

Nutritional benefits from home gardening

Seasonal hunger and malnutrition are ever-present conditions for the landless or near landless rural poor and urban slum dwellers. These groups are particularly vulnerable because of low and irregular cash incomes. In Bangladesh, as in other tropical countries, many such households use the small area around their house to grow food to supplement field crops, purchased food and generate income for households with access to markets. The pilot homegarden project of Helen Keller International (HKI) reported here has looked specifically at the impact of improved home gardening on the nutritional status and health of poor households.

Robin Marsh



Photo: Robin Marsh

Both chronic and acute protein-energy malnutrition are widespread in rural Bangladesh. Nutritional blindness among pre-school children is a persistent problem caused by vitamin A deficiency. Every year, over 900,000 children under 6 years old suffer some degree of xerophthalmia and 30,000 or more children become permanently blind; half of them die within the first few months of the blinding episode (HKI November 1993). Women and children disproportionately suffer the effects of malnutrition and morbidity and mortality associated with malnutrition (World Bank 1992). Among the children, girls suffer higher levels of malnutrition than boys.

Surprisingly, this gender disparity increases at higher socio-economic levels and at higher levels of father's education (HKI 1993a). More educated fathers earn more and improve the nutritional well-being of their sons only. However, mother's education level is positively correlated with improved nutrition of girls. This underscores the importance of incorporating education and training of women in nutrition intervention efforts.

The pilot homegarden project

HKI works globally to reduce the incidence of nutritional blindness and raise awareness of the importance of vitamin A in the diet. Between 1990 and 1993, HKI imple-

A woman from Panchagaor District, Bangladesh, harvesting indigenous leafy vegetables from the family homegarden.

mented a pilot homegarden project in Panchagaor District, northwest Bangladesh, to assess whether promotion of low-cost vegetable gardens, combined with nutrition education, might be a viable strategy for improving the nutritional status of at-risk populations, particularly women and young children. The ultimate target group consisted of 1000 households from 81 villages with less than 0.32 ha of total land area each, including the homestead area, and at least one child less than six years old. A 1990 baseline survey revealed that of the selected households, 48% had no agricultural land at all. Among landowners, the mean size holding was just 996 m² or 0.1 ha. Homestead land was available to every household for gardening (mean = 412 m²). The majority of families earned their livelihood as share croppers or day labourers in nearby rice fields.

Two hundred families were selected from non-target villages as a "control" group. In addition, 100 households from the target villages not directly involved in the project constituted an "interaction" group. This was to ascertain any demonstration or multiplying effects from the project.

The group approach

HKI learned from earlier projects that community involvement is crucial for sustainability of home gardening activities. In each village, working groups of 10 to 20 women interested in home gardening were

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AVRDC has gathered a wide range of data on 191 varieties of 67 vegetable species suitable for home and school gardens. The information covers nutritional value, pest and disease resistance, planting and transplanting dates, and optimum climatic, soil and water conditions, as well as data on 133 varieties of 44 vegetables suitable for AVRDC's simple hydroponic system (see article by Midmore in this issue).

Currently, AVRDC is making case studies of the socioeconomic and agronomic traits and constraints of homegardens in Bangladesh, Indonesia, Nepal, Nicaragua, Honduras and Guatemala. This information will provide important feedback to the Home Garden Program for carrying out useful on-

station adaptive research. In future, AVRDC plans to give training, technical assistance and appropriate germplasm to institutions promoting homegardening, through its regional offices in Asia, Africa and Central America.

As AVRDC increases its international outreach, it is considering a proposal to create a multi-pronged International Garden Resource Center involving collaboration of organizations working on different aspects of gardening in developing countries. AVRDC invites readers to send in comments and suggestions related to this proposal.

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formed. Each group chose a leader to organise technical assistance and seed distribution for the project. These group leaders play a key role in the programme. They work entirely voluntarily, although expenses are paid for attending training sessions. Group leaders generally have a somewhat bigger homestead to facilitate experimentation and seed production. More importantly, they should be respected by group members and able to help resolve problems when they occur.

One field officer and six extension workers with secondary level education in agricultural science - three men and three women - worked full-time for the programme providing training and technical assistance. They all spoke the local dialect and were familiar with local culture and customs. Training of the extension agents was frequent, intensive, participative and multidisciplinary. Lectures and demonstrations covered the nutritional needs of women and children, cultivation of vitamin-rich vegetables using low-cost, low-risk techniques, processing and cooking methods and communication skills.

HKI provided women gardeners with seasonal vegetable seeds not locally available, and some saplings for fruit and multipurpose trees. "Nursery" caretakers were selected among the group leaders to grow the seeds into seedlings for project-wide distribution at subsidised rates, and to facilitate sharing of indigenous vegetable seeds, cuttings and vines. Seed distribution and the general progress of the gardens were followed through a simple but efficient "continuous community based monitoring" system (Talukder 1993).

Expansion and growing diversity

An external mid-term evaluation in December 1992, two years after the project started, showed that the area under homegardens had expanded considerably and that a growing diversity of crops was being cultivated. In 1990 only 50% of the target-group households reported having a homegarden, with a mean size 61 m² and an average of 3.1 varieties of vegetables in the ground. Two years later, all target households had gardens, with mean size 138 m², while the average number of varieties increased nearly fivefold to 17. Most commonly grown vegetables include: bottle gourd, red amaranth, radish, papaya, spinach, taro and sweet potato, all rich in vitamin-A.

Greater diversity in number and types of vegetables grown in the garden generally promotes higher vegetable consumption levels, especially among children, and higher aggregate nutritional value (HKI Baseline Report 1991). Garden diversity is also beneficial for suppressing pest populations and enhancing soil fertility. Furthermore, when income generation is an objective, a small but diverse supply of vegetables tends to have a more secure market value, especially during the "off"

season. The evaluation revealed that, two years into the project, over 50% of target households earned income from sale of surplus garden vegetables in local markets.

Impact on health

For HKI the ultimate criteria for assessing home gardening activities is their impact on nutrition and health among and within participating households. The 1992 evaluation provided very relevant insights in this. For the average target household, over 90% of calories are consumed in rice. Depending upon income and homestead supplies, families combine small amounts of vegetables, fish, *dal* (a lentil based curry) and cooking oil with rice. Over the first two years of the programme, consumption of vegetables among target households increased 27% from 5.8 to 7.5 kilos per week, over the baseline (Table 1). And more than 80% of these vegetables came from their homegardens, as compared with 37% for the control group (Table 2).

The combined home gardening, nutrition education and gender aspects of the project have also had a positive impact on vegetable consumption by infants and very young children. In particular, in the target group fewer babies of 6-11 months (55%) and toddlers of 12-23 months (17%) are not eating vegetables at all, as compared with the control group (83%, 40%). Also, the prevalence of severely underweight children under five declined by 7% (from 25% to 18%) in the target group. This is probably related as much or more to increased consumption of rice, through supplementary income and savings from home gardening, than to any direct effects of vitamin A on growth (HKI 1993b).

Women decide

Studying the data of the evaluation on decision-making aspects reveals interesting gender effects of the project. Regarding "what to keep and what to sell", 65% of the decision-makers were women in the target group, as compared to 25% for the control group. Also, women were more

than twice as likely to receive and exercise control over income earned from garden sales in the target group. The home gardening project, by focusing on women both in gardening and nutrition education, appears to have had an important empowering effect. This alone is crucial for achieving improved nutritional welfare for the family, especially for female members.

Less satisfying is to note that the interaction group showed very little of the above positive effects. This poses an important challenge to all promoting homegarden development. Apparently direct technical assistance and participation in the working groups are required for adopting some of the new practices and consuming more vegetables.

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Table 1. Household vegetable consumption

mean quantity consumed (kilos)	target households	control
before project (1990)	5.80	5.08
mid-term (1992)	7.54	5.36
increase (%)	30	6

Table 2. Sources of vegetables for consumption (%)

sources	target households	control
own home garden	81	16
market	16	67
others	3	17