

**Cornell Sathguru Foundation
for Development**

2020-21

Annual Report

Towards Sustainable Agriculture and Rural Development



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COVID 19 pandemic has posed severe health, economic and social crisis, and has shaken people from all walks of life. COVID 19 induced lockdowns have doubly challenged resource-poor communities. Even though agricultural activities were exempted, in the initial phases of the lockdown, the agriculture value-chain faced large-scale disruptions. Perishable agri-products incurred severe losses as compared to non-perishables.

Food and nutrition security posed a major challenge during lockdown, along with loss of livelihood, restricted movement and lack of access to health facilities. To address and ensure food security, food relief was announced by the government, in terms of dry ration. However, families still needed money to buy vegetables, eggs etc. to fulfil their nutrition needs.

During these unprecedented times, CSFD's interventions played a key role in combating the COVID impact on household nutrition and agricultural productivity, in the target villages in Sangareddy.

To ensure access to nutritious food, CSFD has facilitated kitchen gardens in backyards and has trained farmers to gain yearlong yields for fulfilling their nutrition needs. In addition, CSFD's past intervention on enabling farmers to access uninterrupted agri-advisories through Annapurna Kissan Prasara Seva (AKPS) an IT-based advisory paid off during the COVID 19 crisis, when direct services through extension centres were hampered. AKPS broadcasted necessary crop-specific advisories and enabled farmers to act timely thus positively impacting supply and value chains.

However, due to COVID 19 implications, CSFD had to hold on to some training programs planned for progressive farmers and youth. Intensive training for progressive farmers on short-term profitable crops and a seven-day experiential training for young farmers in agriculture and allied sectors could not be held due to social distancing protocols. Despite COVID 19 opening a great scope for virtual interactions, due to digital disparities among farmers, CSFD had to stall on conducting virtual training sessions.

COVID 19 has taught us to work through several avenues and reach out to the neediest communities with modest, yet significant interventions. We thank our partners for their timely support and for joining us in making a difference in the lives of people.

In solidarity, with the same spirit, in the new normal conditions, we look forward to more meaningful engagements in serving the farming communities.

Happy reading



Hemalatha Vijayaraghavan

Director

VISION

To facilitate sustainable social development through life sciences and technology

MISSION

To contribute towards sustainable agriculture and development by enhancing capacities, knowledge creation, promoting entrepreneurship and gender equity

Our flag ship programs

- Farmers capacity building in 3 P model
- Promoting nutrition through kitchen gardens
- Promoting ICT in agriculture
- Strengthening farmers clubs
- Improving farmers access to Government schemes
- Youth training on agriculture and agribusiness
- Promoting livestock farming



Kitchen gardens for improving food and nutrition security

CSFD has been promoting kitchen gardens to improve household food and nutrition security since 2018 with a key focus on improving food and nutrition security, social empowerment, enhancing income opportunities and gender equity.

But the kitchen gardens promoted during COVID 19 period had additional focus. One is to address the food shortage due to COVID 19 lockdown and enable households to fight nutrition deficiencies caused by COVID 19 economic crisis. In 2020, CSFD has promoted kitchen gardens in two villages and has trained the households on planning and laying the kitchen gardens scientifically so that they can gain sustainable yield around the year.

Households were provided with kitchen gardening kits worth INR 3500 which included high-quality hybrid seed kits with locally preferred 11 vegetables and 5 leafy greens, organic inputs, crop calendars for managing their garden and quantifying their yield. The below tables illustrate nutritive values of vegetables and leafy greens that were provided to the participants. All values are as per 100 grams of edible portion¹.

NUTRITIVE VALUE OF VEGETABLES										
Vegetable	Energy (Kcals)	Moisture (g)	Protein (g)	Fat (g)	Mineral (g)	Carbohydrates (g)	Fibre (g)	Calcium (mg)	Phosphorus (mg)	Iron (mg)
Tomato	23	93	2	0	1	4	1	20	36	2
Chilli	40	88	1.87	0	1	7	0	14	35	1.2
Brinjal	24	93	1	9	9	4	1	18	47	0
Cabbage	21	91	1.36	0.1	1	5	2	51	30	2.67
Ridge gourd	17	95	1	0	0	3	0	18	26	2
Bitter gourd	25	92	2	0	1	4	1	20	70	1
Bottle gourd	12	96	0	0	0	2	1	20	10	0
Okra	31	90	2	0	1	6	1	66	56	0
Radish	32	89	0.77	0.15	0	6.56	2.65	25	26	0.3
Cucumber	13	96	0	0	0	2	0	10	25	1
Pumpkin	25	93	1	0	1	5	1	10	30	0
NUTRITIVE VALUE OF LEAFY GREENS										
Amaranthus	45	85.7	4	0.5	2.7	6.1	1.0	397	83	3.49
Spinach	26	92.1	2	0.7	1.7	2.9	0.6	73	21	1.14
Coriander	44	86.3	3.3	0.6	2.3	6.3	1.2	184	71	1.42
Gongura	56	86.4	1.7	1.1	0.9	9.9	-	172	40	2.28
Fenugreek	49	86.1	4.4	0.9	1.5	6.0	1.1	395	51	2



1. Gopalan, C, Rama Sastri B.V. and Balasubramanian, S.C., 2004, Nutritive Value of Indian Foods, National Institute of Nutrition, ICMR, Hyderabad. [table 1 gopalan et al 1989.pdf \(cornell.edu\)](#)

Remarkably, the second phase of gardens has proved effective during the lockdown period. With movement restrictions, people lost their livelihoods and struggled with limited resources. The situation forced households to compromise on their nutrition and restricted buying vegetables and fruits to prioritize other medical and emergency expenses. This is when kitchen gardens not only provided them with nutritious food during the critical period but allowed sharing and earning income within the neighbouring villages from excess produce.

Cost-benefit analysis of kitchen gardens

CSFD has conducted a study to measure its impact and also to analyze intervention from a social return on investment angle. The data was collected primarily through surveys, focused group discussions and case studies. The study focused on five major parameters namely: money and time saved on market visits for purchasing vegetables, the economic benefit from the sale of excess produce, the socio-economic impact of sharing of vegetables and environmental benefits.

CSFD invested Rs. 3500 per garden which included the cost of inputs, training and monitoring by agriculture experts. One cycle of kitchen garden can provide fresh food for six months. While the leafy greens can be harvested from the third week, vegetables can fruit from the 5th or 6th week onwards. In addition to CSFD monetary investment, households have reported that they have spent 5 hours for laying their garden.

Of 108 gardens laid, 85% of gardens survived and thrived in the second phase.

Following are some key findings of the study:

1. On an average, each household spends INR 300/- per week on buying vegetables.
2. On an average, one person from a household travel for 12 kms per week for the purchase of vegetables.
3. On an average 2 hours per day was spent for garden maintenance and harvesting.
4. 80% of them reported that the entire family was alternatively involved in the kitchen gardening activity.
5. 100% Anganwadi beneficiaries covered through the kitchen garden, reported that their nutrition intake was good when compared to other Anganwadi beneficiaries who were not part of the kitchen gardening program.
6. It was reported that one kitchen garden was good enough to share vegetables with two households.

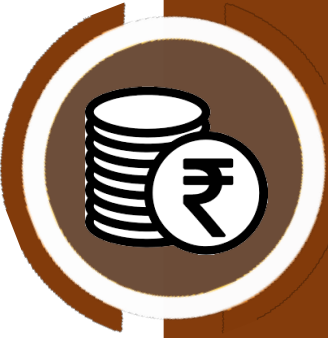
Voices from the field

Aganolla Gouramma


"Food grains through public distribution system (PDS) were much handy but family can't survive on food grains alone. We would need some vegetables, fruits and meat to feed our family and have wholesome meal. I lost employment due to lockdown and we did not have enough money to buy vegetables, buying meat and eggs is out of my budget." Aganolla Gouramma, single mother, landless peasant working as a casual labour, raising two school going kids aged 3 and 7. Gouramma lives with her aging parents. With loss of livelihood, single women pension of Rs. 2000 was only source of income for her family of 5 members.

Gouramma started her kitchen garden in small plot of 70 square yards with only intension to grow vegetables sufficient enough for her family and mitigate food shortage. Reflecting on her experience, Anganolla Gouramma recalled that "I thought I will get vegetables and will be able to feed family with fresh food but super yields from quality seeds not only satisfied my family's food requirement but also shared with neighbors and extended family member who did not have a kitchen garden" Though she could not quantify the sharing of vegetables, she said I gave excess to at least 2 to 3 households. Gouramma is now an enthusiastic participant and looking forward to next cycle of kitchen gardens.


Economic Value

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- Self-consuming vegetables, on average, it is estimated that each household will be saving an amount of INR 1200 per month (300 per week) on the purchase of vegetables, one cycle they can save INR 6000 per family
 - 25% of households sold excess produce for 3 months earning 1500 per month. 4500 per cycle.
 - 15% of participants scaled the gardens commercially and earned INR 10000 a month for a period of 4 months.
 - Evidence indicated that the experience of selling has strengthened market linkage and opportunities to scale value-added products for enterprising families.
 - Through sharing of vegetables, on average, the recipient families - 1000 secondary stakeholder families will be saving an amount of INR 800 per month (200 per week) on the purchase of vegetables) and with 5 months saving of INR 4800 per family.


Environmental Benefit

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- Primary stakeholder travel 12 kms up and down to reach the nearest market 5 times in a month contributing to carbon emissions of 7.932 Kg Co2/family/month. overall project will save more than 8 tons carbon foot prints.
 - Due to the small scale of gardens scope for adopting organic and eco-friendly practices would be high.

Social Value

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- Scope for women's empowerment and the ability of households to invest their savings in child education and other social needs.
 - Scope for strengthening social relations in the village due to sharing
 - Gender equality

Health Benefits

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- 32% of beneficiaries from Anganwadis have confirmed that in addition to the food supplement given by Anganwadi, due to kitchen gardens, pre and post-natal mothers and children below 6 years have consumed a diverse range of vegetables. Anganwadis centres are a government program in India under the flagship of Integrated Child Development Services – ICDS which provides food, preschool education, primary healthcare, immunization, health check-up and referral services to children under 6 years of age and their mothers. Each village or slum will have one Anganwadi.

During the COVID period, kitchen gardens have proved resourceful enabling households to consume value-added products they have processed such as pickles and dehydrated leafy and seasonal vegetables that helped in minimizing their market visits thereby maintaining social distancing.

This community-based intervention has proved that, in addition to providing fresh vegetables, participants have earned additional income, reduced carbon footprints by minimizing market visits and strengthened community relations through sharing of vegetables. This model was presented at World Food Prize - Michigan State University (MSU) Side Event on Home Gardens for Food and Nutritional Security in Developing Countries.

The paper was published as a policy brief by MSU
www.cornellsathgurufoundation.org/category/publications/

Impact of Annapurna Krishi Prasar Seva (AKPS) during Pandemic times

CSFD as part of its ICT interventions has introduced AKPS farm advisory service in two villages in Hathnoora Mandal, Telangana and has registered over 500 farmers in July 2019 with the key objective to ensure access to important information that helps farmers to adopt good agricultural practices and thereby improve the yields and economic conditions.

Reflections from Field

"normally we depend on the input dealer to recommend pesticides for the crop, but at times it becomes either over or wrong dosage causing harm to crops and eventually to human beings, but through APKS we are getting accurate dosage required for protecting the crops"

Buchi Reddy

"advisory on cotton and paddy especially on pest and disease management was very useful"

Kothlapuram Vittal

"weather alerts in June differentiating pre-monsoon and normal monsoon showers was very useful for me to plan field preparation"

Byagari Suvarna

"voice messages are useful but I missed while i am in the field"

Golla Krishna

"voice messages were useful as I could hear and understand the suggestion but I did not find SMS alerts useful as I can't read"

Koppula Anjamma



CSFD has conducted regular awareness programs on the features of the AKPS APP and its utility in farm management, thus enabling farmers to access the right advisory at right time.

While farmers were accessing the advisory since their registration, the impact of the initiative is felt significantly during the lockdown period. To understand the effectiveness of the AKPS from the farmers' perspective, CSFD had a virtual discussion reaching out to farmers from both villages.

AKPS continuously disseminated information to all the registered users of the app. AKPS has been

sending timely advice on rainfall, sowing suitable high varieties of crops for Kharif and Rabi seasons, fertilizer and pest management, correction of micronutrient deficiencies, nursery



management.

They said that they have received the information through SMS and voice alerts enabling them to take appropriate action. They mentioned that direct services from village agriculture officers from Krishi Vignan Kendra (KVK) and District Agricultural Advisory and Transfer of Technology Centres (DAATTCs) are handy, but they saw AKPS as a great resource to receive useful information on their phones especially during pandemic days where social distancing is imperative.

However, due to the challenges of low literacy, some farmers requested more voice messages than text messages. As the voice messages come randomly especially when farmers are in the fields, they opined that they tend to miss important notifications. Therefore, they preferred voice messages to be delivered at a specified timing to enable them to listen to the message and put it into action at the appropriate time.

management etc. Besides, during COVID peak times, for farmers' safety, AKPS has also shared information on best and safe practices that farmers should adopt during the pandemic.

The overall feedback indicated that farmers found AKPS to be very useful. Farmers in the villages have endorsed that they have been receiving timely information on best agricultural practices which played a crucial role in effective crop

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