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Enriching Dietary Diversity Through Self-Provisioning

POTENTIAL, ISSUES AND PRACTICES

STUDIES IN DEVELOPMENT PROCESSES
Issue #4 I 2018

Studies in Development Processes
ISSUE - 4 / 2018

Supported by:
TATA TRUSTS

Designed by:
DESIGN DIRECTIONS PVT. LTD., Pune
www.designdirections.net

Printed at:
MUDRA OFFSET, Pune

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All photos in this document have been obtained by researchers from their field visits.

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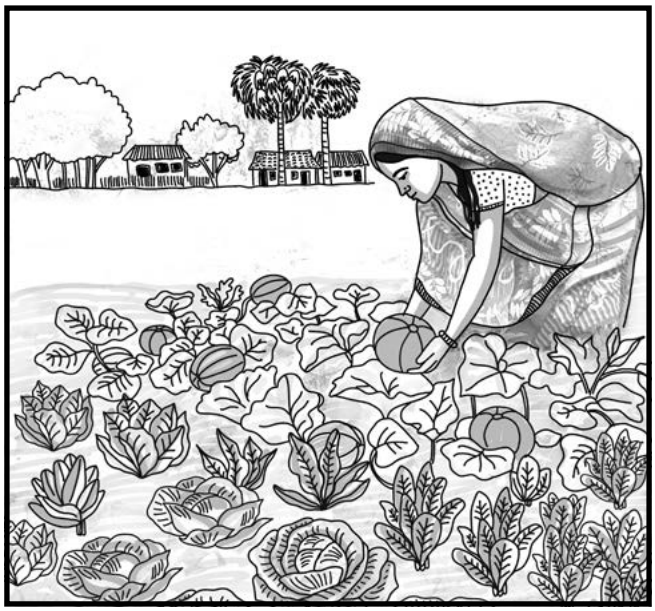

Enriching Dietary Diversity Through Self-Provisioning

POTENTIAL, ISSUES AND PRACTICES

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ACKNOWLEDGEMENTS

We gratefully acknowledge the help and guidance provided to us by Dr. Bhaskar Mittra from the Tata Cornell Initiative, Late Mr. Madhukar Dhas from Dilasa Sanstha, Dr. Ashish Satav from MAHAN Trust, Mr. Martin Rabha from Diya Foundation, Mr. Debanjan Ghatak from PRADAN and Mr. Ashok Kumar of Transform Rural India Foundation.

In addition we would also like to thank the teams at AME Foundation, Tamil Nadu; PRADAN team at Gumla, Jharkhand; MAHAN Trust, Maharashtra; Dilasa Sanstha, Maharasthra, AKRSP(I) and Diya Foundation, Assam.

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Executive Summary

Dietary diversity and increased consumption of fresh vegetable produce are known to be beneficial in terms of augmenting the intake of micro-nutrients and enriching diets at home. Studies elsewhere show a possible association between high dietary diversity and low malnutrition. Building on a fieldwork-based research done by one of the authors of the present study; six methods of self-provisioning, of which one is a traditional method, for dietary diversity are discussed and briefly compared in this study.

• In relatively well-endowed farm households, the tradition of growing a number of vegetable crops for home consumption continues to the present day.

• *Pata* system popularized by Dilasa Sanstha, with the help of Tata Trusts and other supporters, encourages farm households to devote 3-4 rows of a plot of land to grow a combination of vegetable and leguminous crops; whose produce is consumed at home.

• MAHAN Trust modified this to create a system of what they called Nutrition Farms, where the empty rows between rows of cotton are used to plant vegetable, legume and oilseeds crops.

• AKRSP(I) scaled a model of landless gardens, in which up to 60 plants of a range of vegetable crops are grown in 8 gunny sacks. This is ideally suited for ultra poor and landless homes.

• AME Foundation worked to revive the tradition of kitchen gardens either in tiny homesteads or along the periphery of homes in high land villages in Dharmapuri district.

• Transform Rural India Foundation (TRIF) and PRADAN have been engaged in transplanting the idea of *pata* in unused high lands (the *tand*) or homesteads in Jharkhand.

Each of these five promoted methods have reached and benefitted thousands of participating homes in augmenting the supply of homegrown vegetable produce to enrich their diets; save on out of pocket costs and avoid the drudgery of trudging to markets for buying vegetables. Promotion of any of the five interventions in a region would need to be decided on the basis of land availability and agro-climatic conditions of the chosen region.

The most important driver of the programme seems to be access to conveniently prepared packet of seeds in quantities suited to landholdings as well as home demand for the plant. Experience shows that farm households are willing to pay for the packets and thus the programme is Operational Expenditure (opex) neutral. The chief drawback of the system, however is the low importance attached to it by families, interveners as well as donors since these methods do not produce any measurable income enhancement.

The most important lesson that emerges is that it is possible to boost self-provisioning for dietary diversity by incremental consumption of fresh plant produce at low investments and across a wide geographic area. This lesson is so obvious and clear that rigorous assessments of donor costs and investments vis a vis gains in dietary diversity demonstrated by a concrete verifiable metric would seem to be an over-kill.

This study recommends that a programme of self-provisioning for dietary diversity deserves to be created and supported across the country. It is a low cost and sure way of promoting dietary diversity with favourable nutritional outcomes.

1. Introduction

This study is based on a year-long research conducted by VikasAnvesh Foundation on different approaches to growing horticultural crops on a small scale for self-consumption and through that improving dietary diversity in rural India. The field work was conducted in four states of India namely Assam, Jharkhand, Maharashtra, and Tamil Nadu. This study also incorporates learning from approaches which were not specifically included in the study at VikasAnvesh Foundation. The aim was to observe traditional practices of use of homesteads for growing plants for producing materials for home consumption; to study the specific efforts of re-introducing cultivation of the horticultural and other nutrition relevant crops in homesteads and to study innovative practices of combining cultivation of nutrition-oriented horticultural and other crops in the crop cycle of farmers.

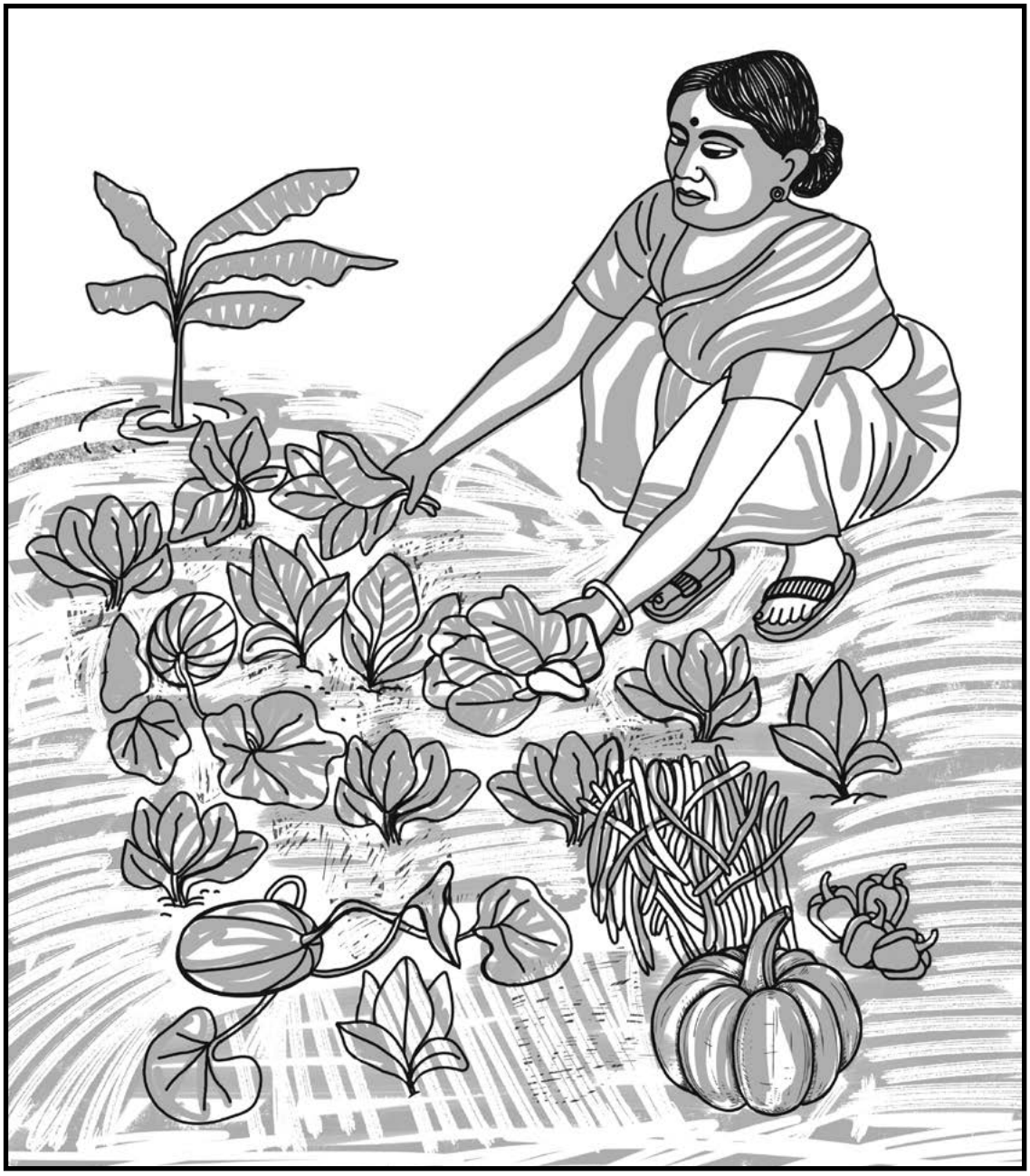
The paper is organised thus as:

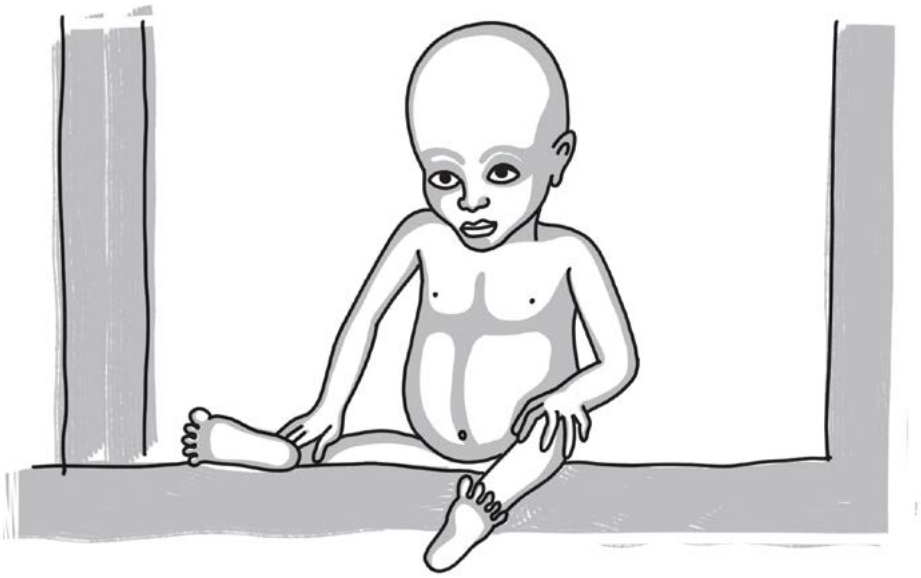
a) A quick recapitulation of the well known situation of malnutrition in India is followed by a discussion regarding the role of dietary diversity in contributing to nutrition of women and children in rural areas and factors that have led to gradual erosion in the production base that supported erstwhile dietary diversity.

b) Observations made during the fieldwork are then presented followed by a summary of lessons learned.

c) The paper ends with suggestions about developing a large-scale programme for restoring the production base for supporting dietary diversity in rural India.

It is recognised that the situation regarding nutrition of women and children especially in rural areas is appalling. The report based on National Family Health Survey (NFHS)-4 (2015-16) details this. The focus of much of discussion on the prevalence of malnutrition is often on protein-calorie malnutrition and anemia and the impact of these on health of women in reproductive age and alarmingly low levels of the Body Mass Index (BMI) of women in this age group. A larger view looks at consequential effect on the health of new born and infants and the deleterious impact on the development and growth of children as seen in alarmingly high levels of wasting, stunting;





resultant high levels of morbidity and hence poor school attendance and poor learning levels. The discussion on the problematic of malnutrition often broadens the scope of the situation (covering water and sanitation, hygiene, cultural beliefs and their effect on Infant and Young Child Feeding (IYCF) practices; economic compulsions for both parents to work leading to neglect of the child, absolute poverty resulting in inability to purchase adequate and right kind of foods) leading to the eventual consequences as discussed above.

There is also a substantial, though relatively less prolific, literature on the prevalence of micro-nutrient deficiencies. Perhaps the most comprehensive work on this was the publication of the Food Insecurity Atlas of Rural India (2001) by M.S. Swaminathan Research Foundation which provided information at great level of granularity across different states. Within this stream, greater attention has been given to deficiency in intake of dietary iron, dietary iodine and Vitamin A as these tend to be more strongly associated with known problems of anemia, goitre and night-blindness respectively. The 22nd Report of the National Nutrition Monitoring Bureau (NNMB) discusses this at length. Indicative assessments suggest an association between dietary diversity and levels of malnutrition, particularly micro-nutrient deficiencies. Two studies in India specifically link dietary diversity with the prevalence of micro-nutrient deficiency and other forms of malnutrition. A report of Indian National Science Academy laying down priorities for research and action on micro-nutrient deficiencies bemoans the reduction in dietary diversity. It states that cereal-pulse based diets in India are deficient in several micro-nutrients such as iron, calcium, Vitamin A, riboflavin and folic acid causing “hidden hunger” and that these deficiencies are amplified in families who have insufficient incomes to afford green leafy vegetables, fruit or animal-based foods. It goes on to record the erosion in areas producing millets resulting in near absence of nutritious grains from diets of the poor.

2. The problem of dietary diversity in perspective

Traditionally the cereal-pulses based rural diets were supplemented by leaves, roots and other plant materials from both deliberately cultivated as well as naturally occurring flora in villages. This dietary diversity has been shrinking at a rapid pace. Some of the factors leading to this reduction are noted below.

• Mono-cropping

Jharkhand, Odisha and Chhattisgarh house a significant population of tribal people living in undulating, hilly and mountainous terrains. These were regions of quite a substantial diversity of crops grown on the sparse farmlands.Over the years, “paddy fixation” of the people has resulted in shrinkage of the area under crops such as finger millets.

• Subsistence-oriented cropping systems

Elsewhere, cash crop dominated farming systems have emerged replacing the earlier diversified and subsistence-oriented cropping systems. For instance, in Vidarbha cotton-soybean has replaced the earlier pattern of sorghum-pigeon pea in millions of hectares. Thereby, shrinking the availability of home grown foods on the one hand and making farm households more vulnerable to market forces on the other.

• Traditional practices replaced by Monetisation

Traditional practices of mutual help in farm operations have been giving way to monetised labour market transactions. The mutual help based systems inter alia provided for sharing of meals and this automatically ensured a degree of food intake. Monetisation introduces market transactions hence the fairly commonly observed phenomenon of use of wages for goods and services other than food products.

• Vanishing floral diversity

Increased use of chemical pesticides as well as the high proliferation of weeds such as Parthenium, Lantana and Prosopis juliflora has led to a rapid shrinkage of floral biodiversity both on and off-farm. Several wild plants which grew naturally and contributed to dietary diversity during monsoon can no longer be found in farms or on common lands.

Types of seeds, beans, oilseeds, okhra, groundnut available for kitchen gardens in Dharmapuri, Tamil Nadu

• Shrinking Common Land

Common lands or lands in public domain (for instance, forest lands to which people in proximate areas have access under *nistaar* rights) have traditionally been sources from which leaves, roots, flowers and plant materials were taken and used by people for a variety of purposes including supplementing their diets. Botanists and nutritionists have documented the variety of and the pressure on wild plants with edible produce in various regions. Increased population has also led to massive pressure on common lands. The common lands under the control of revenue department have been shrinking due to their allotment for alternate purposes. Both revenue lands and forest lands have been encroached and their use privatised. Thus many more people are trying to obtain products from the already stressed naturally occurring flora on these lands.

To sum up the above points one notes that

Increasingly farm households grow only a single crop such as paddy, or they grow commercial cash crops such as cotton or soybean.

Much expanded use of chemicals in farm practices has seriously changed the floral diversity on farms.

Unchecked proliferation of aggressive weeds have reduced the lands on which beneficial natural flora would grow.

Common lands are under severe pressure and many more people now try to exploit a diminishing floral resource base.

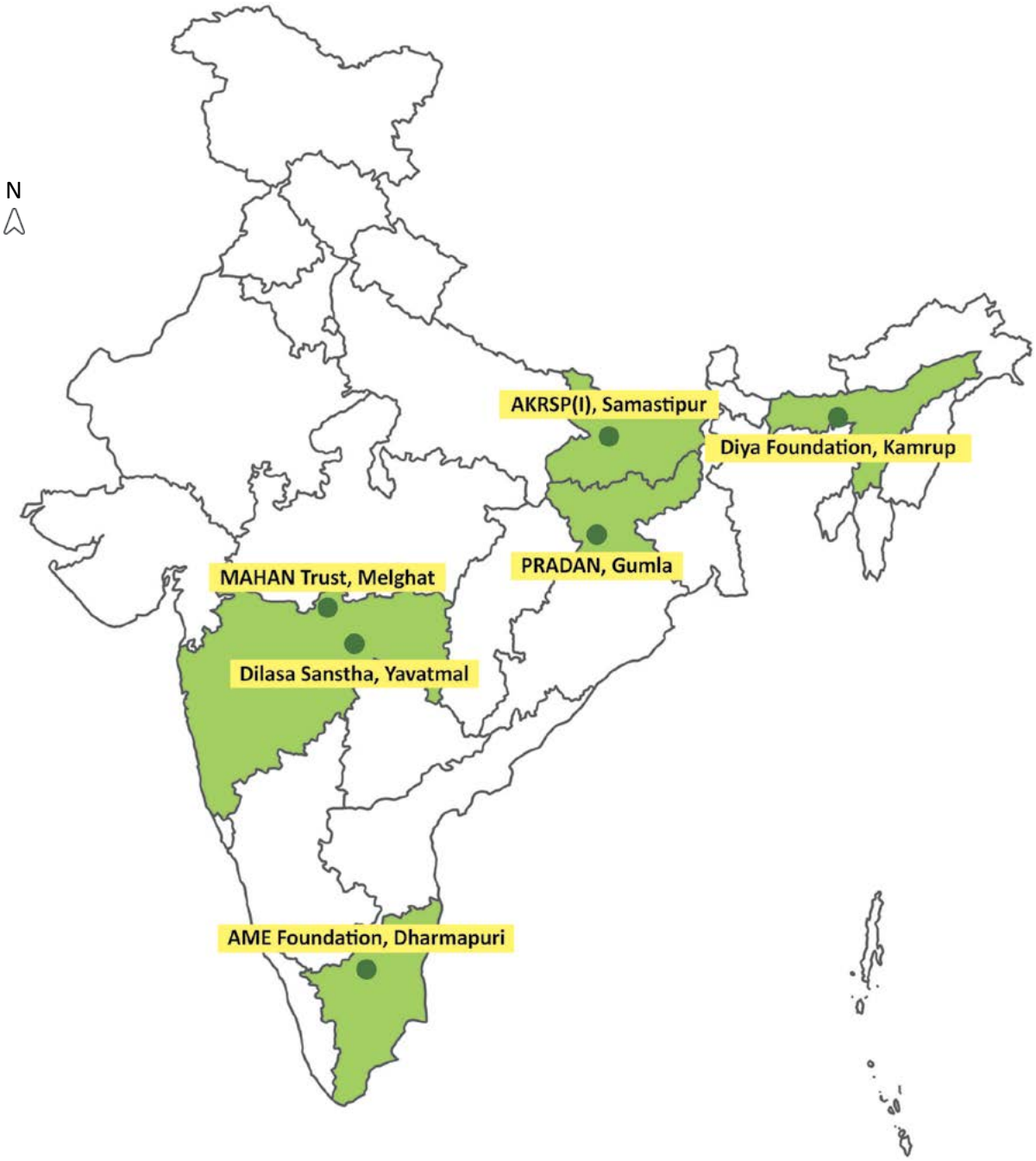
The cumulative impact of all these developments has been a marked inter-generational decline in frequency, quality and variety of plant materials; whether homegrown or collected from common lands; that formed an integral part of rural diets and supplemented in particular micro-nutrients to the populace.

3. Different approaches to self-provisioning for dietary diversity

The situation regarding pressure on land as well as the way homes are located within the precincts of a village shows great variation in the country. In some regions where lands are not under serious pressure, there is a significant area of land attached to or surrounding the home. These lands are then called “backyards” or “homesteads”. Homes in some other regions - for instance in villages in much of the *Hindi* heartlands, could be juxtaposed very close to each other and often grouped by people belonging to the same clan or caste and this physical proximity may permit insufficient area for a homestead; usually at the back of the house. Thus whether a home is with a homestead depends on both the settlement pattern and on the man land ratio. It, therefore, clearly depends on the socio-economic standing of the community; (Dalits, for example, have insignificant land in their homesteads regions). Where the man land ratio is favourable and settlement patterns are appropriate, the homesteads can be veritable stores for homegrown nutritious foods providing vegetables, tubers such as yam, fruit and supporting backyard poultry and goat keeping. The potential of encouraging poor households to grow vegetables within their own homestaeds has long since been recognised. Numerous efforts to revive, strengthen or introduce such cultivation for home consumption have been in vogue. Among the most widespread has been encouragement and financial support for kitchen gardens under the scheme called Development of Women and Children in Rural Areas (DWCRA). While these homesteads and their contributions to home food basket have evolved traditionally and did not reflect any development intervention, their attributes are worth noting. This has been attempted in this section. The study done at VikasAnvesh Foundation also looked at five deliberate development interventions directed at facilitating self-provisioning for dietary diversity. These include the *“poshanvatikas”* in Gumla district of Jharkhand; Nutrition gardens in Melghat district of Maharashtra and the reinvented kitchen gardens in Hosur, Dharampuri, Tamil Nadu.

Formal studies of these were undertaken for understanding their importance to the household, their contributions to dietary diversity, chores involved in managing them, work allocation pertaining to them, the steps in interventions and key parameters determining their success. For the sake of completeness two other interventions; *“pata”* in Yavatmal and “landless” gardens in Bihar in this arena are also looked at here though they were not formally studied in this exercise. Statements about them are based on studies or reports of other people.

Locations covered in the study



In each of these six cases, an effort is made to situate the core method of self-provisioning for dietary diversity in the context of the agro-climatic conditions of the region and its social attributes, the efforts needed and work distribution at the family level required to succeed in the method; the critical external input needed for it to work and the scale and scope of the contribution it can make to dietary diversity.

3.1 The homesteads of Assam

Agro-climatically, barring the terrains affected by annual flooding in rivers, Assam represents the bounty of nature through the fertile alluvial soils, abundant rain, and clement weather. Plant growth tends to be luxuriant and the chief issue is often in ensuring weed control. *Sali* (monsoon) paddy is the main crop and the prevalence of free grazing practice discourages cultivation of second crops. Homesteads tend to have a bewildering variety of yams, shrubs, plants trees and creepers. Homesteads potentially can supply plant-based food articles for half the year round.

Most of the 14 homesteads studied in Kamrup were fringed with arecanut trees. These were recently used to support black pepper creepers. A wide set of food crops was found growing across all the homesteads. Some of the common ones included papaya, potatoes, varieties of onions, garlic, ginger, turmeric, sweet potato, yam, cabbage, radish, forms of spinach, bottle gourds, ridge gourds, brinjals, lime, bananas, mustard, pineapple and chillies.

The homesteads of the better-endowed people also have a small pond (*"pukhri"*) at the lowest end of the yard and some fish and a few ducks may be raised in it / using it. In tribal homesteads, pigs are commonly seen.

Within the schedule of their daily chores, women remain as primary labour workers for such home based gardens. Technical and specific details such as land area and estimates of sale made from betel nuts, black peppers, for instance, are the domains of men.

The homesteads are a really wonderous storehouse of nutritious foods and if managed properly can contribute very significantly to the dietary diversity and nutrition of the household. As it is to be expected, the absence of monetisation of the goods obtained from homesteads and due to their everyday familiarity, the importance of the homestead in the food basket is perhaps inadequately recognised.

Supply of seeds for some of vegetables described above made available in small enough packing sizes and a consistent effort to discourage reduction in the size of the homestead for diverting land

Bottle Gourd, Mustard seeds, lemon and traditional leafy vegetables grown in a kitchen garden in Kamrup

for any other "income generating" commercial purpose would seem to be the chief development interventions needed to preserve the contribution of the Assam homesteads to the household dietary diversity at its current level. For homesteads of those staying in the areas routinely affected by floods, a constellation of flood-tolerant vegetables and animal husbandry practices would be called for.

3.2 *Poshanvatika* (nutrition garden) of Gumla, Jharkhand

Gumla district is on a high plateau with an elevation ranging between 450 and 700 metres above mean sea level. The terrain is undulating, hilly and mountainous and the soils tend to vary a lot across farms depending upon where the farm is located. The district receives an excellent annual rainfall ranging between 1400 to 1600 mm. The population density of the district is just under 200 per square kilometer as per 2011 Census. Monocrop of paddy has started dominating the cropping pattern replacing the earlier mixed cropping patterns of the dominantly *Oraon* tribal people living in the district. Over 70% of 10.3 lakh people belong to the Scheduled Tribes (ST).

Starchy staples including rice and white tubers dominate the diets with a study reporting that over 20% percent youth have BMI less than 18.5. *Poshanbari* (alternatively known as *Poshanvatika*) intervention comprised encouraging farm households to grow mixed vegetable and legume plants on lands they would typically leave fallow. (In this district as much revenue land; mostly highlands without access to irrigation, remains as current fallow as the net sown area.)

The principal ideas behind *poshanbari* were as follows. Free grazing is generally under control in Kharif and as such crop cultivation is possible on all lands. High lands with slopes and thin soils, locally called *tand* lands are generally left fallow as they are not suitable for paddy cultivation. Rainfall however is high. Hence if mixed vegetable and leguminous crops were planted on these unused lands, farm households would get nutritious foods from unused lands and limited resource application.

In the first year of introduction; 2016 *Kharif*; of *poshanbaris*, packets containing seeds of 17 different plants were distributed to about 2000 farm households in 30 villages of 10 Gram panchayats of Ridih Block, Gumla. Each packet could cover a land area of up to 1200 square feet. Each pack contained in turn smaller packs of seeds of these various plants. Each packet was priced at Rs. 100 which was paid by the desirous household upfront. The organisers - PRADAN Gumla team; had to essentially organise the preparation of the seed packets after procuring good quality seeds. The

plantings were done after minimal land preparation either on *tand* lands or on homestead lands close to family cottages.

The experience was in general quite good. In Raidih; Gumla the programme of *"poshanvatika"* was implemented by TRIF /PRADAN through the self-help groups (SHGs) established by the PRADAN. A meeting was held with the representatives of these SHGs in May 2018. The pilot year in 2016 saw 89 women growing vegetables in their homesteads. The next year, 2017, saw the number growing to 700 households in 6 GP. Each participating member was given a large packet weighing about 600 gms. This packet contained smaller packs of seeds of some 14 different vegetables (including green peas, Bengal gram, mustard, carrots, coriander, egg plant, bitter gourd, cauliflower, cabbage, chillies, bottle gourd, and three varieties of leafy vegetables). They were also provided with extension material on one hand of the need for consuming these at home and on the other about how to grow. Most of them grew these on their own homesteads. Women helped their sisters who did not have homesteads. Makeshift fences with nets or old sarees were made by many of them to prevent poultry birds from eating up seeds or young plants of the vegetables.

Of the 700, vegetable gardens failed to grow in 154 cases. In 196 cases, the household could manage the gardens and met some of their vegetable needs. In 200 cases they could meet their vegetable needs for about 5 months till February. The remaining not only did this but had enough surplus to distribute and give it to neighbours. A lady explained that on an average her household

A look at women distributing seeds amongst SHG women for growing vegetables such as Cauliflower and cabbages in tribal villages of Gumla

spends about Rs. 200 per week on buying vegetables from the market and this expenditure was completely avoided for about 16-20 weeks, with an estimated saving of about Rs. 4000. She further said that since plucking of vegetables from own garden matched the need, they always got fresh vegetables while buying once in a week meant that towards the end of the week their stock would become stale. Since they focused on growing vegetables using farm yard manure etc., they were also assured of the quality of their own produce, something they could not guarantee for the purchased vegetables.

3.3 Kitchen gardens in Dharmapuri, Tamilnadu

Dharmapuri lies in the Southern corner of the Deccan plateau with an elevation between 470 and 1400 metres above mean sea level at the North-Western corner of Tamilnadu adjoining the Chamarajanagar district in Karnataka. The district reports an average annual rainfall of 870 mm and the rainfall sharply declines as one moves eastwards in the district. The district is populated mainly by stock peasantry with a small proportion of ST and SC households. It is a drought-prone district. Proximity to Bengaluru tempts a large number of households to send their menfolk on wage work as migrant labour and hence farm operations and homes are looked after mainly by women. Landholding of a typical farm household is between 1 and 3 acres. The cropping pattern, as well as, diets were dominated by millets (*ragi*, fox millets, *kodo* millets etc.) earlier but the general march of civilisation led to paddy fixation in agriculture and now mainly the cheap rice programmes of the Government have shifted the diets towards rice. Few homes have any sizeable homesteads and several have none whatever.

AME Foundation works in this area to promote nutrition friendly kitchen gardens. Four villages where the programme is run were studied. AME Foundation provides the packets of seeds both in monsoon and in winter to the desirous farm households in the programme reached through the women SHG in the villages. The monsoon packet contains seeds of upto 18 different varieties, cumulatively weighing about a kilogram. Winter package contains about 10 different seeds and weighs about 600 gm. Households who have a piece of homestead land grow the plants in that land. Those who have no homestead lands, plant them in a thin strip of land along the perimeter of their homes and allow the creepers and plants to rise on strings tied to the walls and tiled roofs of the homes. Farmers are guided to prepare makeshift drip irrigation systems: they puncture a hole at the bottom of a Bisleri or similar water bottle, fill it up and hang it above the plant. This method has become quite popular at least for winter kitchen gardens. All the work pertaining to tending to the garden and harvesting, etc. is done by women since menfolk are away in any case. The plant produce from the kitchen garden is largely consumed at home. It enriches their normal rice + *daal* (usually *sambhar* prepared from *tur daal*) diets.

A look at Drip Irrigation which enabled kitchen gardens found in Dharmapuri. Also, a variety of snake gourd, bottle gourd, fenugreek and brinjal can be seen.

The farmers acknowledge this benefit. The articulation of this comes as “it saves us the trouble of going and buying vegetables every day from the market”. Since the markets tend to be 4-5 km away from these villages, the reduced drudgery is a significant advantage. Besides keeping the vegetables fresh as well as having ready cash for each trip to market both are a little problematic for poor homes. It can be conjectured that if vegetables are available within the household, the frequency of their inclusion in a meal would be higher than the frequency if they were entirely purchased. Formal data about quantities of vegetables produced and eaten at home or their money value etc. has not been gathered. However, there appears a strong reason to believe that the programme contributes to dietary diversity of the participating household significantly.

3.4 Nutrition gardens of Melghat, Amravati, Maharashtra

Melghat area of Amravati district nests in Satpura hills lying between an altitude of 200 and 1000 metres. The rainfall is between 900 and 1400 mm, generally declining as one traverses north-westward within the block. The terrain is undulating and largely hilly and mountainous with frequently occurring steep slopes. *Korku* tribal dominate the demography, comprising over 75% of the population in Dharni block and about 70% in Chikhaldara block. Melghat has acquired a poor reputation in the field of child survival and nutrition as being the among the most poor performing region with child mortality being as high as 70 per thousand live births and upwards of 60% children reported to be malnourished. The malnutrition among children is clearly an inter-generational phenomenon as they are born to wasted, stunted or grossly underweight and underage mothers. Average land holding is about 3 acres; much of which are slopes and topped with thin, pebbly soil. Some minor millets and coarse paddy or maize are cultivated in *kharif* while sorghum is the inter-seasonal crop. Wheat and soybean are grown wherever farmers have water to grow *rabi* crops. Homegrown food is insufficient and alternate livelihoods are very uncertain leading to a long-term food deficit. Diets are largely cereal based - deficient in both protein and micro-nutrients.

MAHAN Trust, an NGO working out of Dharni has been engaged in working towards alleviating the situation of malnutrition in the Melghat area. It started implementing a programme to enable self-provisioning for dietary diversity and better nutrition. This programme has three components: “kitchen gardens” which are done on a small plot of land within homesteads; “nutrition farms” which attempt to integrate cultivation of nutritious crops for self-consumption within the overall cropping practice of the farm households and “demonstration farms” which are essentially nutrition farms of first time adopters and technically assisted by an extension worker. A study of some 50 kitchen gardens / nutrition farms was undertaken. It was found that a typical kitchen garden had plants of some 10 vegetables including leafy vegetables like fenugreek and spinach; other vegetables like carrots and amaranth seeds. Nutrition farms had some additional vegetables and leguminous crops.

Cabbage, Fenugreek leaves, caroot, tomato, brinjal, beetroot and radish grown in the malnutrition prone Melghat region of Amravati district, Maharashtra

The programme has subsequently been expanded to include oilseeds as well in nutrition farms. The number of farm households buying packets of seeds in monsoon season is much larger than those who buy them also in winter. Only households which are sure of having access to water participate in the winter farm activities. The small kitchen gardens based on wastewater from within the household yield much less. Households without access to water often work on a share-cropping basis on nutrition farms of those who have access to water. It can be asserted that households having access consume more vegetables more frequently and to a larger extent than those who do not. The effect on dietary diversity is thus straightforward. The link between dietary diversity achieved through these measures and decline in malnutrition remains formally unexplored.

3.5 *Pata* of Yavatmal, Maharashtra

The word "*pata*" was used and communicated by Late Madhukar Dhas, Executive Director of Dilasa Sanstha. This refers to a few rows of mixed vegetable and legume crops grown alongside the main cash crop (such as cotton or soybean) or other crops (such as sorghum and pigeon pea) in the main farms of the household. The *pata* programme implemented by Dilasa Sanstha was the fore-runner of the programme of both *poshanbari* programme of PRADAN as well as the nutrition farms of MAHAN Trust.

Madhukar Dhas had told one of the authors that he had picked up the concept of "*pata*" from memory of his childhood. He said that often when his mother could not locate him, she would correctly infer that he would have gone to *pata* to pluck and eat a few bean pods or cucurbits. Farmers do not plant such mixed vegetable and legume crops alongside main crops for the simple reasons that they do not have access to a mixture of these seeds at the time of sowing their crops.

In 2009, Dilasa Sanstha experimented with supplying packs of seeds to farmers and encouraging them to plant them along with main crops at the start of the *kharif* season itself in the villages of Ghatanji block in Yavatmal district in Maharashtra. The mixed vegetable crops grew with the main crop in the rainy season. Vegetables became available during months of August and September when the food storages and cash reserves in homes are at their rock bottom. The own grown produce thus becomes very valuable since the farmers in drought prone Vidarbha region simply can not afford to buy vegetables during those months.

Dilasa Sanstha obtained a grant for disseminating the *Pata* programme and took it to many more villages in 2010 and 2012. The organisation had to fetch good quality seeds of a large number of vegetable and leguminous crops; mix them in pre-determined proportions and prepare packs of *pata* seeds. The seeds would then be sold at cost price to farmers, Dilasa Sanstha meeting the organisation's costs on coordination and manufacture of seeds out of donations received from the Tata Trusts grant or funds from Caring Friends.

Cabbage, Fenugreek, Carrot, Tomato, Brinjal, Beetroot and radish grown in winter season of kitchen gardens in Melghat.

Dilasa Sanstha took the programme to over 65000 farmers in 500 villages. They ensured that the quantities of any individual plant produce harvested on any given day seldom made it attractive for the head of the household to take them to the market for sales. Thus the produce was largely consumed at home significantly contributing to dietary diversity of the household. Towards the end of the season, some plants would continue to yield edible produce with a frequency that exceeded the appetite or desire of the household and then such produce would be sold. A formal evaluation of this programme was done and it was found technically as well as socio-economically satisfactory. The main point of the programme was that it involved very little incremental effort on the part of the farm family, ensured that the vegetable crops grew alongside the main crop thus ensuring that there was a watchful eye on them.

3.6 “Landless gardens” in Bihar

This simple but powerful concept was picked up from observations made in villages in Bihar. A development professional working with the AKRSP(I) picked up the idea and took it to some scale. The principal idea is that marginal mahadalit homes in Bihar have no land holding of their own and hence the question of cultivating vegetable produce “on their lands” does not arise. Yet they can grow vegetables by packing soil and manure; (either vermi-compost or farm yard manure) in a used sack, making holes at pre-determined places in it and planting vegetable seeds in the soils. The plants sprout in the rich peri-humid climate of the region and can creep on to strings tied along the walls of the huts of the mahadalit homes. They need to be watered every third day. These plants can yield up to several kilograms of vegetable produce to the homes and the householder can multiply the number of sacks creating a “landless garden”. By creating a garden of up to 8 sacks planted in a phased manner; vegetable requirement of the family can be fully met for almost a whole year. Preparing each sack would cost about Rs. 100-150 depending upon the type of manure used. It is a very elegant and sweet approach so beautifully suited to the most needy and deserving communities. The idea reached a scale of reaching out to a few thousand homes in Samastipur district before it was picked up by a state programme and lost in its bureaucratic procedures. AKRSP(I) however transplanted this idea in their Madhya Pradesh programme in Barwani, Khandwa and Burhanpur districts and to Dang in Gujarat. The programme has become integrated in their rural outreach activities now and annually reaches out to nearly 18000 households. Detailed documentation about the process to be followed for creating a landless garden is available with AKRSP(I).

4. Interpretative summary

Homesteads are used for a variety of purposes including plantations of vegetables, tying up of animals,backyard poultry, yard for farm implements, etc. Diversion of land for construction often happens. Generally, settlement pattern permits sizeable land around homes. *Poshanbaris* specifically used hitherto unused lands along with homesteads. The other four activities were seen to have been done within the tight constraints of arable land. Both land-less gardens and kitchen gardens in winter need special efforts for watering the plants and tending to them. Others tend to fit in normal course of household chores of women and children. Multiple small picking and harvesting is as per daily home needs. The period of utility ranges mostly between three-four months.

Attribute	Homesteads in Assam	Poshanbari in Jharkhand	Kitchen gardens in Dharmapuri	Nutrition farms in Maharashtra	Pata in Maharashtra	Landless gardens in Bihar
Locale	Land-abundant homes	Land-abundant homes	Drought prone land scarce	Land scarce, high rainfall	Drought prone	Marginal homes
Size	Up to half acre	1200-1600 sq ft	2-300 sq ft	Between rows in an acre	3 furrows in an acre of the main crop of cotton or soybeans	Very limited
What	Rich combination of plants	15-20 species of veg and legumes	15-20 plants of veg and legume	15-20 plants of veg and legumes	15-20 species of of veg and legumes	5-6 plants of veg in each sack; up to 8 sacks
Who works	Women	Women	Women	Women	Women and children	Women
Input	None	Seeds. Extra nutrients may be needed depending upon soil quality.	Seeds, extension	Seeds	Seeds; shares nutrients given to the main crop	Seeds; manure, extension
Cost (Rs/unit)	Not Applicable	100	Not mentioned	100	100	100 Rupees per sack
Main use	Home	Home	Home	Home	Home	Home
Perceived benefit	Homegrown foods	Home grown foods	Saving on walk	Nome grown foods	Home grown foods and sales	Home grown foods
Driver	Tradition	Member interest	NGO push	NGO push	NGO push	Own interest
Barrier	Diversion of lands	Extra labour, Seeds	Seeds	Seeds	Seeds	Seeds

5. Lessons learnt and way ahead for programming

A number of factors including pressure on common lands; mono-cropping on farms; use of chemicals in agronomy of main crops; dominance of commercial or cash crops have all tended to reduce floral diversity and hence the availability of naturally occurring vegetable and edible plant products.

Given the cash strapped nature of most rural homes; the consumption of vegetable and fresh plant produce suffers particularly during periods of acute cash deficit which coincides with high vegetable prices. This results in much reduced dietary diversity in rural homes leading to deleterious effects on micro-nutrient consumption and exacerbating nutrition situation. Hence alternate approaches for augmenting consumption of vegetables and fresh plant produce become necessary.

This study has recorded the experience of six different approaches that have been adopted by different communities for self-provisioning for dietary diversity. Traditionally ingrained approach of homestead plantation would appear to be all pervasive but seems to have been on the way out due to rising pressure on land in rural areas. It is completely unworkable in regions where settlements are in clusters of densely packed homes or with marginal households having little or no lands. *Poshanbaris*, *pata*, nutrition farming, landless gardens and kitchen gardens are diverse ways that aid in improving the households self-provisioning for fresh produce.

Within the overall bounds of informal programme implementation without scientific documentation in terms of precise quantities produced and consumed at home and their effect on status of micro-nutrient intake and nutrition levels; quantitative information on the utility of these approaches is not available. Rigorous work in this direction could prove useful to specify the benefits. Recall and anecdotal information tends to support the view that these approaches do in fact contribute to improved dietary diversity and hence are beneficial. The study highlights the fact that possibly there are three chief barriers to self-provisioning.

• The first one inferred by us from the study pertains to “metric and money value bias”. This refers to the tendency of farm households, intervening agencies and donors to under-estimate the subsistence-sustenance oriented activities and overplay the activities that produce saleable goods and hence enhance incomes. The fact that self-provisioning eliminates the market transactions saving a great deal both from drudgery and from cash expenses tends to be under-played.

Incremental cash in hands of households appears to be an overly stressed "concrete" benefit of the investments made. Homes, too, tend to assume away the invisible gains obtained through the invisible efforts of women from simple methods like the above. This is largely a mind-set issue.

• The second barrier appears to be pressure on lands and tendency to devote even available small patches of land to alternate purposes: extra construction, parking of vehicles, growing another cash crop, installation of machines or gadgets for some activity, etc.

• The third and most curable barrier seems to be lack of availability of a packet of mixed seeds in packing sizes that are both affordable and appropriate to the need and capacity of the household. *Poshanbaris* and *pata* both have demonstrated households are perfectly willing to pay amounts that cover the out of pocket costs involved in purchase of the packet of seeds.

The most important lesson that emerges is that it is possible to boost self-provisioning for dietary diversity by incremental consumption of fresh plant produce at low investments and across a wide geographic area. This lesson is so obvious and clear that rigorous assessments of donor costs and investments vis a vis gains in dietary diversity demonstrated by concrete verifiable metric would seem to be overkill. The study points the direction which donors could consider.

It is recommended that donors may consider supporting distribution of packets of mixed plant seeds and method of planting them appropriately as per land availability and agro-climatic conditions of the location; as a part of all their rural development support programmes.

Therefore, we recommend:

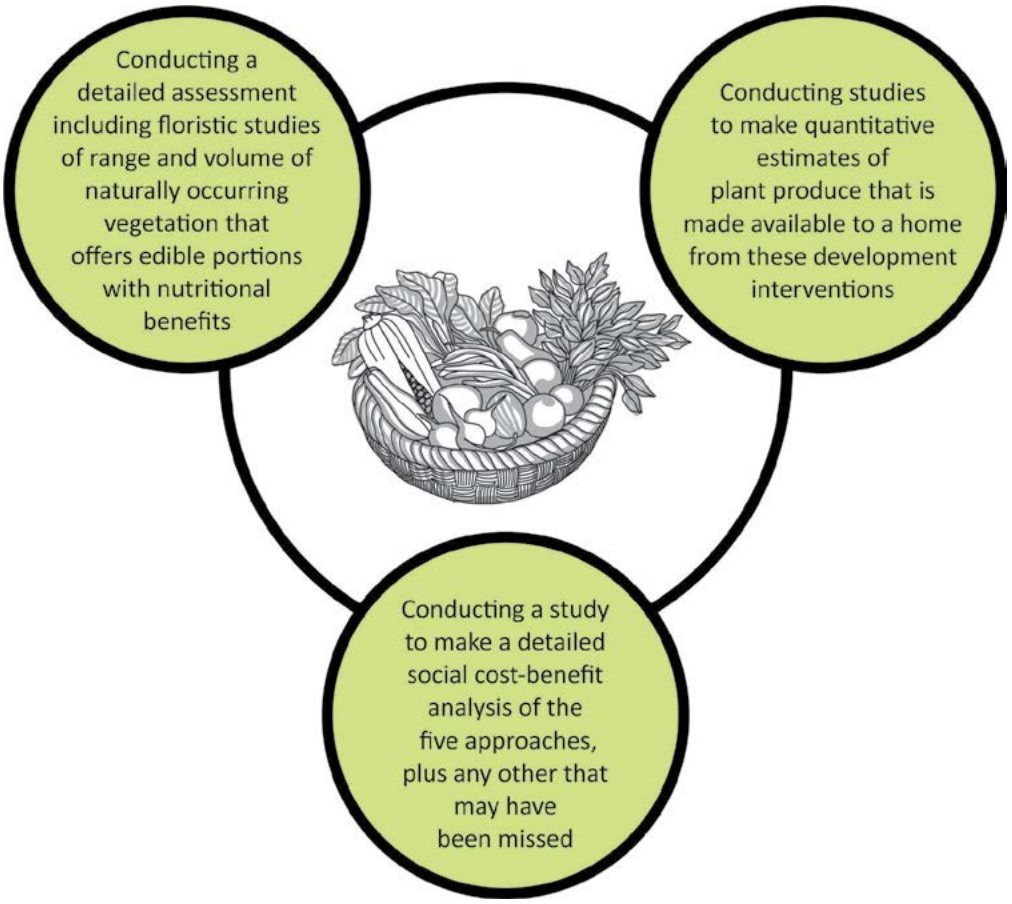
• Encouraging assessment of level of fresh produce consumption within the target community to be done on the part of a ground partner. This exercise may include the area of land, if any, currently unused and available with the target community.

• Evolution of protocols for arriving at the composition of seed packets considering local taste; agro-climatic suitability and cost of the packet and preparation of simple extension materials to explain the method of planting.

• Financial support to participating organisations for the first one or two year for producing and distributing a number of packets to be mutually decided on the condition that they will price the packets at a level to cover all out of pocket costs and also try to institutionalise the self-provisioning within the communities through the grass roots structures much the same way as happened in case of *poshanbaris.*

Our brief study assesses the five deliberate interventions alongside the traditional homestead for improving dietary diversity within households. However, using the findings the study points out the need for future research in the following areas.

Avenues for further research in the field of kitchen gardens:



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VAF is an initiative of the Tata Trusts established as a not-for profit Company under Section 8 of Indian Companies Act. VAF aims to conduct research in two main streams. The first is in the nature of identifying and researching unattended issues of importance to the poor and the marginalised people with a view to evolve actionable programmes on them. Such programmes then could be developed and supported or implemented by civil society organisations, donors or Governments. The second stream is to explore and improve understanding about issues which are encountered in processes of implementing programmes in several domains. Such common issues pertain to the social development process rather than the domains themselves. VAF works in an inter-disciplinary manner.

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The documents brought out in this series are based on intensive and field based research work carried out by VAF staff and associates in the respective fields. Formal research papers have been written on these researches which are published and presented elsewhere. These documents are meant to primarily disseminate the findings with a view to create interest and awareness about the issue on which they are focused, act as bases of discussions and eventually lead to action. An attempt is made to emphasise readability rather than scholastic exactitude. These documents can be used freely for academic purpose or for the purpose of advocating action inherent to the issue. VAF will appreciate being acknowledged when they are so used.

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