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Household gardens: A promising approach to enhance food security and sustainability

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CDEIS Policy Brief Series on Punjab Economy

The COVID-19 pandemic has shaken the economies globally and added to the existing problems and their intensity like climate change, poverty, unemployment, migration, education, and of course, health. Developing economies have suffered even more due to their vulnerabilities to such sudden and large shocks. India is no exception to this trend and has regional variations in the impact of COVID-19 as there is much disparity and specificity in the levels of development of state economies. Punjab being an agriculturally grown state though still highly dependent on its agriculture and rural non-farm economy for significant proportion of its population and their livelihoods in the presence of public resource crunch has also faced this COVID-19 onslaught while being in economic, social and environmental crisis.

In this context, it was thought fit to get an independent set of policy directions from scholars in their respective domains based in Punjab, outside Punjab and even overseas to encourage public policy debate in and outside the state about the nature and magnitude of Punjab's economic and developmental crisis and the COVID-19 implications for it and explore possible ways forward to make the economic and social systems of the state move out of the situation of economic and policy inertia.

The policy briefs in this series numbering more than 20 examine issues ranging from agricultural sustainability, environmental and market aspects of the agricultural systems to allied sector and informal and small-scale sector livelihoods including dairy and MSMEs. The marginalised group livelihoods like women, schedule castes, and farm labour and other rural and migrant workers also get adequate attention. The sectors of health and education are also examined. On the fiscal front, institutional credit for recovery and revenue of the state post-GST are analysed. The larger aspects of governance, federalism and diaspora also get a coverage as contextual and overarching themes.

We hope that these briefs would serve to encourage more informed debate and discussion in the interest of the betterment of the state economy and society to aid post-COVID recovery and medium and long-term sustainable development policy making.

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Farm Gardens: A Promising Approach to Enhance Food Security and Sustainability

Amarjit Bhullar

Abstract

Over the recent years there has been growing interest to strengthen and intensify local food production in order to alleviate the adverse effect of food supply shocks and food price volatilities. Consequently, there is much attention towards farm gardens as a strategy to improve household food security and nutrition. Farm gardens are an integral part of local food systems and the agricultural landscape of many developing countries and have endured the test of time. The farm gardens have five intrinsic characteristics: 1) are located at own farm; 2) contain a high diversity of plants; 3) production is supplemental rather than a main source of family consumption and income; 4) occupy a small area; and 5) are a production system that the poor can easily enter at some level.

Punjab has moved in a different direction during the green revolution period. Punjab farmers were accustomed to produce not only a variety of food grains but also the vegetables, fruits, eggs, meat and milk for domestic use. But now with the exception to wheat, rice and milk, most of the farming families are dependent on the market for the supply of other food items required for nutritional adequacy such as vegetables, fruits, eggs, meat and the other food grains. The result is nutritional inadequacy, higher expenditure and lack of access to fresh and quality food. Farmers have enjoyed the economies of scale by producing wheat and rice but have forgone the economies of scope.

The lockdowns, shutdowns and imposition of curfews, necessitated to check the spread of COVID-19, have disturbed the food supply chains resulting in food shortages and price volatilities. So, COVID-19 is an opportunity to think and revive the system of producing food items that can possibly be produced at farm. Punjab Agricultural University has developed plans for home gardens with potential to produce fruits and vegetables round the year, but adoption has failed to pick due to lack of policy support. This policy brief will review the potential social, economic and environmental benefits of farm gardens. It will also suggest the policy framework for enhancing the adoption of farm garden plans by the farmers along with cost estimates of policy implementation, institutional support required and a strategy to implement the policy.

Farm Gardens: A Promising Approach to Enhance Food Security and Sustainability

Amarjit Bhullar

Introduction

Household gardening is a prehistoric and widespread practice all over the world. Worldwide, household gardens have been recognised as an important supplementary source enhancing the food and nutritional security along with ensuring the food sovereignty of the masses. 'Food production on small plots adjacent to human settlements is the oldest and most enduring form of cultivation' (Niñez 1984 p.2). Since ages, household gardens have been an integral component of family farming and local food systems. In the history of agriculture, household gardens have been classified as mixed, kitchen, backyard, farmyard, compound or homestead garden (Terra 1957, Rowe 2009).

The household garden is a small-scale production system providing plant and animal consumption that is affordable, safe and readily available. Household gardens are located close to dwelling or at farm, for security, convenience, and special care. 'They occupy land marginal to field production and labor marginal to major household economic activities. Featuring ecologically adapted and complementary species, household gardens are marked by low capital input and simple technology' (Galhena et.al 2013 pp. 2).

The technology lead growth of agriculture and commercialization and specialization of production undermined the importance of household gardens. The history of agricultural growth tells us that the world has, so far, witnessed two Green Revolutions. The first green revolution started in the 1930s in Europe and North America. It brought quick yield increases in maize and other temperate-climate crops with increased, intensified and effective use of fertilizers, pesticides, crop species, machinery, and farm management. The second green revolution, that was there in some of the Indian provinces too, took place in the 1960s and 1970s and it passed almost the same

technologies to the developing world and crops grown in the tropics. But the negative impact of chemical based food is being felt both in developed as well as in developing world. The third potential green revolution is said to come from the Genetically Modified (GM) technology. GM products especially the seeds produced by using the genetic engineering in agriculture appeared in the 1970s and were commercialized in the 1990s mainly in North America. The advocates of this technology acclaim that it will result in another enormous increase in agronomic productivity and provide qualitative improvements in the food supply. The big differences between the first two green revolutions and the potential third one is that the latter has not been received with conclusive inquisitiveness as the GM organisms are perceived as unsafe to the human, animal and plant health in the long run. The household gardens are free from the negativities associated with all the green revolutions. That is why the household gardens survived or even reemerged. In Greater Vancouver Canada, Institute of Sustainable Food Systems, Kwantlen Polytechnic University in collaboration with city councils has come up with program to popularize the household gardens. Under this program the city councils give a small piece vacant land to the residents to grow vegetables and the Institute of Sustainable Food Systems provides the know how. So even in the developed countries household gardens are being popularized now.

Household gardens are essentially an integral part of local food systems and the agricultural landscape of many developing countries and have endured the test of time. The household gardens have six intrinsic characteristics: 1) are located at own farm; 2) contain a high diversity of plants; 3) production is supplemental rather than a main source of family consumption and income; 4) occupy a small area; 5) are a production system that the poor can easily enter at some level and 6)

production is largely organic or with minimal use of chemicals.

So, the recent years there has been a regrooming interest to strengthen and intensify local food production system not only to make available the home-grown healthy food but also to alleviate the adverse effects of food supply shocks and food price volatilities. Consequently, there is much attention towards household gardens as a strategy to improve household food security and nutrition.

The lockdowns, shutdowns and imposition of curfews, necessitated to check the spread of COVID-19, have disturbed the food supply chains resulting in food shortages and price volatilities. So, Covid-19 is an opportunity to think and revive the system of producing food items that can possibly be produced at local level.

Rationale to promote household gardens in Punjab

Punjab has moved in a different direction during the green revolution period. Punjab farmers were accustomed to produce not only a variety of food grains but also the vegetables, fruits, eggs, meat and milk for domestic use in the pre-green revolution era. But now with the exception to wheat, rice and milk, most of the farming families are dependent on the market for the supply of other food items required for nutritional adequacy such as vegetables, fruits, eggs, meat and the other food grains. The result is nutritional inadequacy, higher expenditure and lack of access to fresh and quality food. Farmers have enjoyed the economies of scale by producing wheat and rice but have forgone the economies of scope.

The stagnant productivity, increasing costs, dwindling profits, receding water availability, declining soil productivity etc. coupled with future uncertainties have brought about an economic, environmental and social distress in the agricultural sector of Punjab. Economic, environmental and social tribulations are reinforcing each other, and the crisis is deepening persistently. The green revolution has completed a full cycle comprising high growth period, stagnation and now a period of crises (Bhullar 2018). So, to come out of the

prevailing impasse, there is an urgent need not only to revive but also to alter the Green Revolution into a new form that expands the scope of livelihood of the farmers beyond rice and wheat rotation. Since 1985, the stated policy and research agenda, in a broader sense, is for diversification of the cropping pattern, especially reducing the area under rice, to ease the strain on resources as envisioned in the two Expert Committee Reports on Diversification of Agriculture. Some farmers responded and struggled to grow alternative crops but after some time returned to the wheat and rice rotation due to the lack of marketing support. The household gardens can be a starting point of diversification as the farmers will attain experience to grow unconventional crops at the small scale and then they can scale up to commercial production.

Nutritional security is a big concern especially in case of marginal and small farming families. A study found that the marginal and small farmers' families were consuming fruits, vegetables, pulses and fats less than what is required in a balanced diet (Bhullar et. al. 2010). Therefore, in order to ensure nutritional sufficiency of marginal and small farmers, an effort needs be made to promote dairy farming and these farmers must be incentivised to produce fruits, vegetables and pulses at their own farm in order to have access to the balanced food.

The adoption of household gardens faces a host of constraints in the developing countries (Hoogerbrugge and Fresco 1993, Mitchell and Hanstad 2004). These constraints include access to suitable and enough land to establish a home garden along with lack of ownership and usage rights, access to water, seeds and planting materials, weak extension and advisory services, access to labor, etc. etc. Punjab farmers are almost free from all these constraints and the prevailing institutional support system is capable to provide the required back up for adoption and sustenance.

Institutional Support for household gardens in Punjab

Punjab Agricultural University (PAU) has developed field plans for farm gardens with potential to produce vegetables round the year. PAU has also developed a kitchen garden

without soil (called vegetable nutrition garden model) in which all-season vegetables can be grown. This is a vegetable nutrition garden model and anyone who has some space in their house can use this model to grow vegetables regardless of the season. There is no use of pesticides, so it is healthy. The problem is that the soilless model requires space in the house and significant initial investment i.e. around Rs. 35000 at 2018 prices.

Horticulture Department Punjab has developed low-priced special vegetable seeds kits containing the seeds of all vegetables grown in winter and summer. The kits contains seeds of vegetables like carrot, radish, [turnip](#), peas, spinach, fenugreek, coriander, [broccoli](#), beetroot, lettuce, sarson, etc, all of which can be easily grown on a small piece of land and provide fresh vegetables for a family of seven. With the help of these kits, residents can get vegetables almost round the year. The kits have been prepared by the horticulture department under Mission Tandrust Punjab of the state government. Along with the seeds, the kit also includes a pamphlet containing the package and practices for growing vegetables.

However, PAU and Horticulture department need to extend it and include fruits plants and pulses in these gardens suitable for growing in the different agroclimatic zones and specify the land requirements for that.

The policy initiative

Considering the numerous advantages, the farmers must be supported and incentivised with a comprehensive policy to go far household gardens. The comprehensive policy should include:

- Free provision of seed kits and fruit plants to all the farmers of Punjab every year (distributed through stakeholder departments).
- Free provision of relevant literature with a mobile app.
- State of the art demonstration plots at PAU and Horticulture Department farms and extending these further to progressive farmers' fields.
- Short training for planning and caring the household gardens.

- Educating the women about the balanced food as well as training them to grow the vegetables and fruits.
- A roadmap to further move to integrated farming system.

Budgetary requirement

The policy can be implemented using the existing research and extension networks that include PAU, Department of Agriculture, Department of Horticulture, Krishi Vigyan Kendras, Progressive Farmers' Associations. So, the implementation costs will be negligible. The cost of supply of seed kits assumed to be Rs. 200 per year including Rs. 100 for each seed kit for Rabi and Kharif seasons. There are about 11 lakh farms households in Punjab and thus the yearly cost of seed kits will be Rs. 22 crores. The cost of supplying 5 fruit plants to every farmer free of cost will be Rs. 11 crores considering Rs. 20 as cost per nursery plant. The logistical support will require another Rs. 2 crores. So, the total cost per year works out to be Rs, 35 crores. The policy support for promotion of household gardens must continue at least for 5 years.

Gender roles

The household gardens can be taken care by the women and it will provide not only the employment to them but also can be a source of income.

Likely concerns about the policy

The most likely concern about the policy will be that it will be difficult to revert to the traditional farming system. No, it will not be a reversal. It will be a marginal change. The land requirement per farmer will be just half to one kanal and the rest of the production can be carried out 'business as usual'. The total land requirement for the state, if every farmer adopts this, will be 27500 to 55000 hectares. So, there will insignificant impact on the usual agricultural production.

Intended Benefits

- Since the production will be for household consumption, price and marketing concerns will not be there.
- Food diversity and a step to provide safe, healthy, nutritious and balanced food in the rural areas.
- Organic food production possible.
- Improving the food security in the rural areas.
- Environmental benefits from recycling the wastes.
- Training of the farmers to grow fruits and vegetables at a small scale.
- A small step towards diversification of agriculture.

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