Nutrition from innovation, and taste from waste

From a situation of widespread undernutrition, consuming fresh vegetables all year round has now become a reality for many Nepali households thanks to their expanding home gardens. But the stories they tell show that the benefits of home gardens are not limited to improving household nutrition. The gardens also help to empower women and conserve biodiversity, two much needed conditions for better family and community nutrition on a broader scale.

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The World Health Organization reports that in Nepal, 39% of under-five's are underweight and 48% have anemia. The country's primary nutritional issues were identified as chronic energy deficiency in mothers, low infant birth weights, widespread childhood malnutrition, and deficiencies in Vitamin A, iron and iodine. Inadequate micronutrients are especially common in remote rural communities where dietary diversity is limited, and is a particular problem with women and children. Lack of nutritional education and resources for maintaining long term food and nutritional security contribute to these problems.

Home gardens

Despite these serious problems, some rural communities have started to improve their food and nutritional security through investing in more genetically diverse home gardens. Various programmes are supporting this move, including a large project implemented by LI-BIRD over the past 12 years, a national NGO supported by the Swiss Agency for Development and Cooperation and Bioversity International.

Home gardens used to be a cornerstone of traditional Nepalese farming systems, but over time, they have slowly begun to lose their importance in people's eyes as a relic of old-fashioned customs. But now, their importance is being recognised once again. A home garden is the area around a homestead where traditional and improved varieties of vegetables, fruits, fodder, herbs, spices, mushrooms and ornamental plants are grown, along with livestock, fish and bees. Production from home gardens is primarily intended for family consumption though many farmers may also produce a surplus for sale.

Nutritional calendars were developed with local people that showed the monthly gaps in nutrition for each community. Farmers were supported with the provision of vegetable seeds and fruit saplings. They also received training on human nutrition, and on low cost sustainable home garden management techniques. The introduction and integration of goats, pigs, poultry, mushrooms, fish and bees was also promoted, to complement family nutrition and household income as well as providing agroecological benefits to the farming system as a whole.

How home gardens were developed was decided by farmer groups within each community. These groups are village level institutions with a defined legal status that also abide by national rules and regulations. In each home garden group, the inclusion and participation of marginalised groups based on ethnicity, gender or poverty, allowed more equitable access to the opportunities and benefits. The garden groups received support not only in specific techniques, but also in organising themselves, thus preparing them long for continuation of project activities. The farmer groups built knowledge and skills on governance, accounting and finance, and building relations with service providers. They also implemented a savings and credit programme that allows them to overcome unforeseen financial problems.

Cultivating diversity

The tiny home garden of Surya and Saraswati Adhikari is flourishing. Situated directly in front of their house in Begnas village, Kaski district, just a few steps from the kitchen and storage areas, more than two-dozen different plants can be found in their eight square metre plot. Papaya and banana trees stand tall. Below grow many local vegetable varieties, and climbing beans vines wrap themselves around edible bamboo stalks. Other medicinal, cultural, and decorative plants such as *tulsi*, *barbari*, and *til*, help the family and the community as a whole to preserve traditional knowledge and practices otherwise at risk of being forgotten.

Chemical contamination and poisoning from unregulated use of industrial pesticides by untrained farmers is a widespread problem. But Surya and Saraswati use no insecticides, herbicides or fertilizers in their garden, preferring mulches and compost to enrich the soil and natural fertilizers to promote plant growth.

Still, many farmers with home gardens struggle to maintain vegetable production during the dry season, especially in hilly areas where the availability of water is limited. To overcome this, farmers began collecting waste water in small tanks and using this to irrigate their gardens. Mr Lok Bahadur explains, "I have constructed a water tank of nearly 500 litres in my garden

Grinding spices for the day's cooking.
Photo: Jacob Zucker

and I can now grow vegetables even in the dry summer." This result has been aptly described as producing 'taste from waste'.

Women and nutrition Women know the importance of home gardens for family nutrition very well as they typically take responsibility for both. With respect to which fruits and vegetables to grow, food preparation and feeding the family, women make critical decisions that have lasting impacts on the lives of their children and other family members. A proper understanding of the relationship between the plants grown in the family garden and the nutritional makeup of meals prepared in the kitchen is indispensable for addressing the issue of malnutrition.

Saraswati Adhikari is responsible for the family's cooking, and is fully aware that creating a proper nutritional balance in each and every dish is a delicate task of the utmost importance. Most rural families only eat two main meals a day, with white rice as the staple carbohydrate source. *Daal* is a typical Nepali dish prepared from lentils or beans, both of which are an important source of dietary iron and protein for rural communities. On days when it is not served, she prepares a stew of taro leaves or mustard greens that supplements the iron intake. Taro leaves are also a rich source of vitamins A and C, and when consumed with vegetable sources of iron and protein, significantly increase their absorption by the body. In the summer, ripe cucumber is sprinkled with iodized salt as a cooling afternoon snack, helping the family to avoid the range of disorders associated with iodine deficiency.

Saraswati carefully crafts each family meal with a wide range of fresh fruits and vegetables from her home garden. And the health benefits of such a nutritious diet are being felt. Now able to consume fresh vegetables all year round, Lok Bahadur explains, "I feel in good health compared to before. Previously I had to travel to Kathmandu up to four times a year for medical treatment, but not any more."

Beyond self-sufficiency Home gardens have also added to household incomes and the nutrition of others, with surplus produce sold for cash in local markets. Home gardens have also proven to be useful 'testing grounds' for some farmers, where they have experimented with new plants and practices, learnt, adapted, and then scaled up the successes on their fields. After learning from their home gardening experiences, others have increased production to such an extent that for the first time, they have excess to sell.

Mrs Champa Chaudhary is from the indigenous Tharu community in western Nepal. Not long ago she had limited access to resources and used to have practically no say in household decisions despite her responsibilities for cooking and household tasks. Wage-labour was the only source of income, and the food that she could grow was never sufficient to support her family for more than four months in any year. Champa has since improved her gardening skills, increased and diversified her production portfolio, and last year she was able to earn 5000 Nepalese Rupees (around US$50) from selling surplus crops. She proudly explains, "I do not have to spend my hus-

Saraswati and Surya Adhikari in front of their home garden. Photo: Jacob Zucker

Peeling pumpkin vines for a stew. Photo: Jacob Zucker

Diversity is key to sustainability. Photo: Roshan Mehta

band's hard earned money any more to buy expensive vegetables from the market. And now the community has also started listening to my advice on how to grow vegetables."

Women step up Champa is not alone in finding herself having a new social status. The development of home gardens has brought prosperity and social development to communities in a number of ways. Not only have women developed their skills and knowledge about growing fruits and vegetables, rearing small livestock and linking farm products to markets, but they have also, developed leadership skills and increased their participation and influence in local affairs.

In addition, saving and credit groups have provided a platform for women to manage their individual and family financial resources. They now meet and discuss various issues at the community level. This increased and regularized group interaction has thus mobilised and enhanced rural womens' leadership skills.

More than 80 home gardeners have stepped up to become their local community's 'resource home gardener', a role played by one in every 25 home gardeners. With initial technical and material support from the LI-BIRD project, 'resource home gardeners' have become focal points for the exchange of local knowledge and seeds. Sita Bhugel, living in Kathjor, Ramechhap, once grew very few vegetables and only during the wet season. After participating in the home garden programme, she started to grow many different crops all year round. She inspired and taught many of her neighbours and became a local resource contact. She has become so respected in her community that she was recently nominated to be vice president of the village-level Agriculture, Forest and Environment Committee.

An ideal approach The maintenance and expansion of genetically diverse home garden systems is an ideal approach to ensure nutritional security for farm families in Nepal. A wide range of fruits, vegetables, medicinal herbs and spices helps to supplement often limited family diets, and provides a host of essential micronutrients in the process. As the vast majority of rural families already maintain home gardens this undertaking can build on existing local knowledge and requires minimal financial investment. The result is widespread implementation and spread of this grassroots method.

On a broader level, home gardens offer increased resilience for farming households in the face of risks brought about by climate change and the migration of many men who migrate to urban centres in search of off-farm employment. Women are developing their capacities to produce food, generate income and take leadership positions. They are feeding their communities while cultivating and conserving a wealth of local biodiversity – species and varieties that are better able to resist the vagaries of more frequent and severe droughts, unpredictable climate changes, and pest and disease outbreaks.

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