

“Village in the City”: Healthy vegetables in Trivandrum

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Trivandrum is the densely populated capital city of Kerala, the southernmost state of India. The majority of its inhabitants are employees in the government and private sector offices. The value of land is very high compared to nearby semi-urban and rural areas, so houses in the city have very little or no surrounding area at all for doing any farming. Food consumed in the city comes generally from vegetable farmers in nearby areas, as well as from farmers in the neighbouring state of Tamil Nadu.

Kerala has a very high literacy rate, reaching almost 100 percent in Trivandrum. At the same time, people are very health conscious, so knowing where their food comes from has been, and is, a major concern. These worries increased after the Department of Entomology of the Kerala Agricultural University revealed that high levels of pesticide residues –well above the maximum residue limit– had been found in the vegetable samples tested in the state. Its report presented the results of a study which showed that vegetables such as bitter gourd, cowpea and okra sold in the markets in the city had high levels of pesticide residues. Furthermore, the report clearly outlined the variety of health hazards resulting from the presence of pesticide residues in vegetables. This was well publicised in the media. In 2002, the State Directorate of Health Services issued a public health warning that many of the vegetables and fruits being sold in the market had been found to contain high levels of chemical residues.

The promotion of terrace farming

Just as some farmers near Trivandrum have been producing vegetables organically for some time, some enthusiastic individuals have been growing vegetables in the city for over a decade. However, this has been largely unorganised and isolated. It was after the health warning that some inhabitants and residential associations thought more seriously about cultivating vegetables on their terraces of their houses. They approached the local government for help, and a scheme called “Village in the City” was officially launched at the end of 2002 by the Department of Agriculture of the Government of Kerala. This proved to be a great success as many residential associations and individuals registered and participated. It was popularised



Photo: Author

Having fresh vegetables is only one of the benefits of the “Village in the City” programme. Participants can also eat species which are not found in the markets.

through the media, which led thousands people in Trivandrum and other cities in Kerala to adopt terrace farming.

Under this scheme, vegetable seeds, plastic gunny bags or garden pots, together with agricultural implements, are supplied to terrace cultivators at half of their cost. Cement tanks made out of rings used in wells are also supplied at half price, encouraging the new urban producers to solve the lack of organic manure by preparing their own vermicompost in these tanks (see Box). Simultaneously, study classes were organised by the state Department of Agriculture in partnership with the local residents associations (such associations are common in each ward of the city). These classes are offered free of charge once in a season or once every three months. A theory class is frequently supported by a slide show on the general “practices in urban farming”, and in most cases they have been followed by a visit to two or three terrace farms. The Department of Agriculture and the residents associations have also arranged for expert teams to visit new terrace farms, and have encouraged all participants to seek contact and look for additional advice from the “experts”. Articles on terrace farming have appeared in local newspapers, resulting in over 10 000 enquiries.

Urban agriculture

At the moment, approximately 2000 families are practicing terrace farming in Trivandrum as part of this scheme, and many more are doing it on their own. The practice most commonly

Improving the model

As a simple and straightforward process, making vermicompost is recommended to all urban farmers. This can be done in cement tanks made out of the rings used in wells, in old water tanks or even in old wooden boxes. The most common alternative is using the tanks made by the Department of Agriculture by converting cement well rings, which are sold for only US\$ 6 to any interested producer. As these are 2.5 feet in diameter, they can be used in the backyard, not occupying much space. Farmers only need to protect the worms from ants (something which is easily done by filling a rim made around the base with water), and also be careful and not add plastic, glass, oil or very pungent materials like red pepper. Worms grow well and multiply easily, and also produce good compost.

Considering the limitations of space, the incorporation of poultry is also an asset, but it requires additional care. Some urban producers raise chickens in wooden sheds which can accommodate up to 10 chickens. They are allowed to go out onto the terrace at feeding times. A serious problem is the heat, but this is effectively solved by stretching a green tarpaulin sheet above the shed and also by erecting the shed below the crown of a coconut tree (most urban homes in Kerala have at least one coconut tree in their house compound). Chickens can be fed with food wastes, azolla, or with the leaves of chekurmanis (*Sauropus androgynus*) or drumstick (*Moringa oleifera*).

adopted requires filling gunny bags or pots with a mixture of two parts of soil, one part of sand and one part of vermicompost (or any other organic manure like dried cow dung, poultry manure or goat manure, depending on its availability). These are placed on bricks put on the terrace to avoid direct contact with terrace surface. Many different vegetables can be planted in the gunny bags, and some families have even planted yam, tapioca, pineapple and bananas. Crop rotation is advised to reduce pest population, and irrigation needs to be done carefully so that water will not drain on to the terraces. If all family members go away, they are recommended to place water-filled plastic bags with pinholes on the plants. Vermicompost, dried cow dung, ordinary compost or neem cake are used for periodical manuring. Some families also grow certain crops under greenhouses.

Mr. K.P. Pillai has been growing crops on his terrace for the last 30 years. He is a model for others involved in this programme. His terrace covers an area of only 800 square feet, and there he cultivates vegetables in cement pots and inside old rubber tyres filled with soil. He collects goat manure from a nearby village, dries it and keeps it in gunny bags. This is the main source of nutrients for his plants, although he also uses dried cow dung powder, bone meal and groundnut cake. Mr. Pillai was one of the first to join the urban farming scheme, and as a result he now produces vermicompost. Pests are controlled using a soap solution (made by dissolving 4-5 spoons of soap powder in one bucket of water). Experience has taught him which vegetable varieties do better, and he prefers to produce his own seeds. Covered trellises are made on the terrace for trailing crops like ash gourd and little gourd (*Coccinia grandis*). Fruit trees like papaya and banana are planted in the ground so that the fruits can be harvested easily from the terrace. Both he and his wife dedicate one hour every morning and every evening to their terrace farming activities, seeing many advantages in it.

Building on Mr. Pillai's example, many families also stretch tarpaulin sheets to provide shade in the terrace, under which chickens can be raised in small sheds. Other households have opted for growing azolla in tanks made using tarpaulin. These blue green algae are used as mulch and manure for the plants, and also as poultry feed. Apart from using soap solutions, pests are also controlled manually or by using botanical pesticides like tobacco decoctions, neem kernel suspensions, neem oil-garlic emulsions, or bait-traps. Many families have observed that pest incidence is not severe as the terraces get a lot of direct sunlight.

Urban-rural links

Farmers in rural areas are aware of the changes in consumption trends and preferences. They know that terrace farming is gaining popularity because of health concerns, but do not consider it an immediate threat to their production activities or livelihoods. Some farmers and farmer groups have, however, started to restrict the use of chemicals and have begun learning about organic farming practices from extension workers from the Department of Agriculture. Some even market their produce as organic, although they are not certified, and certification of vegetables as organic is uncommon in Kerala. Consumers can only judge for themselves whether marketed produce is organic – it is commonly believed that organic produce will not be so plump and may have some insect bite spots, but will be tastier.

Urban producers do not produce all the vegetables and fruits required by their families, so they do still buy from farmers. But urban producers are now much more selective. For example, very plump bananas produced with high doses of chemical fertilizers and pesticides are always avoided, not only by urban producers, but also by most urban consumers.

In addition, urban producers like to buy vegetable seeds and dried cow dung, poultry manure, or goat manure from rural farmers rather than from government agencies. They believe that those cultivars that have been cultivated through generations are better. The rural farmers welcome the chance to sell some of their products.

Benefits

A review of the results of the "Village in the City" programme clearly shows how terrace cultivators get garden-fresh vegetables and eggs, all of which are nutritious and –especially when compared to those sold in the markets– free of chemical residues. Families also acknowledge saving money. Some estimates have put the total production figures at more than 1000 tons of vegetables produced in one year. Others estimate that while production costs may reach up to 5000 rupees per year (approx. US\$ 100) for growing vegetables in a 40 m² terrace, the value of the vegetables produced can easily exceed a total of 40 000 rupees.

Inspired by terrace farming, the local authorities in Trivandrum have launched a new scheme this year. Under this scheme, a free kit consisting of vegetable seeds, dried organic manure powder and two banana suckers will be given to the students of 20 schools in the city. The aim is to involve children in terrace farming in their homes, to use these activities as part of their education and at the same time to inspire their parents.



Photo: Author

The terraces of the houses in Trivandrum are full of vegetables, showing how much can be grown in the city in spite of space limitations.

Interviewed officials have also mentioned other benefits. Many middle-aged and older people in the city have health problems like obesity, high blood pressure, diabetes or high cholesterol levels as a result of their busy, yet sedentary lifestyle. By farming in their terraces they get some physical exercise daily, which is a preventive measure against many of these problems. At the same time, house wastes are reduced as they are recycled for the production of vermicompost. Mr. Pillai mentions that by growing his own vegetables, he can eat species which are rarely available in the markets. These, for example, include little gourd (which is believed to have anti-diabetic properties) or ash gourd, known to lower blood pressure levels. Quoting Mr. Pillai, "Above all, the taste and satisfaction of eating something produced with one's own hands cannot be expressed in words".

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