



MAKING THE CONNECTIONS:



**SMALL-SCALE
AGRICULTURE, FOOD
SECURITY AND
NUTRITION**

A DISCUSSION PAPER

**Research into the
effectiveness of
sustainable agriculture
projects**

**by
The NGO Food Security
Program Effectiveness Group**

INTRODUCTION

Nearly three-quarters of a billion people are chronically undernourished, even though the world produces enough food for everyone. This harsh fact tells us that – on its own – increased food production does not guarantee improved food security and nutrition. Clearly, if we want to improve peoples' nutrition and food security, we need to better understand the range of factors that interact with food production to create positive outcomes.

This discussion paper explores these complex issues, and in particular, the impact of small-scale agriculture projects on food security and nutrition outcomes. It is the product of a working group led by several non-governmental organizations (NGOs) with support from the International Development Research Centre (IDRC) and the Canadian International Development Agency (CIDA). While our discussion paper focuses on

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project-level issues, other groups such as the NGO Food Security Policy Group, CIDA's Food Security Group, and IDRC's Sustainable Use of Biodiversity Program Initiative are analyzing a broader range of issues that affect small-scale agriculture, food security, and nutrition, such as international trade policies, genetic engineering, corporate marketing strategies, and the deterioration of public goods (access to health care, etc.).

As practitioners, we want to identify the conditions under which small-scale agriculture projects lead to better food security and nutrition outcomes. We focus on

the most common situation in the Global South: farm- and village-based agricultural production for home consumption and local markets. Our learning, and efforts to share the lessons with the broader development community, can be used to improve project design and help identify other policy and program constraints where change is needed. It may result in both immediate adjustments to projects or longer-term campaigns to build the political will necessary to change conditions that affect food security and nutrition globally.

ON THE PATH TOWARD GREATER EFFECTIVENESS

The process for this discussion paper really began after the World Food Summit in 1996. As part of Canada's commitment to the Summit coordinated by Agriculture and Agri-Food Canada, representatives from Canadian NGOs and academics contributed to the development of Canada's Action Plan for Food Security. NGOs also contributed to CIDA's draft Action Plan for Health and Nutrition, leading to the integration of food security into the plan released in 2001. These Action Plans highlight three equally important pillars:

- food availability (sufficient quantity and quality of food available on a consistent basis where needed);
- food access (when all people have sufficient resources to obtain appropriate foods for a nutritious diet); and
- food use (appropriate use based on knowledge of basic nutrition and care, as well as adequate water and sanitation, and health care).

Building on these relationships, CIDA, IDRC, and a group of Canadian NGOs held a two-day workshop in March 2001 to explore the

issues in more depth. Following a review of case studies and much discussion, participants concluded that the evidence linking small-scale agriculture projects to food security and nutrition outcomes was poorly understood. In response, several participants formed a working group and commissioned a broader literature review to better understand these links and related evidence.

A second workshop, held in February 2002, presented the findings of the review. Two complementary papers confirmed that small-scale agriculture projects alone are insufficient to achieve significant or lasting results in food security and nutrition.¹ They presented evidence from dozens of different studies pointing to factors that, when combined with food production, enhanced food security and nutrition outcomes. The reviews also brought to our attention a tool for planning and tracking the wide range of economic, social, and cultural factors that can influence food security and nutrition outcomes: Sustainable Livelihoods (SL) (see box, page 7).

Encouraged by the reviews, workshop participants recommended production of this discussion paper to share the lessons and to promote new studies on how to make small-scale agriculture interventions more effective at improving people's nutrition status and food security.

¹ The review produced two papers: *Effectiveness of Small-Scale Rural Agriculture Interventions Study: Nutrition Outcomes - Literature Review and Critical Analysis*, prepared by Peter R. Berti and Julia Krasevec of PATH Canada and *The Effectiveness of Small-Scale Agriculture Interventions on Household Food Security: A review of the literature*, prepared by Ricardo Ramirez.

THE MISSING LINKS

If small-scale agriculture alone is not enough to ensure food security and nutrition, what is missing? Based on the findings of many studies some patterns in the evidence seem clear: the integration of women's perspectives and priorities when planning interventions; educating families and communities about child nutrition; building on and promoting crop diversity in agriculture; promoting positive linkages between different livelihood options. The evidence suggests that small-scale agriculture projects are more likely to generate sustainable and positive food security and nutrition outcomes when they strengthen these dimensions of community life.

EMPOWERING WOMEN

The community is the focal point of small-scale agriculture interventions. Getting communities involved in project design and implementation promotes local ownership of both the process and the outcome. It also

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builds local capacity and shared knowledge that can help sustain food security and nutrition outcomes. Participation allows a project to root itself in the community. The involvement of women is particularly crucial as they provide the link between agricultural production, food security and nutrition. Women are both food producers and food and care providers in the home. A project in the Philippines found that women's participation as groups involved in project planning provided a venue for them to seriously discuss questions of sustainability, leading to improvements in both the

efficiency and equity of the small-scale agricultural activities carried out.

In Eastern Zambia, a project developed a three-pronged strategy for engaging with women:

- support to women's various livelihood strategies, including income generating activities;
- agricultural research programs geared to increasing returns to women from their land;
- short-term safety nets, including targeted food aid, in recognition that rural women are a heterogeneous group who require a variety of options.

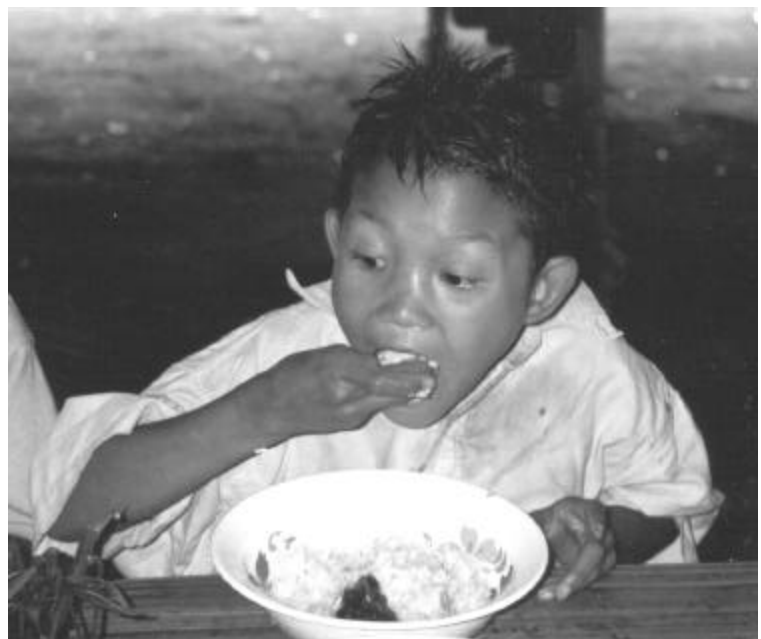
Evidence from many studies shows that projects which target women as food producers, food processors and food traders, and which recognize their knowledge, skills, and central role in child feeding and care, can help strengthen food security and child nutrition outcomes. It can also enhance their livelihood assets, which, in turn, can improve food security and nutrition. Caution is needed, however. In many African societies, cash income is controlled primarily by men. Even when gender considerations are integrated into a small-scale agriculture project, men may still take control of crops with income potential, making it difficult for women to benefit from cash-cropping and non-farm microenterprises.

NUTRITION EDUCATION

To effect nutrition change, an intervention needs a nutrition focus, and nutrition evaluation considerations should be included early on in project planning. Most of the projects reviewed demonstrated that nutrition education with a gender focus was critical to improving nutrition status. When

included in the intervention, this factor had a positive effect and when not included no effects on nutrition status were observable. While other factors also seemed to be important to the sustainability of the positive nutrition outcomes, the investment in building human capital through nutrition education distinguished the projects that succeeded in having a positive impact on nutrition.

A project in rural Kenya, for example, trained women in the growing, processing and marketing of vitamin A-rich sweet potatoes, and educated them regarding the role of vitamin A in child nutrition. After a year, children in the intervention groups had much higher vitamin A intake. Since sweet potatoes were already part of the traditional cuisine, women, men and children were already more likely to change their patterns of food consumption. Follow-up visits to women's groups consolidated their knowledge about child nutrition, further enhancing the sustainability of the intervention. A project in Vietnam that focused on the child-care and feeding practices of pregnant and breast feeding mothers led to a higher intake of fruit and vegetables by participating children and improved their nutritional status.



PROMOTING DIVERSITY IN AGRICULTURAL PRODUCTION SYSTEMS

During the Green Revolution, small-scale agriculture interventions promoted the production of a few crops using new varieties, pesticides, fertilizers, and extracted ground water. This strategy of specialization and monoculture did not work in areas with limited natural resources and financial capital. In other areas, the strategy cannot be sustained because input costs have increased dramatically, crop prices have tended to go down, and pesticides are becoming less effective. More recent experience suggests that planting of a wide range of crops and mixed cropping patterns is more viable

because it provides food throughout the growing season as different crops mature or produce edible plant parts. It also enables farmers to pursue a wide range of livelihood options based on diverse plant and animal resources: crops that also produce fodder for livestock or supply fuel for cooking provide farmers with several ways to earn income or reduce expenditures.

Sustainable or ecological agriculture practices such as the use of farm-yard manure, composting, and green manuring complement diverse and mixed production systems. They allow farmers to use relatively abundant labor resources effectively and to avoid cash expenditures and debt. Our review identified several principles used by projects to raise agricultural productivity in a sustainable manner:

- biodiversity throughout the farm to increase ecosystem resilience and reduce vulnerability to pests;
- building soil health by using ecological practices such as farm-yard manure, composting, and green manure, and avoiding the use of pesticides that undermine ecological processes that rely on beneficial insects and soil microorganisms;
- encouraging local adaptation and innovation based on the combination of local knowledge and outsider insights into ecological principles and experience from other regions.



Traditional practices such as fishing in rice fields, agroforestry on cropland and reforestation on marginal lands are also recognized as important ways to intensify and diversify production. In Bangladesh, for example, a project helped farmers raise fish in their rice paddies and grow vegetable crops on paddy boundaries, doubling their income and increasing their food supply. Similarly, in the Claveria region of northern

Mindanao in the Philippines, farmers planted natural vegetative strips to reduce soil loss and improve maize yields. Building on their success, they began planting fruit trees and other plants of economic value along the strips. The diversification of the farming system enhanced their livelihood assets, which in turn improved food security.

In Malawi, a project integrated fish ponds into farms to recycle wastes from other agricultural and household activities. Yields increased steadily, nearly doubling over six years. As farmers began to appreciate the benefits of this new system, they adapted the techniques, conducted their own tests, and gradually increased and sustained yields on their own. The project's success depended largely on an approach that encouraged the community to understand the principles behind the system and to take ownership of the learning process. Enhancing farmers' problem-solving skills proved to be just as important, perhaps more important as having a so-called "appropriate" technology.

Small-scale farmers, of course, do not all operate in the same natural settings. The research we reviewed identified at least 13 different major agro-systems, ranging from wetland rice and rain-fed maize to high mountain root crops, where different kinds of interventions are needed. Still, promoting diversity in agricultural productions systems is critical in all of them.

DIVERSIFYING LIVELIHOODS

Small-scale agriculture is the main way for people in rural areas to meet their food and nutrition needs. It is not, however, their only source of livelihood. Farm families eat what they grow, but they also sell their produce to buy foods they don't grow, and they often work in off-farm enterprises to earn cash for investing in future food production. Many rural households benefit from remittances

sent by relatives working in urban areas or abroad. This observation suggests that rather than focusing on food production per se, we should determine how small-scale agriculture projects support households' multiple livelihood strategies in an agricultural context.

Livelihood diversification is a double-edged sword. On the one hand, it can lead to higher cash income, reduced pressure on natural capital, and the spreading of risk. On the other hand, diversification can skew income distribution within communities, reduce total farm output, and lead to greater inequities between men and women. Moreover, markets in developing countries may not be able to pay fairly for specialized products, and prices on international markets may swing considerably. Furthermore, the investment needed to diversify incomes can also lead to debt. Households weigh these considerations in relation to their labor assets and determine how best they can be used to respond to livelihood options.

. . . promoting diversity in agricultural productions systems is critical . . .

Risk is a particularly important factor to understand. Households – especially women farmers – often choose to maintain low-yield food farming strategies because they offer the least risk to things of greatest importance to them, like food security. The evidence we reviewed shows that it is vital to integrate an analysis of core priorities and the risks associated with diversifying away from these core priorities. This analysis is the only way to determine if it makes sense for households to take up other activities to generate additional income.



HEIGHTENING IMPACT THROUGH SYNERGY

In the most effective examples of small-scale agriculture interventions, various factors interact with and mutually reinforce each other. Livestock production, market gardens and seed banks may improve the natural and physical capital of farmers, but by also building social capital through community participation and human capital through nutrition education, interventions can have significantly more impact.

This observation led the reviewers, and workshop participants, to examine the Sustainable Livelihoods (SL) approach developed by the United Nations Development Programme (UNDP), the Overseas Development Institute (ODI) and the United Kingdom's Department for International Development (DFID). We concluded that it might be a useful tool for planning and tracking the wide range of economic, social, and cultural factors that can influence food security and nutrition outcomes.

THE SUSTAINABLE LIVELIHOODS FRAMEWORK

The Sustainable Livelihoods (SL) framework in its most common form identifies five types of assets important to development: human capital (skills and knowledge); natural capital (renewable natural resources); financial capital (access to credit and livelihood assets such as chickens, cows, goats, etc.); social capital (local institutions, relationships of trust, social norms); and physical capital (seeds, fertilizer, land, equipment, etc.). It argues that as we design and implement projects, we need to consider the strength of all five assets and bring them into synch to achieve positive outcomes. While not a model of reality, it allows people to “interpret reality” so they can understand how best to deliver interventions that will achieve objectives, and then to monitor and evaluate these interventions. As such, the SL approach is a process for practitioners from different backgrounds to debate the issues, and to learn as they go along.

The SL approach is holistic, and yet flexible. By creating awareness of different types of assets people have available to them, the SL approach helps us to see possible connections among factors leading to food security and nutrition outcomes and to take these factors into account during project design. However, this should not be seen as a call for a comprehensive approach to all interventions, a problem experienced in the 1970s with integrated rural development initiatives.

A project in Bangladesh, for example, promoted home gardening of vitamin A-rich vegetables by addressing strengths and weaknesses in selected assets. The project targeted poor women, providing them with seeds and seedlings (physical capital) for the first two years, as well as training in child nutrition (human capital). The project’s participatory approach elicited strong community involvement and leadership, leading to the creation of women’s groups in each village (social capital). It also promoted ecological practices such as the use of farm-yard manure, composting, and green manure, and introduced locally adapted crops such as carrots and spinach (natural capital). Ultimately, with a small, but diverse supply of new vegetables, the women created value-added products that fetched a good price in local markets, especially during the “off season” (building financial capital).

While synergy can improve impact, the converse is also true. A study in the Philippines, for example, tried to increase women’s incomes by growing tomatoes for export. However, the project’s focus on income alone ignored negative impacts on human and natural capital due to pesticides in the water, soil erosion, and more general declines in nutrition and health. Since it bypassed local marketing networks, it did not help develop social capital.

The Sustainable Livelihoods approach provides a lens for assessing the potential contribution of complementary interventions such as nutrition education, gender analysis, and health. This, in turn, makes it easier to make connections between small-scale agriculture interventions, food security, and nutrition. SL is a holistic tool that nevertheless allows practitioners to assess individual capital assets. Rather than trying to address all gaps in the asset base, the SL approach points to the need to strengthen and build on existing assets, targeting those that enhance food security and nutritional objectives.

At the same time, holistic thinking does not have to imply comprehensive programs; interventions should remain selective, focused on creating synergy by filling gaps and building on the assets available to, and controlled by, communities.

CONCLUSION

Our review shows that at least four factors are at work in small-scale agriculture interventions with positive food security and nutrition outcomes: women's perspectives and priorities are reflected in project planning and implementation; knowledge of nutrition is strengthened through targeted education; agricultural diversity and ecological processes are promoted in agricultural production systems; options are created for people to pursue a range of livelihood strategies. These are clearly important factors, and we conclude as well that they work together in ways that enhance the range of peoples' assets. The connection is not linear but rather synergistic and mediated by the assets available to people in a particular context. Depending on the context, the mix of interventions needed to improve food security and nutrition

outcomes will vary, even within particular villages and household groups.

Still, questions remain. Many of the studies analyzed through our review did not set out to intentionally measure nutrition and food security outcomes. What's more, many lacked a standard baseline measure, a control group and a significant sample size. As a result, we recognize the need to obtain new information based on more targeted studies. Various NGOs involved in the workshops to date have volunteered to continue the collective learning process, in part by applying an SL approach to selected projects. Ultimately, we want a better grasp of what factors to consider in the design and implementation of small-scale agriculture projects so that we can achieve positive food security and nutrition outcomes.



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