

Stories of change

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Home gardens and fishponds for nourishment and empowerment

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Key messages

- In three Indian ‘agro-biodiversity hotspots’, home gardens are providing households with up to 135kg of legumes, vegetables, tubers, leafy greens and gourds per year. This is more than double the quantity of vegetables that families were previously buying in local markets.
- Households with home gardens have access to more nutritious and more diverse food, have reduced their reliance on local markets and share more food with others than non-participating households.
- Women have gained more self-confidence and decision making power through their management role in home gardens.
- Communities have adopted fish farming in local water bodies, generating a new source of animal protein.

regions in India. Koraput in Odisha state is rich in rice diversity; in Tamil Nadu, the Kolli Hills are home to many varieties of small millets; and in the Wayanad region of Kerala, numerous types of yams and rice can be found. In all three regions, however, this diversity is being lost through the introduction of cash and industrial crops, and the areas are now regarded as agro-biodiversity hotspots. High levels of poverty and malnutrition are also present, with diets typically limited to rice and soup made from pulses or vegetables. Surveys have found that low body mass index and high rates of anaemia are major problems among women and children.

The *Alleviation of Poverty and Malnutrition (APM)* project led by the MS Swaminathan Research Foundation with support from the University of Alberta, aims to enhance food and nutrition security, and the income of marginal, small and landless tribal communities in agro-biodiversity hotspots in India. It uses home gardens to reduce micronutrient deficiencies and has established over 2,000 home gardens across the three states. Both structured (raised beds, with specified areas for six varieties surrounded by green shade nets) and unstructured (vegetable plots of different sizes, grown in pots, with limited diversity) home gardens were encouraged, depending on household

Context

The paradox of poverty existing alongside great natural diversity is perfectly illustrated by three

circumstance. In introducing the gardens, the project also investigated how the promotion of local genetic diversity through home gardens would impact on household nutrition and income generation.

Emerging outcomes

Women empowerment: 'I can now manage my food'

Women often have little control over what food comes into their homes, since men are normally responsible for food purchases. By creating a home garden (particularly if this was a structured one), households made a significant increase in the number of fruits and vegetables they grew. The seeds and technology provided to establish these home gardens also resulted in an increased diversity of plants in these regions. As a result, home gardens are giving women access to a greater diversity of food crops, increasing their confidence and decision making autonomy and reducing their dependence on local markets. In addition, as the role of women in household decision making has been enhanced, households have become more self-reliant, better able to withstand shocks and maintain nutritional quality in crisis conditions.

“ I am deciding myself now what vegetables to use for making curry, unlike before, when I had to look at what my husband had bought for the week. ”
Ms. Sasikala, Alavadi village



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Managing home gardens improves women's confidence

A survey investigated women's self confidence, through a set of questions related to decision making, prioritizing spending within the household, choice of life partner and children, decision making within the community, dealing with officials and self-satisfaction. Women who participated in the project were found to have higher levels of self confidence than non-participants (Table 1). Focus group research has also highlighted the greater sense of autonomy women feel in decisions about food within their households when they have home gardens (Huang, 2014).

“ Before the kitchen garden, we used to spend 200 rupees every time we went to the market, which we did about four times a month. After setting up the kitchen garden we spend less money in the market, maybe 80 rupees less each time. ”
Ms. Ambiga, Oyanguli village

Landless women build food security

The project has helped landless women to organize themselves into collectives, thereby increasing their access to land, quality seeds, capital, machinery, and the market. In Wayanad, for example, 67 landless women were encouraged to lease fallow land for cultivation of elephant foot yam, a crop which is lucrative but expensive to produce. The project supported them with quality seeds and improved cultivation practices, with the women contributing in cash towards external labour, manure and fertilization. As a result, they have achieved profits that range from

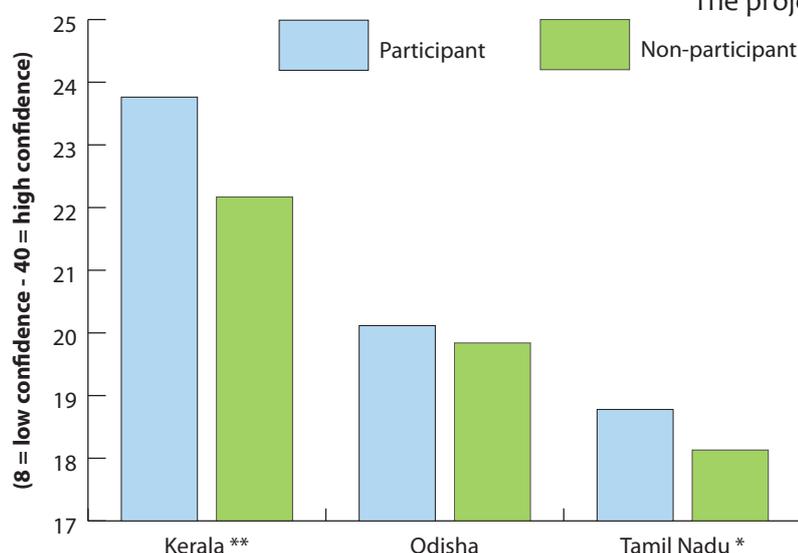


Table 1: Aggregate self confidence score

INR 3000 to 13,000 (Indian rupees) per person. Enthused by this, some women have started yam cultivation independently and the results have encouraged other collectives to begin growing the crop.

Changing food habits

Through a combination of nutrition and behaviour change communication activities (including cooking demonstrations) and access to a broader range of foods, households have been encouraged to change and enrich their diets. Women with home gardens adopted new foods, changed the mix of foods they prepared, and shared foods produced (and knowledge of how to produce them) with others in their communities. Interventions such as nutrition education, cooking classes and demonstrations were used to explain the role of different foods in diet, teach people the components of a balanced meal and encourage different methods of food preparation. Recipes like raddish leaf chutney, carrot halwa, yam and mixed vegetable poriyal (a fried vegetable dish), and greengram baked with mixed vegetables are just some of the newly adopted foods produced through home gardens and added to the diet.

The project saw enthusiastic uptake of all forms of nutrition training and education, which has led to women making more informed choices, gaining them respect from family members. Adolescent girls and young mothers, for example, have learned important facts about prevention of anaemia and micronutrient deficiency diseases. Prior to training, only around one in five adolescent girls and one in ten young mothers understood either the causes of anaemia or foods to prevent it. Following the training, around 90% of girls and 70% of young mothers showed a good understanding of both topics.

Vegetables from home gardens were mostly consumed by households (increased consumption levels are indicated in Table

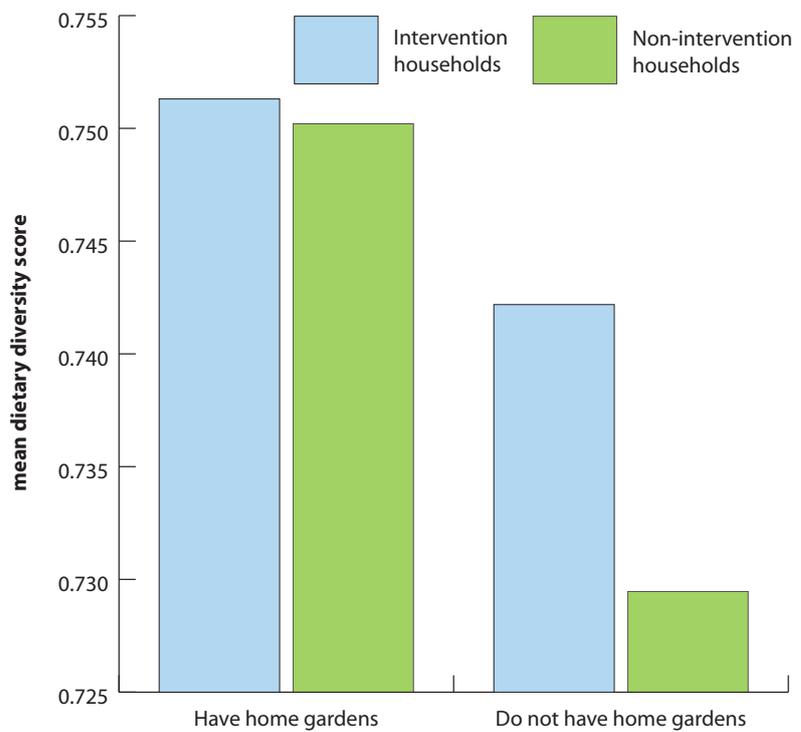


Table 2: Mean dietary diversity scores in Odisha

3), although women also valued the gardens for allowing them to share food with relatives and neighbours. As sharing was repeatedly described as an important community value, kitchen gardens have become important assets for the entire community.

Dietary diversity

Dietary diversity is a key indicator of food security, providing a wide range of micronutrients that support long-term health and increasing the resilience of households to shocks from weather or markets. This project has the potential to increase dietary diversity, both in supplying a wider range of foods through the home gardens, and also in saving (or even earning) household income, thereby permitting additional foods to be purchased. Table 2 indicates the importance of home gardens to dietary diversity based on data from Odisha. Households with home gardens (whether receiving input from the project or not), clearly have more nutritious diets than households without gardens. In the latter households, project interventions appear to have had a

Food type	Odisha	Tamil Nadu	Kerala
Vegetables	56.4 kg to 135 kg	48 kg to 90 kg	26.4 kg to 96 kg

Table 3: Pre-intervention to post-intervention consumption of vegetables per household per year



Harvesting of fish in a community pond in Jeypore

significant impact in improving household diets by indirect means (e.g. increased income and knowledge), leading to substantially better diet scores compared with households that had no contact with the project.

Boosting nutrition through freshwater fish culture

Fish farming also has potential to improve dietary diversity in these areas. Typically, fish found in local ponds are small, few in number, have poor taste and fetch a low price in the market. The project therefore introduced a system of community-based fish culture, for the rearing of carp species. Between 2012 and 2013, fish fingerlings were stocked in 13 ponds and reared by farmers' clubs for 7-8 months. Over 1,500 kg of fish were then harvested, shared and sold among families. This positive outcome suggests there is potential to promote freshwater fish culture in community ponds and excavated water tanks, to boost household consumption of animal protein.

Conclusion

By developing home gardens, women enhanced their skills on vegetable growing, from nursery production and harvesting, to seed collection and post-harvest processing, helping them to emerge as effective managers of agro-biodiversity. Introduction of home gardens contributes to household nutrition security, improving energy intake and dietary diversity, while also changing women's roles in household

food management. In addition, fish culture in the common and private ponds has increased immediate access to fish for poor and marginal families, supplementing nutritional diet. Future work will refine approaches to engaging households in home gardens, maximizing the nutrition potential of this activity across the population.

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