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## Nutrifarm-means of successful women entrepreneur in Chamarajanagar District, Karnataka: A case study

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### Abstract

Micronutrient malnutrition is a health and nutrition problem, affecting the growth and development of young children, pregnant women and lactating mothers. Food supplementation and fortification are commonly employed interventions to improve micronutrient status. Agriculture interventions are the longterm strategies to combat malnutrition and provide regular produces to meet family's requirement, generate income and employment. Nutrifarms are the one of the such initiatives established under DST project at Chamarajanagar involving tribal women. A case study on implementation nutrifarm, its impact on food and nutrient intake, haemoglobin status and income generation were assessed. Smt. Janaki bai was the motivated women with her nutrifarms, 75 per cent of produces were sold, 20.00 per cent for processing and value addition and 5 per cent for seed bank was reported. Intervention of nutrifarm and nutrition education has increased food and nutrient intake, increase in haemoglobin level from 10.2 to 12.00gm/dl and income as net profit from farm and nonfarm activities was Rs. 58077/- Thus, nutrifarms were helpful in providing food and nutrition security, generated income and employment to the tribal women.

**Keywords:** Enterprise, income, nutrifarms, malnutrition, haemoglobin

### Introduction

Millions of people around the world suffer from hidden hunger or micronutrient deficiency, as they do not get enough micronutrients required by their body to lead a healthy life. Malnutrition in India is largely seen among the pregnant women, lactating mother, infants and the adolescent girls, hence long-term strategies to provide food is very necessary in rural and tribal areas. In this background the study was carried out in Chamarajanagara district of Karnataka to support tribal woman to take up nutrifarm as an enterprise and sustenance of micronutrient supply. Smt. Jayabai w/o Nagunaik, from Kolipalya village was identified and motivated to take up nutrifarm in one acre land. She was encouraged to use nutri-dense quality seeds and saplings, specific method of green leafy vegetable production, planting of perennial fruit plant, use of FYM and vermicompost for field, minimum sprays for pests and disease control, safe and timely harvesting of crops, grading and packaging including value addition followed by marketing. Regular field visits and awareness programme were conducted during nutrifarm intervention. With her production, 75 per cent of produces were sold, 20.00 per cent for processing for value addition and 5 per cent for seed bank was reported. Monitoring of health and nutrition status of the family and screening for anaemia before and after the intervention with the help of Primary Health Centre. Intervention of nutrifarm and nutrition education followed by screening for nutrient deficiency disorders revealed that, there was an increase in the food & nutrient intake in terms of cereal, pulses, milk and milk products, roots and tubers as well as nutrient intake. An increase in haemoglobin level from 10.2 to 12.00gm/dl was reported indicating that, regular supply of protective foods not only enhanced consumption but also improved the health and nutrition status. Nutrifarm has helped her to take-up entrepreneurship activities like selling of green leafy vegetables, cereals, pulses etc. Food processing for value addition using drumstick leaves, ragi, cowpea has enhanced dietary diversity and skill for large scale production. She has formed Self Help Group (SHG) comprising of 32 women to take up nutrifarms and related activities in dry land area. She has created seed bank for sale of quality seeds. Her income as net profit from farm and nonfarm activities was Rs. 58077/-. Earning such a big income in tribal area where resources are limited is a big achievement. Thus, nutrifarms are helpful by providing food and nutrition security, generated income and employment to the tribal women.

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### Back ground information

Smt. Jayabai w/o Nagunaik, from Kolipalya village with 100 per cent tribal population engaged in agriculture for lively hood. A successful agripreneur wanted to find a better way of farming with crop diversity to meet food and nutrition security. She wanted to get answers to her pressing family need as she could hardly get opportunity to earn more income through dry land millet cultivation and small-scale diary activities. Dept. of Food Science and Nutrition under DST Project entitled "Promotion of sustainable nutrition and empowerment of SC/ST women through nutrifarms in Chamrajanagar district" has enrolled her as one of the project respondents among 600 farm families. She was identified and motivated to take up nutrifarm in one-acre land. KVK Chamarajanagar has joined hands with Principal Investigator

to provide technical support and awareness programmes. Nutrifarm with cereal, pulse, fruits and vegetable production, vermicomposting and processing was discussed before enrolment.

### Description of Technology

Use of nutri dense quality seeds and saplings, specific method of bed preparation for green leafy vegetable production, planting of perennial fruit plant on bunds, use of FYM and vermicompost for field, minimum sprays of pests and disease control, safe and timely harvesting of crops, grading and packaging 75 per cent of produces for marketing, processing and value addition of 20 per cent produces and creation of seed bank (5-10%) was encouraged. Care was taken not to alter the basic millet production. Details of inputs provided is given in table 1 and activities under the nutrifarm intervention are presented in plate 1.

**Table 1:** Inputs provided for Nutrifarm intervention

Sl. No.	Seeds				No. of saplings provided to beneficiaries						
	White ragi	Cowpea	Amaranths	Tomato & Palak	Basale & Lemon	Chakrmuni	Papaya	Amla	Guava	Curry leaves	Drumstick
Quantity/Family	2 kg	½ kg	200 gm	20 gm & 100 gm	10	10	10	10	10	10	25

### Dissemination process

- Awareness programmes followed by base line data collection on socio economic status, family size, occupation, land holding and crops grown, food and nutrient intake were collected
- Training, method demonstration on nutrifarm and vermicomposting
- Exposure visits
- Skill training on value addition,
- Monitoring through field and family visits.
- Assessment of food and nutrient intake
- Haemoglobin estimation of family with the help of Primary Health Centre
- Market linkage via farmers, line departments, ATMA, Bank, and district skill development centres
- Impact assessment was conducted before and after three years.

**Table 2:** Success point in terms of income generation as a quantitative parameter

Sl. No.	Type of enterprise	Area/Nos	Production/annum (Qtl.)	Expenditure (Rs)/Annum	Income /Annum	Net Profit (Rs) /Annum
1	White ragi production	25 gunta	14 qtls	6000	35000	29000
2	Cowpea	3 gunta	30 kgs	300	1500	1200
3	Weakly harvesting and sale of green leafy vegetables	6 gunta	530 bundles	1800	4240	2440
4	Tomato	2 gunta	110 kgs	400	1100	700
5	Lemon	1 gunta	200 No.	200	600	400
6	Papaya	-	40 No.	300	800	500
7	Amla	-	25 kg	300	750	450
8	Guava	-	100 No.	150	500	350
9	Drumsticks	-	375 No	240	750	510
10	Amaranth seeds	-	5 kg	100	300	200
11	Sale of cowpea and amaranth seeds to fellow farmers	-	10 kg cowpea and 3 kg amaranth	350	1300	950
12	Preparation of value-added millet products		-		*	
	ragi malt,	50 kgs		1875	6250	4375
	ragi biscuits,	10 kgs		600	1500	900
	dried drumstick leaves	5 kgs		450	1500	1050
13	Dairy and goat rearing	2+ 6 animals	370 lit 12 kg meat	3108 600	10360 8400	7252 7800
14	Total			16773	74850	58077

\*Malt 125 /kg, Biscuits: 150/kg, Dried drumstick leaves: 300/kg and Cowpea millet pappad: 2rs/each

Integration of crops, animal husbandry, value addition and marketing of nutrifarm produces has impacted greatly towards sustained income and employment generation to her family. Nutrifarm has met the family needs for food, nutrients, fodder, seed and saplings. Overall income of the women is Rs, 58077/- (Table 2). Getting so much of income in tribal

area was a big achievement, where resources, transportation, communication and sales were difficult. Hence Janaki bai has emerged as successful entrepreneur due to her persistent efforts.

There was a change in food intake especially cereals and pulse, green leafy vegetable. But could not achieve 100

adequacies for most of the food groups. However, significant changes were reported. Similarly, Iron and calcium intake changed significantly after the intervention (Table 3). Value addition of daily diet with underutilised pulse cowpea, basella, drum stick leaves and amla has contributed towards

better nutrition status, especially improved haemoglobin levels after 3 years (Table 4). Therefore, long term studies with regular monitoring are very essential to study the impact on malnutrition.

**Table 3:** Success point in terms of improvement in food security and nutrition status as a quantitative and qualitative parameter

Impact of Nutrifarm and nutrition education intervention on food and nutrient intake (% adequacy)					
Food intake	Before	After	Nutrient intake	Before	After
Cereals	108.75	110.52	Energy (Kcal)	82.72	91.51
Pulses	52.76	63.47	Protein (g)	80.28	84.61
Milk and Milk products	23.87	34.66	Fat (g)	74.52	83.54
Roots and Tubers	20.40	29.67	Fibre (g)	50.45	67.93
Green leafy vegetables	42.17	83.50	Calcium (mg)	128.19	130.71
Other vegetables	18.23	34.53	Iron (mg)	83.01	109.95
Fruits	17.33	27.33	Beta Carotene (microgram)	29.83	32.80
Sugar	66.00	62.22	Vitamin C (mg)	57.87	94.41
Fat	70.80	73.33			

**Table 4:** Impact on Haemoglobin status

Hb (gm/dL)	Before	After
	10.20	12.00

**Impact**

Mrs. Jayabai w/o Nagunaik of Kolipalya motivated women and also motivated fellow farmers in her village. She has kept entrepreneurship activities based on agriculture, food processing for value addition and formed SHG of 32 women to take up nutrifarms and related activities. She has created seed bank for sale of quality seeds. Her field was visited by

many farmers in the district. As she reports nutrifarm has provided all essential commodities to lead a healthy life. Her food and nutrient intake have improved and significant change was reported for Haemoglobin levels, making her as a strong individual with lot of productive activities. Her income from farm and nonfarm activities was Rs. 58077/- as net profit. Vermicomposting has added value to land. Regular exchange of money due to sale of leafy vegetables and fruits. She has become a role model to take up multiple crops in limited land and their best utilisation. She has established very good marketing linkages with Tamil Nadu and Karnataka state.



Data Collection



Awareness creation and seed distribution



Haemoglobin estimation



Skill development training on value addition



Mrs. Jayabai, fellow farm women and PI in her field



Nutrifarm with cereal pulse crop



Crop harvesting and yield documentation in Jayabai's field

**Plate 1:** Activities under nutrifarm intervention

**Institutions Involved:** DST project (SEED/ WN/2014), Govt. of India, implemented by Dept of Food Science and Nutrition, UAS, Bangalore, KVK, Chamarajanagar, Primary Health Centre, Kolipalya, Myrada NGO.

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