

12.

City farming innovations

1. GENERAL INFORMATION

1.1 Title of practice or experience

City farming innovations

1.2 Category of practice/experience and brief description

Dr **R.T.** Doshi, a city-bred intellectual now residing in Mumbai, India, has experimented with an innovative package of workable farming practices that enables city dwellers to grow their own food on every available square inch of urban space, including terraces and balconies, if they **so** desire.

None of the innovations Dr Doshi recommends requires heavy expenditure, equipment or subsidies. Neither does the farming he proposes require long hours of work. Every member of the family can be involved in the maintenance of the city food garden, including the old. The food garden provides the family with ample nutrition from plant sources, eliminating the need to purchase one's vegetables and fruits from the market, where inflation makes a mockery of housewives' budgets.

1.3 Name of person or institution responsible for the practice or experience

Dr **R.T.** Doshi

1.4 Name and position of key or relevant persons or officials involved

As in 1.3 above

1.5 Details of institution

- (a) Address: Jamunotri, 26th Road, Bandra (West), Mumbai 400 050, India
- (b) Telephone: ++ (91) (022) 640 1439
- (c) Fax: ++ (91) (022) 643 2174
- (d) E-Mail: rtdoshi@hotmail.com

1.6 Name of person and/or institution conducting the research

Claude Alvares, Editor, Other India Press

1.7 Details of research person/institution

- (a) Address: Above Mapusa Clinic, Mapusa 403 507, Goa, India
- (b) Telephone: ++ (91) (832) 263 306, 256 479
- (c) Fax: ++ (91) (832) 263 305
- (d) E-Mail: oibs@bom2.vsnl.net.in

2. THE PROBLEM OR SITUATION BEING ADDRESSED BY THE PRACTICE/INNOVATIVE EXPERIENCE

Dr R.T. Doshi was an economist before he commenced farming. Prior to this, he was associated with the marketing of NPK (nitrogen, phosphorus and potassium) fertilisers, micronutrients, organic manure, etc. After retirement, he worked on his farm at Kamshet near Pune and discovered the immeasurable problems farmers face. He discovered that if farmers include the costs of their labour in the calculation of farm profit and loss, all farms would be uneconomical. This led him to think very seriously about reducing the costs of farming, including labour.

There were also other problems associated with food production for persons living in urban areas. One is the cost of food, which continues to spiral because it is subject to inflation. The other is the quality.

The production of food, particularly vegetables and fruits, in many countries of the South is carried out in rural areas and often involves transport over long distances. The lack of an active linkage between such producers and consumers has led to several undesirable practices that place urban populations at risk.

One of the most important of these issues is the present farming practice of dousing most agricultural produce, from grapes to cabbages, with toxic chemical pesticides to enable them to maintain their outward appearance for fetching better prices. Institutional facilities like laboratories which can investigate toxic pesticide residues in market produce are almost non-existent in many countries of the South. Even in countries like India where such facilities do exist, actual investigations and sampling can be frightfully expensive and no institution, not even the government, is really willing to pay such costs.

One of the alternatives to this unhealthy scenario is to stimulate urban dwellers to grow their own food, particularly vegetables and fruits, in their own backyards. However, agricultural production of any kind is seen as impossible in urban areas simply because most land is covered up in bitumen and available space is seen to be more profitable if diverted for real estate development instead of being utilised for the growing of vegetables. Cities swallow up agricultural fields with impunity, especially in countries of the South.

In these circumstances, Dr. Doshi's city-garden methods are a major innovation and qualify easily for good-practice status. Dr. Doshi has perfected a method of growing vegetables and fruits for domestic consumption in available covered urban spaces, including terraces and balconies, and utilising even the walls of civil constructions. He has shown how it is not at all necessary to think that food should only be grown in fields, with expensive irrigation facilities and mechanical equipment like ploughs, harrows and tractors. This has opened up possibilities in the imaginations of urban dwellers of raising nutritionally acceptable food close at hand, within their own premises. In addition, since Dr. Doshi recommends only organic methods of farming, food grown in such city gardens is safe from toxic residues and can be consumed without any anxiety. Dr. Doshi's methods involve neither extra time nor money, but produce net gains. His gardening materials include sugarcane waste from nearby sugarcane juice vendors and spent polyethylene bags which are normally used to pack cement or fertiliser and are useless thereafter. These cost next to nothing. The only item for which some payment may be necessary is soil, if this is not available in the close neighbourhood. Nothing more is required for the urban gardener to begin a thriving garden producing wholesome vegetables for his family "the Doshi way".

Dr. Doshi today grows vegetables, pulses, fruits and cereals on the terrace of his bungalow in Mumbai located in one of the crowded areas of the city.

He has raised mango, fig and guava plants and also harvested bananas and sugarcane stalks. All these crops Dr. Doshi raises only for self-consumption and not for sale in any market. He enjoys the exercise tending to the city farm entails and also, of course, the ample fruits of his labours.

Dr. Doshi's innovative practices have now been adopted by several families in not just Mumbai but adjoining cities like Pune as well, leading to a profusion of city vegetable gardens, and improving local environments, family nutrition and public health overall.

3. DESCRIPTION OF THE PRACTICE/INNOVATIVE EXPERIENCE AND ITS MAIN FEATURES

Since it is no longer possible to even imagine the availability of fields for planting vegetables in most cities, Dr. Doshi came up with the unusual idea of planting soil in containers or cylinders of different kinds. This ensured also that only limited quantities of soil need be used. Only the root zone of the plant need be given soil and nothing more. In any case, more is simply not possible.

For instance, Dr. Doshi uses high-density polyethylene (HDPE) bags (of the kind used to pack 50 kg of cement or fertilisers) which have a diameter of around 9 inches and a length also of around 9 inches, in growing vegetables and cereals.

For bigger crops like sugarcane, HDPE bags with larger diameters are essential (14 inches). Fruit trees like fig, guava and mango have to be grown in bags which have a diameter from 18 to 24 inches. The bags must be open at both ends; hence the base of the bag must also be cut open.

After selection of the appropriate bags according to size, the next step is to fill them up with soil. If soil is put as it is into the bags, it will fall out the other end which has also been opened. To prevent this, the bottom half of the bag is tightly packed with biomass of any kind. Dr. Doshi himself often uses waste sugarcane stalks which he collects from the sugarcane juice vendor outside his house. The material is free and the sugarcane juice vendor is glad to be rid of it. Left to itself, it attracts flies. Dr. Doshi makes good use of it as a base for the sacks, functioning as a kind of giant plug which will keep the soil in but is, at the same time, sufficiently porous to allow the water given to the plants to drain out easily.

After the base has been plugged, so to speak, 25% of the bag space that remains is filled with compost, either made in the house or purchased from garden stores. Dr. Doshi makes his compost by putting cowdung, organic material and water in polyethylene bags and leaving them alone for six weeks.

Compost can be made in hundreds of ways, but Dr. Doshi's method requires the least amount of labour and trouble and is ideal for city homes since the bags are kept closed and there is no chance of them being infested with vermin or other undesirable insects like cockroaches.

The remaining portion of the standing HDPE bag is now filled with nor-

mal garden soil and the bag is ready for planting. Approximately 2 to 4 litres of soil would be required for every sq. ft. of area. The bags are now soaked with water two to three times and then the water is allowed to dry up. Now one is ready to plant the seeds.

Seeds should be carefully selected: they can be taken from one's kitchen (groundnut, cereals like wheat) or bought from the store. The important point here is how one plans the planting. Dr. Doshi suggests the idea of "chain-planting", by which plants are raised as per a schedule that provides for small quantities of vegetable at staggered intervals and not a large quantity all at once, as is usually the practice in large vegetable farms growing for the market where bulk and quantity are important considerations, given the costs of transport. Either seeds, cuttings or grafts can be placed in the bag and with the right amount of watering, they begin to take root and flourish. Seeds may be placed 1/2 to 3/4 inch below the soil level. After three weeks have passed and the plant has emerged fully from the soil, leaves may be given foliar sprays. Pests should be dealt with, as far as possible, with non-toxic sprays and concoctions which can be made at home, including neem extract.

The city farming efforts of Dr. Doshi owe much to the insights of Dabholkar's Prayog Parivar (more of which in the following section). Today, scientists admit that most of the energy of the plant (95%, in fact) comes from the atmosphere and only 5% from the soil. Doshi argues that solar energy can replace soil in cities since solar energy is available in plenty on terraces and balconies. Looked at from this point of view, city spaces are ideal for such farming.

Water use in the "Doshi system" is also considerably less than in conventional farming. Since the plant grows in sealed bags or tyres or other cylindrical bags or containers, considerably less water need be given compared to if it were receiving the water while growing on soil in open fields where most of the water would leach underground or even evaporate since the area of evaporation would be extremely large and unconfined.

4. DESCRIPTION OF THE INSTITUTION RESPONSIBLE AND ITS ORGANISATIONAL ASPECTS

What Dr. Doshi has done is to put into practice the ideas propagated by the Prayog Parivar, an institution set up by Shripal Achyut Dabholkar from Kolhapur, also located in Maharashtra. The word "prayog" means experiment or effort while "parivar" (family) is used to signify a sense of belonging and togetherness till success in the experiment is achieved.

Dabholkar has influenced thousands of individuals all over the country

with his natural-farming ideas in which the best of indigenous farming practices is combined with the best of modern thinking.

The essence of the Prayog Parivar movement is the regular meetings of farmers' groups to discuss practical problems they face in their fields and to provide them access, at the same time, to the best of scientific practice, whether indigenous or modern.

Dabholkar is convinced that it is possible to feed an entire family on 1/4 acre of land (or 1,000sq. m.), if people follow his system. Doshi has refined it further. He says he grows his requirements of vegetables and fruits in an area of 1,200sq. ft.

Dr. Doshi candidly admits that he has been heavily influenced by the ideas and practical advice of the Prayog Parivar. He is not a farmer nor an agriculturalist by training, but his innovations are the result of close observation, experience and frank discussions with the Prayog Parivar. More important, as one can see when one visits his terrace farm in Mumbai, whatever he does he does successfully and can be replicated by others elsewhere.

5. PROBLEMS OR OBSTACLES ENCOUNTERED AND HOW THEY WERE OVERCOME

No problems were encountered in the implementation of this practice.

6. EFFECTS OF THE PRACTICE/INNOVATIVE EXPERIENCE

The impact of the practice of city farming is clear. Following Dr Doshi's lead, urban folk are now growing their own quantities of vegetables and fruits without having to depend all the time on markets. Marketed food is expensive often because the cost of transport has to be added to it. It is also often hazardous: no one quite knows what amount of pesticides and pesticide residues will be found in the foods purchased from the market.

Dr. Doshi's agriculture precludes the use of chemicals and pesticides. For this reason, it is also safe. Since it does not require much time and money and relies on using wastes from nearby sources, it is an important form of sustainable agriculture.

7. SUITABILITY AND POSSIBILITY FOR UPSCALING

The urban farming methods developed by Dr. Doshi are suitable for any scale of operation: his own plot is a mere 1,200sq. ft of terrace space. On this, he grows an enormous variety of fruits, vegetables and cereals. He has also

raised 1,000 sugarcane plants. Smaller or larger plots can also use this method since the techniques used are easily replicated and rely very much on materials available in the local environment.

8. SIGNIFICANCE FOR (AND IMPACT ON) POLICY-MAKING

Dr. Doshi's good practices could have a significant impact on policies relating to food production. Today, most governments have fallen into the trap of relegating all food production to the countryside. However, new policies supporting such forms of urban agriculture should now be entertained.

Urban farming brings the health and other benefits (including recreation and physical exercise) associated with rural agriculture to city folk.

Farms of the kind raised by Dr. Doshi can help bring down prices in the market for obvious reasons. Even if the vegetables and fruits produced are not destined for the market, their availability to several households in the cities can help reduce scarcity generally.

9. POSSIBILITY AND SCOPE OF TRANSFERRING TO OTHER COMMUNITIES OR COUNTRIES

Dr Doshi's social innovations promoting successful urban or city farming are simple enough to be promoted among city dwellers in different countries. The practitioner himself has written a detailed booklet on city farming which lists out detailed steps for those wishing to get into urban farming immediately. The book also advises on the economics of the operations and provides pointers for dealing with pests.

Another useful book is *Plenty for All – Prayog Parivar Methodology*, which contains critical details, photos, pictures, tables, etc. and is written by Prof. Dabholkar himself.

In general, the techniques propagated are not expensive and rely on materials available close by. There are no requirements of heavy equipment or even light equipment. But the results are there for all to see and, if lucky, to taste.