 60 (60.00%) | 2 |
| 2 | Unaware of the economic advantage of Nutrigarden | 78 (78.00%) | 1 |

CONCLUSION

Economic returns from the analysis revealed that Nutrigarden can be a wonderful solution to the vulnerable households in providing economic benefit besides nutritional security. However, there are certain constraints in successful adoption of Nutrigarden. It can be concluded that socio-cultural followed by input, general constraints were at par followed by technical constraints. It is revealed that constraints like Nutrigarden is perceived as a times consuming activity followed by lack of space for taking up the gardening, Unaware of the economic advantage of Nutrigarden and lack of awareness in management of pest and diseases were major blockages in successful adoption of Nutrigarden.

Therefore, if we look into the positive impact of Nutrigarden, it not only provides the healthy lifestyle with diversity of vegetable in diet but also provide additional income for the households. Hence, Nutrigarden can be the best way in improving economic standards of farm families and helps in reducing financial burden by waiving the expenses spent on vegetables. In addition to this, garden maintenance will keep women healthy and active. Hence keeping in view all this above advantages people should adopt the Nutrigarden for its immense benefits.

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