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# Household gardening projects in Asia: past experience and future directions

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# Household gardening projects in Asia: past experience and future directions

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*Report based on a workshop organized and sponsored by:*

**Asian Vegetable Research and Development Center (AVRDC)**

**User's Perspective with Agricultural Research and Development  
(UPWARD)**

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## Introduction

The household garden has appeared on the international development agenda at least since the 1950s. However, unlike field agricultural development, gardens seldom attracted sustained support from development agencies in the next two decades, despite their potential to address the food and income needs of the most deprived groups in the developing world.

The 1980s, however, witnessed encouraging interest in household gardens. Small-scale family food production programs received the backing of UNICEF and FAO. Many NGOs initiated projects designed to promote household gardening amongst landless and marginal farmers. The U.S. Agency for International Development launched a long-overdue research effort to evaluate and develop household garden interventions as a viable long-term approach to tackling vitamin A deficiencies.

An International Workshop on Household Garden Projects was held in Bangkok, Thailand, on 13-15 May 1991, to consolidate lessons learned from experience with household garden projects over the past decade. The workshop brought together practitioners who have implemented garden programs in Asia and Latin America to analyze the relevance and effectiveness of household food production as a development intervention targeted at the most nutritionally and economically disadvantaged, and to assess the factors that have contributed to the success or failure of particular projects.

This report summarizes the workshop discussions and recommendations, addresses key issues concerning the role of household garden programs in rural development, and identifies viable implementation strategies drawn from the experiences of the workshop participants.

We hope that these conclusions will prompt policymakers and development managers to reassess the much-neglected potential role of small-scale household food production in enhancing nutrition and income generation.

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## Household gardens: sustainable food production

Food production on small plots adjacent to human settlements is an age-old survival strategy in the developing world. Food gardens make a substantial, though rarely appreciated contribution to the food security of the poorest segments of society. For instance, sales from homestead vegetable gardens in Bangladesh contribute more than 10% of the income of landless households; the value of the produce retained for home consumption is often higher.

The 1990s is a particularly appropriate time for progressive policymakers to push for the wide and sustained development of small-scale household cropping. More food will have to be produced and distributed during the first three decades of the 21st century than since the agricultural revolution that started over 10,000 years ago.

Increasing numbers of small farmers are being marginalized by ecological, social and demographic forces. The emphasis on commercial agriculture tends to exclude such resource-poor households from access to government technical services. Meanwhile, growing landlessness, compounded by the shift to less labor-intensive technologies, is squeezing opportunities for farm labor. With rapidly increasing migration from rural areas into large cities the challenge of providing adequate food to the urban poor will only intensify.

Despite dramatic jumps in cereal crop production, the United Nations Development Programme estimates that over 800 million people remain chronically hungry. Further, the commercialization of agriculture based on plantation crops and basic staples such as rice and maize using monocropping technologies has seriously unbalanced the diets of the rural poor by reducing the intake of vegetables, fruits and other supplementary foods. As the price of vegetables doubles, intake of vitamins A and C declines by more than one half with a corresponding increase in illness. More worrying still, the incidence of vitamin A deficiency has not declined despite increased income and prosperity in many parts of the developing world.

Household gardens by themselves will not solve all these problems.

Nevertheless, a number of successful initiatives in countries as diverse as Bangladesh, the Philippines and Thailand have demonstrated that household gardens represent a direct, cost-effective and ecologically sound strategy for tackling the socioeconomic and nutritional needs of the poor.

### **What are household gardens?**

*Household gardens are mixed croppings of fruits, vegetables, trees and condiments that serve as supplementary sources of food and income. They have a functional relationship with the homestead but are also found in pots, along fields and in strips along rail tracks, highways and canals (hence 'household' and not 'home' gardens).*

*The function of gardens is largely shaped by their purpose for the "users". A household garden does not have to have a residence on it to qualify. The garden may be purely for subsistence or at least partially market-oriented, and it can consist solely of vegetable crops or mixtures of annuals and perennials (and if so, is it merely agroforestry?).*

*For those who are promoting interest in gardens, the challenge is how to promote low-cost, ecologically-sound cropping technologies that can enhance nutrition and income for the poorest households. Where the "garden" is planted or what it must consist of are completely dependent on the family's needs and resources. The development facilitator seeks only to enable these choices, unrestricted by preconceived notions.*



*Products from multi-purpose gardens spico up staples and add to family medicines.*

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## Why household gardens?

Small-scale household gardening as a food production strategy has been overlooked by development policymakers in favor of field-based, commercially-oriented agriculture. However, despite remarkable gains in staple crop output, resource-poor rural households have benefited little from large-scale production-oriented programs biased towards land-owners and dependent on costly industrial inputs.

Recognition of this dilemma calls for development programs that directly reach the "poorest of the poor". Promotion of small-scale household cultivation on marginal and homestead land is one answer, and resources should be directed to introduce gardens in areas where they do not exist (but are feasible) and to multiply their number, and increase utilization of garden products when they do exist. Even though the contribution from household gardens to family welfare might only be supplementary in nature, such modest contributions are important to those who have very little.

### ***Reaching the poorest***

Homestead or under-utilized marginal land is often the only resource available to landless and near-landless groups and urban slum dwellers. Intensive gardening can turn this land into a productive source of food and economic security. There are few, if any, barriers to adoption of intensive household production using organic manure, regenerative agricultural practices and locally-adapted species. The technology entails very little capital investment and, because of the marginal nature of resources used and variety of crops grown, carries very little risk.

### ***Providing food security***

Family gardens may constitute the only source of certain nutrients to less well-off households and the major — or only — source of food between harvests or when harvests fail. They provide critical sources of energy and protein especially for weaning-age



*Daily harvests from gardens  
augment intake of essential nutrients  
and ensure fresh produce.*



children. Habitat destruction and migration to urban areas mean that wild foods are no longer available to the poorest groups. The commercialization of agriculture has displaced many indigenous crops that ensured a balanced rural diet. Year-round, readily available and continuously harvested garden production can be a source of nutritious and pesticide-free vegetables and fruits for the poorest families who may otherwise have no access to them.

### ***Intensifying food supply***

As efficient users of soil, water, sunlight and household waste to realize high and sustained yields, household gardens exemplify the oft-noticed relationship between intensification of land use and higher yield. In semi-arid areas where low and erratic rainfall has made the introduction of vegetables into existing farms a difficult task, water-conserving garden systems that recycle water used in the home can achieve substantial production.

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## ***Fostering economic security***

Gardens generate income through the marketing of surplus produce and from the savings created by producing items that were formerly purchased. The small amounts of cash income that household gardens provide can make the vital difference between relative well-being and hardship, crippling debt and starvation in cash-poor societies.

## ***Generating employment for women***

Limited access to resources means that land-poor women are more likely to be under-employed. Household gardening offers women an important means of earning income without overtly challenging cultural and social restrictions on their activities. Since women are frequently the principal providers for family diets, enhancing their purchasing power and food production capacity has a direct impact on household nutrition and health.



***The old and the young nurture household garden plots.***

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## ***Protecting the environment***

Household gardens can be ecologically sound land management systems. Multicropping prevents depletion of soil nutrients; the combination of trees, shorter plants, creepers and tubers enhances soil conservation. An advantage of polycropped, intensively-managed gardens planted with locally-adapted species is their primary reliance on cultivation practices rather than toxic chemicals to control weeds, pests and diseases. Household food production will rarely poison people or the environment — a serious problem in agrochemical-intensive field-based agriculture. Traditional-style household gardens are also crucial repositories of diverse plant genetic resources.

## ***Using available resources***

Among low income households the factors of production, including time, energy, money and land are available in small discrete increments through time and space. Accumulation of these factors to make larger investments can be difficult. Household gardens are a very efficient way to use these resources without competing with staple crop production or other productive activities. Labor inputs effectively utilize small amounts of the spare time of family members, especially women, children and the elderly, and can be conveniently combined with child care and domestic tasks.

## ***Contributing vitamin A***

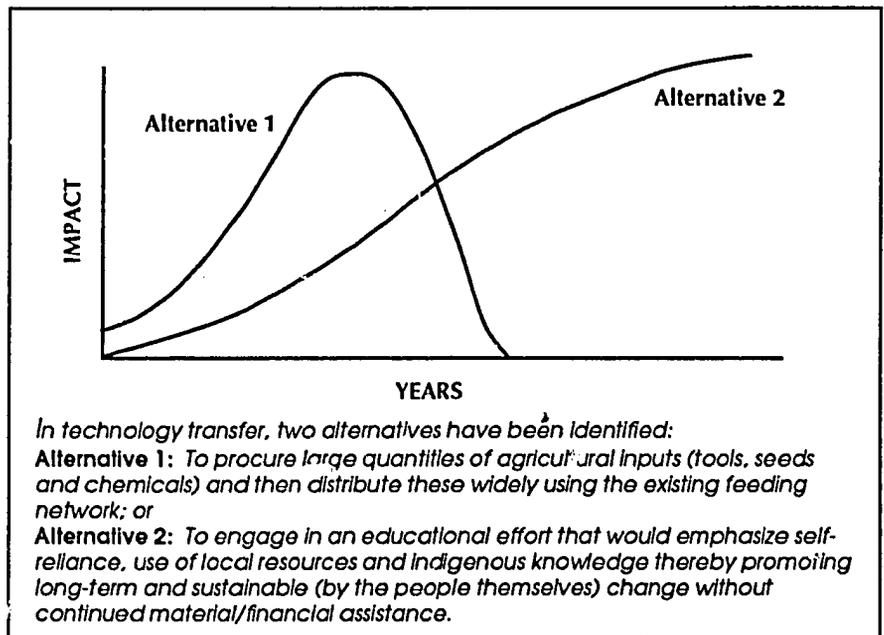
Vitamin A deficiency contributes not only to xerophthalmia and blindness, but to high child mortality rates as well. Lasting long-term solutions to vitamin A deficiency rest on increasing the availability of vitamin A-rich foods to the most vulnerable groups. Household cultivation of vegetables and fruits (86% of the vitamin A intake in Asia and Africa comes from plant sources) has proved to be the most effective solution.

In short, support for small-scale family food production can confer enormous health and economic benefits to the most deprived sectors of the developing world population at a relatively low cost while safeguarding the environment.

How best can this support be extended? The next two sections review guidelines based on concrete project experience.

## Commitment and institutionalization

The lack of a long-term commitment by development agencies and funding organizations is the single most important reason why garden projects fail.



One reason for the short-term duration of garden projects is the perception by funding agencies that household food production is easy to promote (Alternative 1). Extending appropriate household production technology, however, is no less complex than developing and delivering improved technology to field-based agriculture.

If anything, the "poorest of the poor" are more difficult to reach than the larger-scale commercially-oriented farmers who receive most attention from agricultural research and extension services. The determinants of the viability of a technology for resource-poor households are more complex than maximizing yield or nutrient output from the garden plot. Consumption and nutrition education, vital to maximizing the impact of household gardens on family health, involve the gradual change of ingrained beliefs and habits and cannot be completed overnight.

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In short, promoting household food production requires experienced and committed staff who understand the local situation and develop technologies that are compatible with household needs and resources (Alternative 2).

Once established, household gardens can be maintained primarily with locally available resources. Family food production is less affected than field-based agriculture by circumstances beyond the households' control – political unrest, bureaucratic delays or a sharp decline in agricultural prices.

But small-scale family gardening, like field agriculture, needs researchers and extensionists to continue developing and delivering options that overcome production constraints. Minimal infrastructural arrangements, especially for the provision of planting material, are also essential.

Such support is provided by the executing agency during the life of the project. No agency however should stay engaged in one project site for a very long period since the presence of an outside facilitator fosters dependence.

Integrating support for family gardens within the existing national agricultural development framework is the best way to ensure this long-term development support after the initial project ceases. Institutionalization also provides a mechanism for expansion of project-related prosperity to new areas on a large and sustained scale (too many potentially successful garden projects have had only limited local impact).



*Promoting household gardens requires committed staff who are familiar with the local situation.*

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## **Lessons from experience**

### ***Build upon user needs and interests***

Too many garden projects define the problem to be addressed (malnutrition, poverty, pesticide abuse) on the basis of broad assumptions or general national policy objectives, rather than knowledge drawn from the households the project is designed to assist. The result: "users" reject or only partially adopt the introduced practices. From the very start of the project communication should be established between the participant families – who know their goals, resources available and critical production constraints – and the project designers who have access to an array of potential solutions that can be adapted to specific environments. The union of these two knowledge systems provides a more adequate framework in which to develop viable and truly beneficial interventions.

### ***Use appraisal techniques to assess limiting constraints***

The perception that household gardening is easy often leads project people to promote gardens in areas where technical, environmental and socioeconomic conditions are inappropriate. Sometimes, even minimal resources required for household food production such as water supply and secure access to a small lot of land (tenure problems are a major complication with urban gardens) are unavailable. Gardening may also interfere with household enterprises by using up scarce land, labor time and capital.

### ***Assess traditional gardening needs***

Existing gardens provide a wealth of information to evaluate production potential and constraints, as well as information about consumption and nutritional impact. Absence of gardens is also informative – there may be very good reasons why the community members have chosen not to grow vegetables or

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fruits. In the establishment of new gardens, a respect for local knowledge and its involvement and that of local people will help ensure success.

### ***Formulate clear and achievable objectives***

Household garden projects are frequently assumed to solve a wider and more complex range of social problems than other development projects. It is not unusual for a garden project to aim at solving vitamin A deficiency, alleviating child nutritional problems, generating income for women or schools, addressing urban food shortages, and building community pride. It is unrealistic to expect gardens to accomplish all of these. Instead, during the assessment of needs, clear and achievable goals should be chosen and activities planned.

### ***Evaluate social benefits***

Gardens are complex production systems, characterized by a diversity of inputs and products. Assessing costs and benefits is difficult. There are also many intervening factors between garden production and the goal of improved nutritional status. Collection of detailed quantitative data suggested by some evaluation guidelines would be more costly than most projects themselves. On the other hand, using such simple indicators such as the number of project participants engaged in garden production or the number of trainings completed can overstate impact.

### ***Use already available potential solutions***

Technology that substitutes multicropping, and intensive management for external inputs is available from on-station research and in the garden plots of innovative local farmers. However, considerable skilled adaptive research is required before the different components are turned over to extension for dissemination. This is not merely a question of selecting varieties or practices to maximize yield or nutritional output. The technology has to be evaluated in conjunction with its users both on the basis of technical performance and its conformity with the goals and socioeconomic organization of the household.

## ***Economic security for the landless in Bangladesh: CARE's homestead horticulture project***

*Meeting the basic staple needs of a rapidly growing population has forced Bangladesh's agricultural research and extension services to give overwhelming priority to rice and wheat production. Sidelined, horticulture remains inefficient and low in productivity. Per capita daily availability of vegetables averages only 32 g or roughly one-seventh of the quantity recommended by nutritionists to meet daily requirements of essential vitamins and minerals. The last few years have witnessed a steady decline in the proportion of vegetables in the rural diet, which is increasingly dominated by cereals. One result: widespread vitamin A deficiency that causes 30,000 children to go blind every year.*

*In 1986, CARE-Bangladesh, a development NGO, launched the Local Initiatives for Farmers' Training (LIFT) project. LIFT promoted homestead horticulture amongst landless and marginal farm families who own little more than the land on which their house is situated. Nearly 60% of Bangladesh's population falls under this category and their numbers burgeon. Growing vegetables intensively and at low cost on their limited land resources offered resource-poor households a productive food and income strategy.*

*In Gaibandha, one of the project sites, participants have recorded a five-fold increase in gross production (from 135 kg to 677 kg) on an average plot of 260 m<sup>2</sup>.*

*Gardening households have, on average, increased their incomes by 8-10% from greater production and sale of horticultural produce. Over 90% of former LIFT participants in Tangail and Shibpur where LIFT income averaged 15% and 21% of total income, continued to invest and profit from homestead horticulture two years after the project was completed in their areas.*

*Participants describe the benefits of LIFT not only in terms of producing and selling but also in terms of eating more vegetables. In fact, CARE's workers noticed that while many LIFT participants initially take up vegetable gardening for the increased income it would bring them, as their production increased, their priorities shifted to increasing consumption with sales to follow.*

*A key reason for LIFT's success is the package of regenerative gardening technologies that was introduced by the project.*

Multicropping/rotation, productive live fences, mulching and green manure – are not unfamiliar to farmers and can easily be adopted by them. They maximize use of on-farm resources – labor, organic matter, sunlight – and minimize the need for external inputs. In a context of rising prices for farm inputs, LIFT farmers remain competitive because they can produce more without increasing their costs. Start-up costs are also minimal and can be met from personal savings or informal sharing arrangements: in Kishoreganj, 3,000 participants have started homestead gardening without a single working capital loan being extended.

LIFT's emphasis on multiple cropping of different varieties in small quantities throughout the year, also has a positive impact on marketability. One LIFT farmer recounted how he couldn't sell his radishes because of a seasonal glut and simply had to throw them away. With multiple cropping, he now carries different vegetables which greatly increases his chances of selling something.

Local farmers trained in extension by LIFT are central to the effective delivery of technology to the homestead level. Dubbed "progressive farmers", these local extensionists bring their knowledge of the community to the task of motivating participants, demonstrating techniques and solving problems. Progressive farmers offer a way for systematic and continuous follow-up that could not be done by external extension workers. LIFT is gradually devolving much of the responsibility for participant training and supervision to its progressive farmers.

To ensure sustained support for household horticulture after CARE's withdrawal, LIFT has devoted considerable effort to influencing the government extension services. The networks of progressive farmers in the project sites are being linked up with the official extension system at the subdistrict level. Incentives for progressive farmers come from their involvement in seedling production and marketing for LIFT gardeners.

Too many projects have been criticized for assisting only a limited number of participants. LIFT appears to be an exception. The visible impact of a flourishing vegetable patch is having a demonstration effect on non-LIFT farmers.

In short, LIFT has demonstrated that landless and marginal farmers can significantly increase their food production, consumption and income from landholdings they previously thought too small to cultivate intensively.

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## ***Emphasize locally-adapted fruits and vegetables***

Many garden projects promote crop varieties that are not adapted to local growing conditions (see box). These require large amounts of agrochemical inputs if they are to flourish. Nonlocal varieties also result in loss of local control over planting material by increasing dependence on commercial seed stock. Disruptions in seed supply were a major problem with household garden programs. More important, nonadapted species and varieties frequently have lower nutritive value than the wild foods or locally-adapted species which they replace. This is especially critical for vitamin A consumption where dark green leafy vegetables are being substituted by crops such as cabbage or lettuce, which are extremely low in carotene.

## ***Avoid using free inputs***

Households should be motivated to take up household food production for its intrinsic value rather than for the free handouts of water pumps, fertilizer, cash or t-shirts that may come with involvement in the project. Free inputs may produce impressive short-term results but they also serve as disincentives for people who have not received them. Also, once the project ceases handouts stop altogether. This is often ignored in the initial enthusiasm to jump-start a project with cash or material gifts.

### ***Locally-adapted vs "exotic"***

*Collective terms used by researchers and development agents for species cultivated in gardens vary extensively across garden projects. Synonyms are used to distinguish between two functionally distinct sets of species, those which are locally-adapted and those which are not. The term locally-adapted qualifies species, and varieties of species, which are not subject to great environmental (biotic or abiotic) stress when grown in a locality. Planting materials are in ready garden-level supply, and produce can be harvested without the application of large quantities of agrochemical inputs. Thus, in the botanical sense even certain introduced species qualify as locally-adapted, since they have essentially been naturalized. Although not exclusively, "exotics" or "nonlocals" refer to high-input and often less nutritious species grown for economic returns.*

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Seed may be the only input that needs to be subsidized for project success. If any other facility (such as tube well) is absolutely essential to project sustainability, it should preferably be provided only after participants have demonstrated their keenness to engage in household gardening despite the constraints.

### ***Direct training toward users***

The three key issues in training for gardens are who to train, what to train, and who will do the training.

Training focus should be on actual users – motivated family members, particularly women, children and the elderly who are likely to engage in gardening. Training whole families also has reinforcing benefits and exposes all members to the potential benefits of garden production.

The content of training at the household level will depend upon family needs, but should involve a nutrition and production component. Awareness of the nutritional and remedial value of vegetables must be conveyed and taboos dispelled. Production training should build upon indigenous knowledge, and is best done through previously identified and trained community garden promoters, who maintain their own and help install other demonstration plots in highly visible locations (near a temple or mosque, or alongside the village market). Villagers are more receptive to ideas from friends and neighbors than from the outside.

Year-round garden production depends upon a sustained training and follow-up commitment to village communities by motivated GO or NGO staff. Regular training of these agents themselves, and their continuous technical back-up requires consistent logistic and research support from their own organizations, and research and higher education institutes.

### ***Vary technology options for marginal households***

Marginal householders are cautious decision-makers who test and select carefully among alternative technologies and production strategies and then adapt them to their particular conditions and needs. Complete technological packages are rarely adopted by resource-poor farmers. Frequently, this is misconstrued by project analyzers as "non-adoption." Households, however, evaluate each component of a package and selectively adopt technologies which they consider both economically feasible and appropriate to their garden conditions.

## **Reducing malnutrition in the Philippines**

*The sugar-rich province of Negros Occidental in Central Philippines was one of the hardest hit during the national economic crisis of 1984. That year, inflation rose by 45% and the price of sugar fell drastically. As a consequence, unemployment soared with 60,000 urban workers laid off and prices of agricultural inputs shot up by 100%. In the province alone, 250,000 workers were displaced and 25 children were dying every month from malnutrition.*

*In response to the crisis, a multisectoral family-focused intervention was launched to reduce malnutrition in the province by increasing the availability of food in poor communities and rural schools. To institutionalize and sustain the Family Food Production Program (FFPP), local volunteers or indigenous workers called Community Garden Promoters were involved to complement the work of the NGOs and GOs.*

*The Program, under the UNICEF-assisted Area-Based Child Survival and Development Program, is coordinated by the International Institute of Rural Reconstruction.*

*The first two years of the program focused on the province-wide relief and rehabilitation of displaced sugar workers through Bio-Intensive Gardens (BIG), among others. BIG is a labor-intensive, low external input technology approach which makes use of small pieces of land, as small as 50 m, to produce adequate amounts of vegetables for a family of 5 or 6, using locally-available natural resources.*

*BIG uses indigenous and diverse vegetable crops which have higher nutritional value than introduced exotic types of vegetables. It also provides farmers with flexible technological options using simple approaches. The technology lends itself well to the work schedule of the sugar workers who can devote time to these gardens during off-milling season.*

*Two years after the introduction of BIG, the rate of malnutrition went down from 40 to 25%. This was attributed mainly to improvements in the delivery of basic services such as primary health care through immunization, mothers' classes, feeding programs and adoption of the BIG technology.*

On the third year, the Food Lot Module (FLM), an income generating project, was started utilizing the land set aside for gardens by the sugarcane planters/landowners for the sugarcane worker families. FLM included BIG and various components such as crops, livestock, fishpond and trees to respond to the cash and food needs of the family. The livestock and fishpond component assured the availability of protein-rich food for the household, with the excess providing an additional source of income. FLM also has soil fertility and environmental conservation as a long-term agenda. Training on community organizing, further training of community garden promoters, technology update and the formation of the Family Food Production Program (FFPP) at the municipal level were also stressed.

So far, hundreds of low-income families have been trained as cooperators and garden promoters who, in turn, have promoted the BIG technology throughout the province, resulting in tens of thousands of BIG and FLM plots annually. Indigenous seeds have been introduced and a seed multiplication system formulated while hundreds of schools and teachers have been trained to establish BIG and FLM projects in the province. GOs and NGOs have succeeded in implementing these technologies in farms and other communities.

More than 60% of the products from BIG and FLM are consumed by about 8,000 nutritionally-at-risk families, with the quantity of BIG gardens increasing substantially over a 4-year period at an annual average of 21,000 garden plots. A province-wide survey showed that 50-75% of vegetables from the gardens were eaten by the family members.

The project has contributed to the dramatic reduction of malnutrition, infant and maternal deaths, and greatly improved the food production capability of low-income families, contributing overall to the improvement of the food and nutrition security situation in the province.

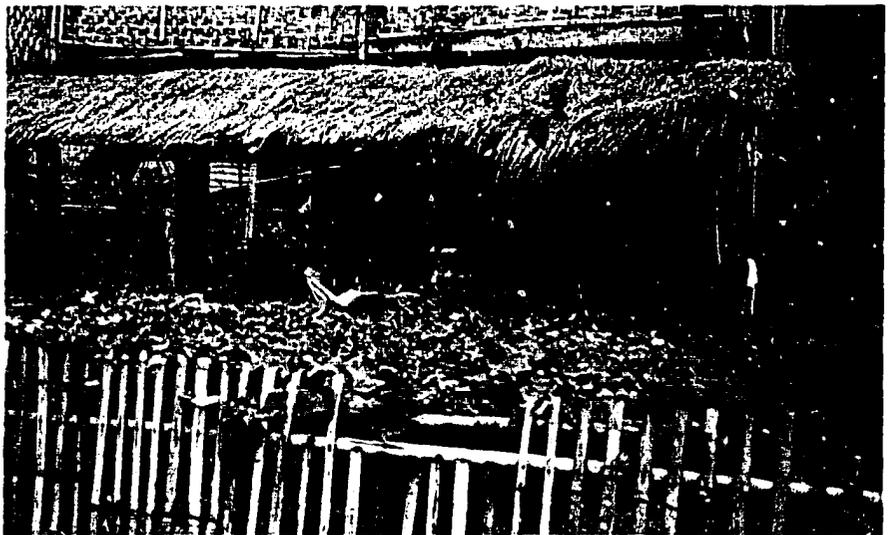
The FFPP is low profile, with all the mechanisms for implementation, requiring only national support; and the technology used is low-cost, regenerates the environment, utilizes organic fertilizer, provides natural pesticides, conserves indigenous seeds and protects health. Thus, aside from solving the economic problems of the province, FFPP is ecologically viable. Already the program has been institutionalized province-wide.

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However, offering an array of alternative options at the level of each household is not a feasible extension strategy. The introduction of complete technology packages is easier to promote than complicated systems involving multiple choices. Varying technology options are best pilot-tested at the village or regional level before being narrowed down to one or two recommended practices.

### ***Employ social marketing techniques***

Promotion through motivation of new or improved household garden activities requires creative communication abilities. Increased and fostered awareness of household production as a means to alleviate economic and health problems can produce remarkable results (see next box). Media messages can simply stimulate interest in the processing of garden produce, especially where markets are far away, and economic returns from sales guarantee the sustainability of project results. Over-commercialization, however, may impair nutritional gains. Increased income may not be spent on rounding out the family diet. There may be disadvantageous nutritional "balances of trade" when highly nutritious household garden crops are exchanged for high priced but low nutrition foods.



*Ivy gourd adapts to household resources.*

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## Research and policy support

Policy support at the highest administrative levels is essential to guarantee the success of gardening enterprises.

Since gardens can improve income, nutrition and health, implementation of garden activities should draw strong support from ministries of agriculture, health, education and economic planning, to reinforce their prominent position within the development agendas of national governments. Promotion of gardening at the national policy level must be interministerial.

Formulation of policies must draw upon multisectoral (i.e., NGO and GO) resources to promote garden activities. Promotion should be by way of small-scale credit provision, education on the beneficial role of balanced and nutritious diets emphasizing the use of vegetables, and technical support by suitably trained agricultural extension officers and urban community workers for implementation and management of ecologically-sound garden plots. Policy support for garden activities must be incorporated into medium-term (e.g., five-year) government development plans to ensure their sustained adoption.

Garden projects should address a few attainable, rather than a complex range of, development ideals. Garden activities cannot be viewed as a potential panacea for all development ills, even though they are capable of impinging upon many facets of household inadequacies. One or two clearly formulated goals when designing garden activities are more likely to be achieved than the elixir approach to solve a gamut of poverty problems.

As with field-based farming, garden production systems are never static. Small, and less frequently larger-scale deviations (e.g., flooding in Bangladesh) are always brought about by the physical, biological or economic environment, and require new research for development of suitable solutions. Newer garden technologies, and a simple appreciation of their scope for implementation, provide the household with more garden-based options suitable to address changing and evolving needs.

### **Creating demand for vegetables: social marketing of vitamin A-rich foods in Thailand**

*A growing body of evidence links inadequate vitamin A status with xerophthalmia and blindness. Globally about 10 million children under the age of 6 exhibit symptoms of xerophthalmia, of which one million become blind. In Northeastern Thailand severe vitamin A deficiency is marginally present, but subclinical deficiency rates are rising alarmingly. Short-term interventions such as vitamin supplementation provide temporary solutions, but long-term solutions must rest on increased consumption of vitamin A-rich foods by those most vulnerable to deficiency.*

*Preformed sources of vitamin A such as eggs, milk, and animal livers are often inaccessible to the deficient sector. Provitamin A sources such as leafy vegetables, yellow and orange fruits may also not be available, or culturally acceptable.*

*To promote the household gardening of vitamin A-rich foods, the Institute of Nutrition at Mahidol University, Thailand, has been conducting a project entitled "Social Marketing of Vitamin A-Rich Foods", funded by USAID. The project promotes the household gardening of the ivy gourd, a vine containing large green leaves high in vitamin A, which grows wild and is readily available in almost every Thai rural community. This species has a specific advantage over two other contenders, amaranth and spinach, in that it is much more palatable to children.*

*Promotion of this target food item drew upon various conjectures, which could be used as guidelines in developing similar programs:*

- Nutrition and household gardening are integral components of a wider community development, and that improved nutrition promoted through messages to appropriate audience segments could rectify disease and infections.*
- Perceived needs of community members are as important as the appropriateness of household gardens, e.g., cultural, agroecological.*
- Bottom-up and top-down participation are indispensable at all stages of project evolution to address people's needs and sustainability in the long term.*
- Education on nutrition and household gardens could promote recognition of further solutions to nutritional problems.*

- Synergism between creative media channels promotes audience awareness.
- Programs to promote ivy gourd production and consumption could be locally controlled, yet draw upon technical assistance by extension agents and other constituents.

*Creative marketing techniques, such as theater, contests, free shirts and more traditional media such as the radio and endorsement by famous personalities (e.g., pop singers), initially gave the ivy gourd and vitamin A much exposure. Community-based programs to promote the ivy gourd, through demonstration and other group interventions, were the key to sustain long-term interest in nutritious diets for the underprivileged.*

*The project ran up against its fair share of problems, the most notable is that the reputedly rustic ivy gourd fell prey to various pests and diseases. Modern and traditional knowledge were combined following a meeting of villagers, district officers and horticultural experts, and an effective solution to the pest (mealybugs) was devised.*

*Continuous monitoring, which stressed participation of all project constituents, played an important role in the success of the project. Community members were helped by volunteers to implement new or corrective activities, following regular inquiries as to the progress of the project. A recent innovation, the production of a vitamin A-rich noodle from ivy gourd, in excess of homestead requirements, has fortified the production of the ivy gourd, taking it out of a subsistence setting and placing it into a market context.*

*A preliminary participatory evaluation shows that a genuine expansion in production output from household gardens has taken place, that ivy gourd consumption has increased especially amongst households with young children and child-bearing women, that district officials and the community view the project as sustainable and are actively institutionalizing it, and that teachers outside the test area are showing strong interest in starting similar programs.*

*Formal evaluation with baseline surveys of attitudes toward and dietary intake of vitamin A-rich foods, of vitamin A status, and an anthropological assessment of the effectiveness of the modes of communication, an important factor in promotion of household gardens and the ivy gourd, are underway.*

Research to reduce technical bottlenecks and to improve efficiency of garden production is evident in a number of areas. Reliable supplies of planting material, and checklists of beneficial interspecific associations are but two examples. Although the success of garden projects will not ultimately depend on the outcome of this research – provided the projects are well thought out and compatible with local resources – such research is necessary to amplify the scope for adoption and output of household gardens.

In particular, the seed availability dilemma for exotic species in all its facets (production, storage and packaging, government promotion and subsidies) has limited inroads by homestead vegetable produce into centralized markets. If promotion of homestead production of exotic species is appropriate, then applied research to solve constraints to multiplication and distribution of their seed should receive top priority. This type of research, together with identification of varieties and cultural practices permitting year-round vegetable production, even in the hottest and wettest seasons, is traditionally carried out by horticultural research institutes. Research directed towards the reduction of external inputs, with results applicable to household gardens, is also conducted by GOs. For example, selection of locally-adapted and exotic species for appropriate pest and disease and environment stress tolerances and extended storability favors gardeners and farmers equally.

Certain topics require more specific garden-oriented research, such as selection for shade tolerance, a particularly important feature if plants are grown near homestead buildings or closely cropped with other species. Each garden project should have access to a research support group which can address problems in a timely manner (The mealybug problem in ivy gourd was overcome through this approach – page 25). Other studies, for example, to evaluate the socioeconomic benefits of traditional and introduced technologies, the relations between potential technology transfer and socioagro-economic zonation (particularly important for scaling-up issues), and the development of a multidisciplinary methodology to address research and development agenda at the household level, all require specific research efforts aside from the agenda of traditional agricultural and horticultural research institutes.

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## Conclusions

At a time when food production cannot keep pace with population growth, holistic solutions to the development-related problems of hunger, malnutrition and poverty are needed more than ever. Household gardening has a vast potential for addressing the food, health and income needs of the poor and landless.

However, the obvious advantages associated with household gardening, such as pesticide-free produce, availability at the doorstep, adaptability to household needs and stimulation of rural economics for the landless, are masked if household gardens are not adopted on a wide and sustained scale.

The urban and rural poor are the disadvantaged group that needs to be addressed. City life acts as a strong magnet which draws the rural populace to urban areas, where little spare land remains for homestead food production. Obvious advantages associated with household gardening, that were mentioned previously, could be rapidly lost if this trend persists. Well thought-out and executed rural development programs, of which cost-effective garden projects can play a vital role, are essential to stem the migration of country folk to the cities. Stimulation of better public health, self esteem, and a cash economy – fruits of successful garden activities – should rank high in major development strategies. It is attention to this sector of developing country societies, generally the least privileged sector, upon which future advances in agricultural and industrial development will be built.

The problems associated with the promotion of household gardens are in many ways similar to those faced in addressing the development needs of small and marginal farmers. However, while field-based resource-poor agriculture has received considerable attention with the decade-old “turn to the small farmer”, household systems have generally been overlooked. The low-external input technologies feasible on the scale of small household gardens have proven that vegetables and other crops can be grown with extremely limited use of inputs such as pesticides and inorganic fertilizer, and augur well for their widespread adoption by the poor.

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