

A community approach to innovative agriculture production and marketing among urban/periurban, small and marginal farmers in growing cities: A case study from Magadi, Bangalore, India.

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ABSTRACT

Magadi is a rapidly developing town in South India, with a current population of 25,000. 46% of the township area is agricultural land, and most are cultivated by small and marginal farmers, with land holdings less than 1 ha. Recent plans for township development (2025) have threatened the livelihoods, with high prices being offered for land towards township development. The community has practised a leasing system for generations which will soon die out, unless innovations with high returns are established. This study describes how the town municipal council, local partners and the community have attempted to combine city's "Ecocity concept" to innovate agricultural production and marketing strategies to safeguard livelihoods, while greening and feeding the city in a rapid development setting.

Ninety four farmers formed neighbourhood groups to innovate their production and marketing systems. Of these, 87 (92%) were small and marginal farmers (range: 0.025 to 0.96 ha; average 0.31 ha) with an average income per annum of INR 73,975, from all sources. Community action, support of the municipality, and departments of agriculture and horticulture, served to strengthen the capacities, build group saving schemes, innovate production systems and marketing strategies, recycle natural resources (organic waste), and secure government grants which were not accessible to them before. Organizational strengthening and technical innovations increased the profit margin of a unit of crop.

This study describes a novel approach to enhance opportunities for agriculture production and marketing amidst town planning (eco-zoning), where a good mix of development, livelihood activities, and food security can be maintained in building resilient cities. It is envisaged that the city authorities will utilise uncultivable land, for development allowing innovative farmers to benefit from urbanization to realise new markets and opportunities. It is seen as a win-win situation to safeguard common interests and property, at the same time build healthy and resilient cities.

Key words: South India, agriculture, marginal farmers, ecocity, common property

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INTRODCUTION

Urban Agriculture and Periurban Agriculture - (UPA) - are different from, but complementary to, rural agriculture in enhancing food security in urban and periurban settings. It is an integral part of the urban food production system, contributing to the urban economy, livelihoods, food security, preservation and recycling of natural resources, and, reduction in green house gas emissions within the cities. Thus, its benefits are not confined to food security alone, but extend over a spectrum of social, economic, and environmental dimensions that support city life as a whole. UPA exists in most cities, in one form or another, though it is not formerly recognised. That it's an integral part of the urban economy and overall urban ecological system, is becoming only too clear now, with urban expansion, migration of people to cities, climate change and soaring food prices. Thus, urban agriculture and its multi-functional benefits can only be fully visualised and realised, contextually, and requires the support of science, technology and policy fronts, for optimum results.

The worlds' urban population has outnumbered its rural population (United (UNFPA, 2007), and India's contribution to these figures are evident in the latest projections (McKinsey Report, 2010). It is estimated that by 2030, nearly 590 million will be living in cities, and a booming economy is expected benefit over 200 million rural Indians living in proximity to nearly 70 large cities. Further, a relatively younger population is predicted to give a lift to the overall dynamism and outcomes, compared to other countries that are grappling with aging populations. However, these developments will not be without challenges, as rapid development also accompanies demographic linked social issues like urban poverty and food insecurity. Governments will be forced to look into programmes that support the urban poor, who will be most affected and will be a part of the social fabric that generates the economy.

A recent study estimated that the urban sector/poor will probably face the most severe problems in coping with the global recession and population increases, especially in cities (lower export demand and reduced foreign direct investment) (FAO, 2009). It is estimated that in 2009 over 1 billion were hungry reaching a historic high since 1970. As fast growing cities become principal spaces for planning and implementation of strategies for development, hunger and undernourishment is most likely to increase. The size and urgency of these challenges require innovative ways to stimulate urban food security and local economic development. Urban agriculture is one such novel strategy, in which increasing amounts of nutritious, affordable foods can be sourced from lands adjacent to the city.

While prices of food and fuel have seen some declined in the recent years, they have been reduced only marginally. Such price increases are felt mostly in the cities, and calls for intensive food production close to the cities (Baker, 2008; USDA, 2009). As a response to the dramatic rise in food prices a high food Further, a High Level Task Force addressing on the global Food Crisis (UN, 2008) has explicitly recommended that, among others, small holder farmer should be supported, food production in urban areas should be increased, more local food production should be increased, especially close to cities, incentives to urban-periurban agriculture should be provided while safe guarding public health issues, and management of water resources.

In urban and periurban areas farming is carried out by small and marginal farmers who are often poorly organised. For some, it is a secondary occupation that supplements other primary sources of income. These farmers possess less land, therefore, have less access to government subsidy programmes, which are mostly for farmers with large land holdings. They also receive less extension support, compared to their rural counterparts, because institutions pay more attention to rural farming than urban farming. Despite the fact that they are close to the cities, most are heavily dependent on middle men for marketing, and often do not receive a reasonable price for their produce. Special needs of urban/periurban producers are also poorly recognised by authorities, compounding their vulnerability. This study presents the preliminary findings of a novel approach to enhance agriculture production and marketing capacities of urban periurban farmers, that also strengthens community action and institutional support. It is envisaged that such market oriented small-scale urban agriculture production will not only be profitable, to the farmers, but in part, to the food basket of city dwellers.

METHODS AND STUDY SETTING

Magadi is a town (12°58' N and 77°23' E) in the D istrict of Ramanagara, a newly created administrative unit (2007), carved out of the Rural Bangalore District. The city comprises 23 wards, with a population of around 25,000 (Census, 2001) which has been steadily increasing and stands at around 30,000 at present. The city which is situated 45 km west of Bangalore has been ear-marked for development. The total area under development will be 50,152 ha, given in the maps developed by the Magadi Planning Authority which was established in 2002. The new agriculture area is expected to be around 30,317 ha.

Placed at an altitude of 900 m, Magadi has a good climate for agriculture production. Its average temperature ranges from 14°C - 33°C, and receives most of its rain during the months of June to September from the south-west monsoon. Occasional rains also occur, from the north-east monsoons, in November and December. Currently, the major livelihood activity within the city is agriculture. Farmers engage in both irrigated and rain-fed agriculture and also earn an income from a host of other income generating activities as well.

A programme developed by RUA Foundation, titled "From Seed to Table" (www.ruaf.org) was adapted to strengthen the capacities of poor farmers, so that they could organise themselves and improve production towards greater economic gains and food security at household level (de Zeeuw, 2010). This involved the participation of farmers, local administration, the University of Bangalore, GKVK campus, and an implementing NGO (Dhan Foundation; <http://www.dhan.org/>). The study was carried out in the wards 9 and 10 of the Town of Magadi, where a majority of farmers were practicing irrigated agriculture. Initial surveys showed that there were no farmer organizations in these wards. Therefore, the farmers were sensitised through a series of participatory group discussions and door-to-door visits. Selection was based on a set of selected criteria that were set forth by the programme. The total population in the wards were 1943, and 94 farmers participated in the programme. Neighbourhood farmer groups were formed and leaders were selected by the farmers themselves.

RESULTS AND DISCUSSION

The baseline

Magadi town consists of 23 wards for administration and development purposes. It has a production area of 242 ha, which is 46 % of the city area (Figure 1). Majority of the participants were small and marginal farmers (69 - male and 25 – female), who also engaged in other income generating activities like, livestock rearing and silk reeling. Extra income was generated by renting houses as well as equipment (tractors and sprayers). The farming community in wards 9 and 10 were primarily vegetable growers.

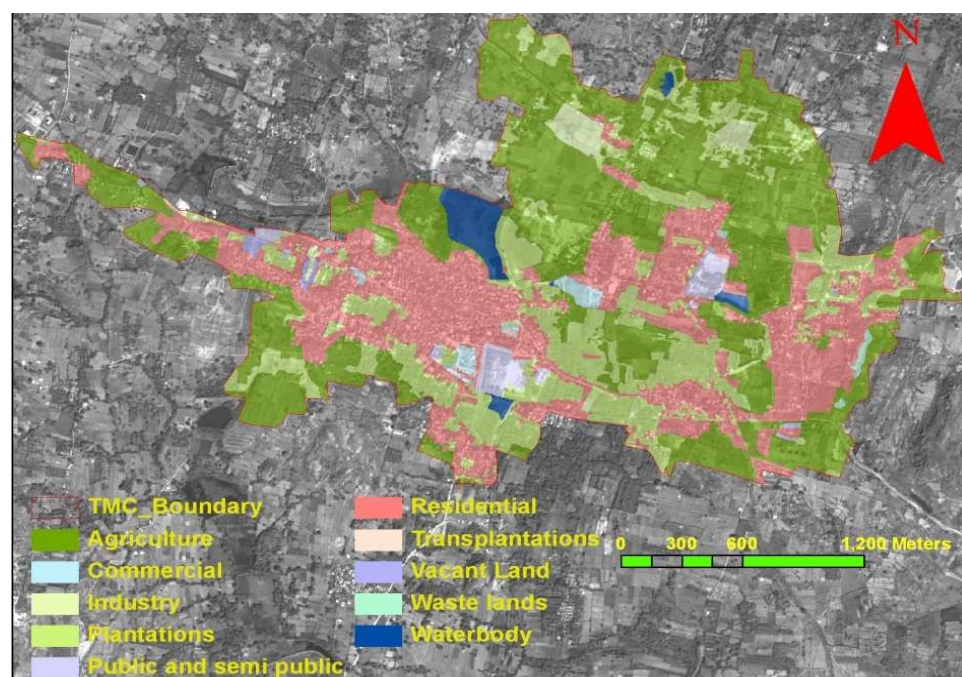


Figure 1: Land-use map of Magadi (Satellite map 2007)

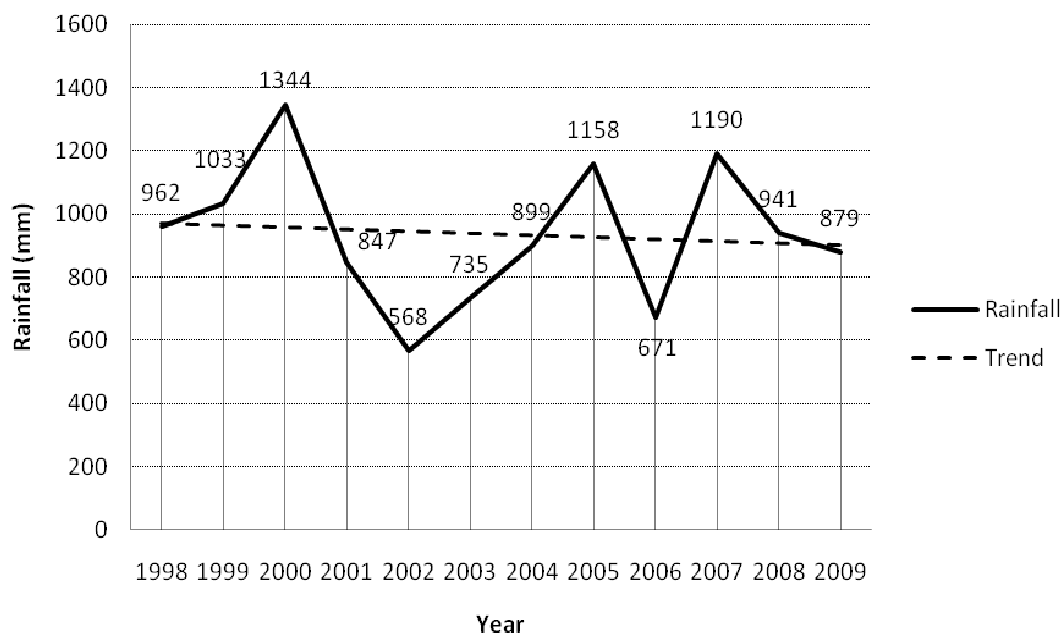
The major crops grown in the area are given in the table 1. Vegetables were grown year round where as the cereal crops were sown only during the monsoon period. It was noted that vegetable cultivation was carried out in areas where there was adequate irrigation. Water markets were common, and people traded when the water was in adequate supply. The varieties of vegetables grown, however, in the two wards were limited, and were confined to short duration crops like leafy vegetables and knoll-khol that gave a quick return. Vegetables like carrots were seasonal and were not grown in the summer months. Inter-cropping was a common practice, short duration crops like leafy vegetables, knol-khol and radish were grown together with long duration crops like carrots, so that farmers could get a continuous flow of income an income during a single cropping season. They were of the opinion that this method minimised the labour effort as well, and as a result, could engage in other income generating activities. If there was a water deficit period the lands were

left fallow. At a time like this, only the bore well owners were able to at least cultivate part of their land. Trend in rainfall (1998 -2009) showed that there were rainfall deficit years, (2002, 2003 and 2006), based on an average value of 928 mm per year (Figure 2).

Table 1: Cropping pattern for monsoon, post-monsoon and summer seasons

| | Monsoon (2009) N=50 | Post-monsoon (2009) N=38 | Summer (2010) N=44 | Perennials (2009/2010) N=19 |
|------------------|--|--|--|---|
| Cereals | Paddy, finger millet | | | |
| Vegetables | Coriander, mint, amaranthus, dill, knol-khol | Mint, amaranthus, spinach, fenugreek, davana, carrot, radish, knol-khol, cabbage | Coriander, mint, spinach, dill, amaranthus, carrot | |
| Flowers | Chinese aster, Chrysanthamum | Chinese aster, Chrysanthamum | Chrysanthamum | Jasmine |
| Plantation crops | | | | Arecanut, betel, coconut, banana |

Monsoon: June –September, post monsoon: October-February, Summer: March – May. N= number of households



Source: Ramanagara District at a glance 2008-2009, published by the District Statistical Officer, Ramanagara. (2009 data from Department of Agriculture, Magadi)

Figure 2: Rainfall pattern over a period of 11 years (1998 – 2009) at Magadi Block.

In total, 51 ha were under cultivation, of which 28% was leased in (Figure 3). The land was leased mostly by farmers who owned less than 1 ha of land. This is to be expected, as the majority (92%) of farmers owned less than 1 ha (Figure 4). Medium sized land holdings were few and far between.

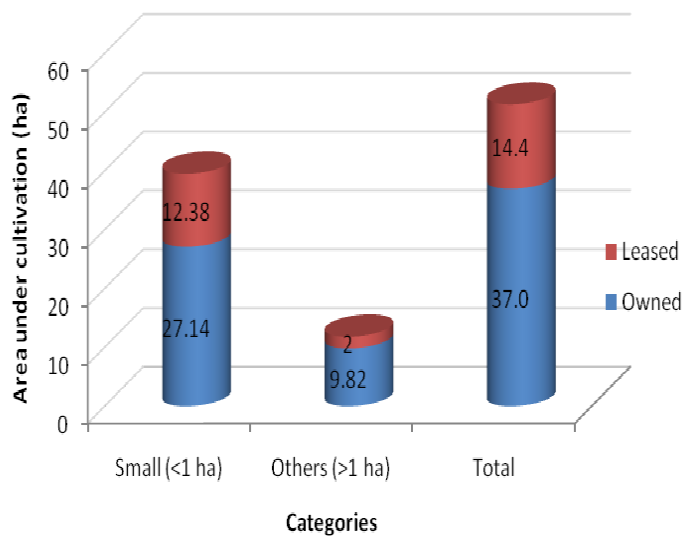


Figure 3: Distribution of owned and leased in land among the farming communities at Magadi

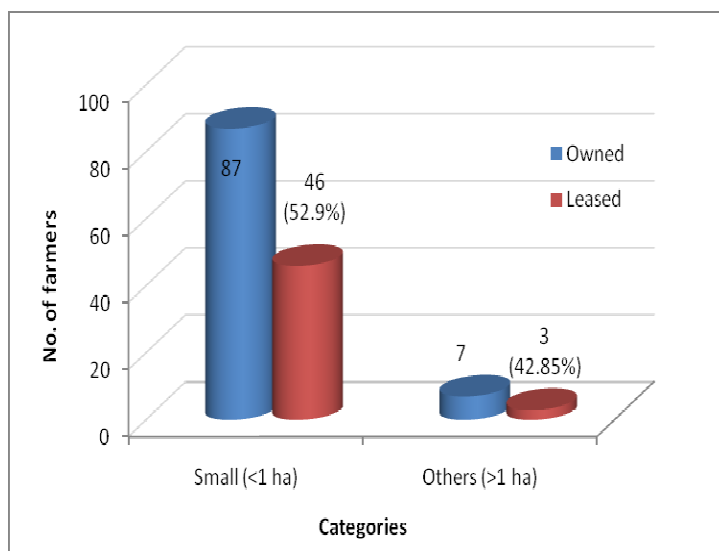


Figure 4: Percentage distribution of farmers who owned and leased land for cultivation.

The family size varied across the households. A nuclear family was seen in over 50% of the households that participated. Extended families were also common, where the number of family members ranged from 5 – 13. In these households, family members participated in less labour intensive activities, but hired labour for weeding and harvesting, which were labour intensive. A high proportion (56%) of the members in the age category 20-40 yr were active in a number of other activities to enhance their household income (Table 3). 63% of participants engaged in some form of agriculture, and a lesser number was involved in other wage earning activities like silk reeling (< 2%). Livestock rearing was popular, but in general a majority of members who were engaging in farming, generated their income from a wide variety of sources (Table 2). It is clear that the income from agriculture alone (39%) was not sufficient, and diversification complemented the household income. Non-farm (24%) and processing activities together contributed a good proportion, though the benefit was only for a fraction of farmers. However, at a household level, the highest income generating activity appeared to be silk reeling, finger millet cleaning and flour making, showing a great potential for income generation and innovation for urban farmers.

Table 2: Income generation from all sources (INR) (n=50, 273 members)

| Parameters | Agriculture | Agri - subsidiary | Non-farm | Assets - rent | Processing | Total |
|-----------------------|-------------|-------------------|-----------|---------------|------------|-------------|
| No. of households | 50 | 27 | 23 | 7 | 6 | 50 |
| Income/year | 1,452,500.0 | 499,255.0 | 886,000.0 | 286,000.0 | 575,000.0 | 3,698,755.0 |
| Income/year/household | 29,050.0 | 18,490.9 | 38,521.7 | 40,857.1 | 95,833.3 | 73,975.1 |
| Income/year/person | 5,320.5 | 1,828.8 | 3,245.4 | 1,047.6 | 2,106.2 | 13,548.6 |

Note: Agriculture: Income earned from cultivation of land; Agri-subsidary: Dairying, sale of live stock (goat, sheep, draught and milch animals), poultry; Non-farm: Services, self employment, labour; Assets (house and equipment) – rent; Processing: silk reeling, finger millet cleaning and flour making

It was seen that leasing land for agriculture was a common practice, and was important to the farmers who owned less land (<1 ha), as it helped to boost the agriculture productivity. The community practised three types of leased in farming, viz., contract, profit sharing and leasing. In the contract system, the farmer who is leasing the land pays the owner of the land, a sum of money, and enters into a legal agreement. The rent per ha can range from INR 10,000 – 15,000 per year, depending on soil fertility and availability of water. In the profit sharing system the owner provides some of the inputs (water, fertiliser and seeds) and will receive 50% of the net profit of production. Sometimes, owners who are in need of large sums of money (eg. 1 lakh) may also lease agriculture land. This occurs between people who are known to each other, where once the total sum is paid the land is redeemed. However, this type of system is not very common.

The novel process

Although the farming community in wards 9 and 10 had been engaging in agriculture activities for decades, they were not organised to support each other. The FStT

programme enabled the formation of 6 neighbourhood groups totalling 94 farmers, of which 25 were women. At the outset, women were reluctant to come forward, as men were identified with the practise of farming. Another reason was that women did not have title deeds for land, and felt that men owned the land. Therefore, only 2 women farmers were present in the initial meetings, however, with time, more female farmers joined the programme, showing that appropriate sensitization processes are needed to build trust and confidence. The use of gender sensitive methods of training was helpful in bringing women farmers to the forefront, and in fact, which was instrumental in forming a separate women’s group. Further, special leadership building activities boosted their confidence, and today, they are the leaders in the marketing process. It was noted that the organizational activity of group savings and internal lending was a catalyst for group cohesion and building trust among men and women.

The RUAF “From Seed to Table” programme (de Zeeuw, 2010) helped develop a farmer-led learning process, specially designed to strengthen the capacities of farmers on production to marketing. With the help of facilitators, selected farmers (leaders) assessed the current situation pertaining to production systems, key stakeholders and institutions whose support will be needed in achieving the goals. This resulted in a participatory review of the main agriculture products, production and market practises, land under cultivation, available resources and institutional support. After a quick market analysis the farmers selected 4 crops, namely, cauliflower, radish, carrot and knol-khol. Then, based on a screening matrix and the views of key informants, carrot was picked as the most promising option (MoPO) to be piloted for innovation. A Together with the facilitators, farmers then developed a business plan, taking into consideration the findings of the participatory reviews. The business plan consisted of key steps involved in production and marketing (the entire value chain) of carrots, inclusive of a financial and an organizational plan. Innovations were introduced at different points of the value chain to enhance production and to obtain a better market price (Figure 5).

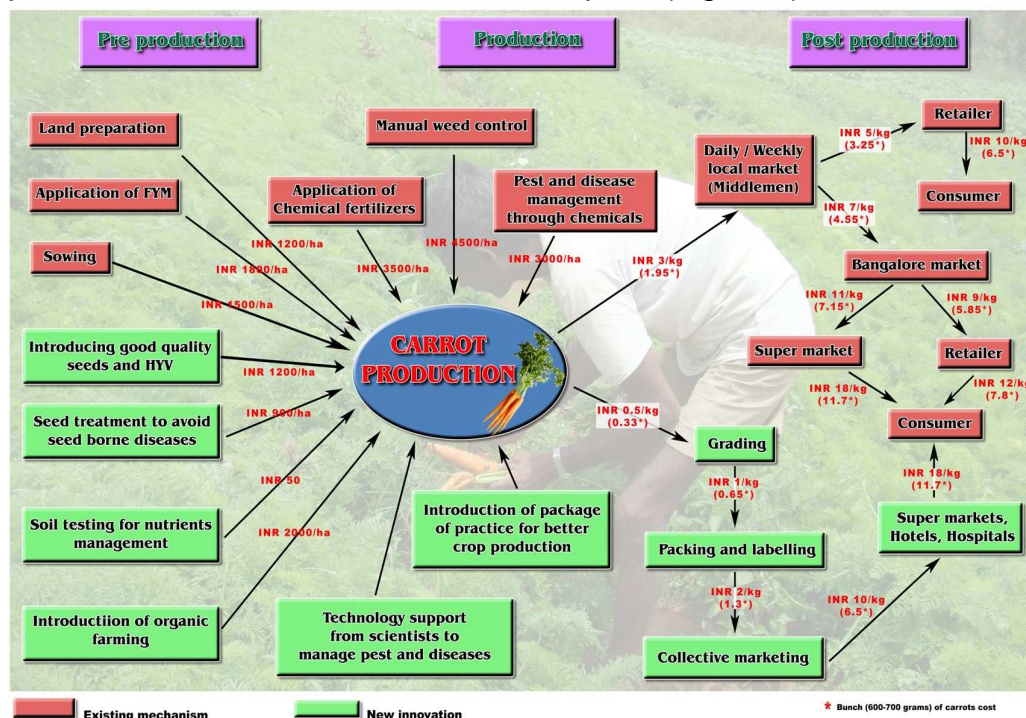


Figure 5: Value chain mapping of carrots

Carrots are highly valued, market oriented crop, for which there is high demand throughout the year. However, there is a shortage of supply during the rainy season, due to problems such as rotting of tubers and frequent attacks of pests and diseases. Also, during the monsoon more labour is required than at other times to manage weeds and pests and to prevent the tubers from rotting due to water stagnation in fields. Hence, the cost of production increases while the yield of carrots decreases, and farmers do not normally cultivate carrots during rainy season. To address these challenges, the project team with lead farmers cultivated carrots during the off season using a special package of practice. A carrot variety that had a demand (super Kurroda) was selected for cultivation. The net benefits to the 3 farmers compared with the control, are given in Figure 6. Although, the input costs were higher for off-season cultivation, a higher market price for the produce resulted in better returns. As a consequence, the number of off-season carrot growers increased by 300% during the next season. With this innovation, the farmers were able to grow carrots year round, except during a short period in the summer. During the season, 61 farmers cultivated in 2.54 ha and earned a net profit of INR 74, 923, but overall, off-season carrots were profitable, if the appropriate package of practice that involved proper drainage was adopted. During all these activities, the Departments of Agriculture and Horticulture, as well as the Municipal Cooperation interacted closely with the farmers.

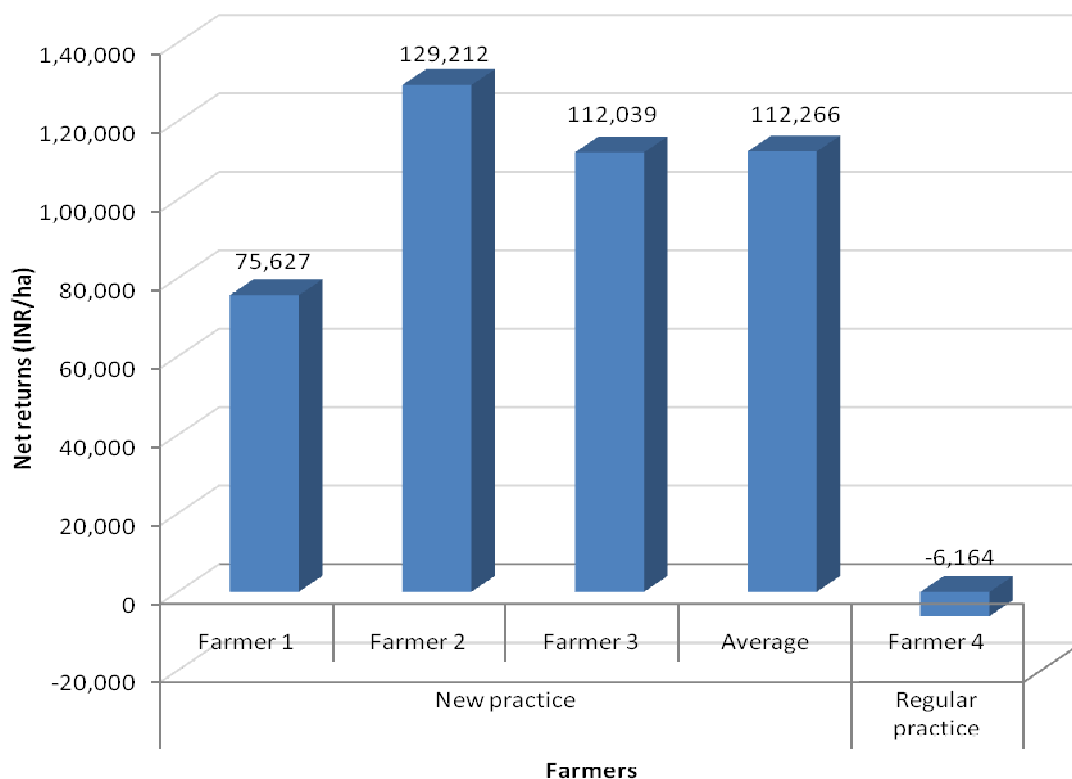


Figure 6: Net returns of farmers for off-season carrot production.

All the farmers were encouraged to adopt ecological farming practices. In this, they conformed to the “ecocity” concept of the town municipal council of Magadi, and recycled the natural waste and produced vermicompost to supplement the fertiliser used for production. 25 farmers aim to produce 25 tonnes of vermicompost, to be sold to other farmers through their organization. The first batch of vermicompost is being collected in December 2010.

Urban value chain development involves the participation of a number of actors. Each one’s contribution is crucial for value addition (Dubbeling et al., 2010). One of the main activities of the programme was directed at strengthening intra- and inter-group cohesion, to maintain the flow of activities. This was successfully achieved through the adoption of savings and internal lending schemes, revolving fund schemes, exposure visits to other farms, Urban Farmer Field Schools (UPFS) and collective marketing activities. UPFS helped sharing and learning new concepts; group savings and internal lending schemes built trust and acceptance; visits to other farms built confidence that collective action can strengthen their stance to have access to subsidies and finance from other institutions. After one and a half years of interaction, the internal lending account has a rolling collection of INR 117,957, which is redistributed each time the groups meet (Figure 7). Access to credit is non-existent for small farmers as they are unable to provide sufficient funds/assets as collateral. A guaranteed fund scheme (Table3), in the form of a revolving fund, established by the project, helped secure a bank account for the organization. This has increased the organizational profile of the community, and credit worthiness, which will no doubt enable groups to seek larger funds from cooperate and financial institutions serving in Magadi.

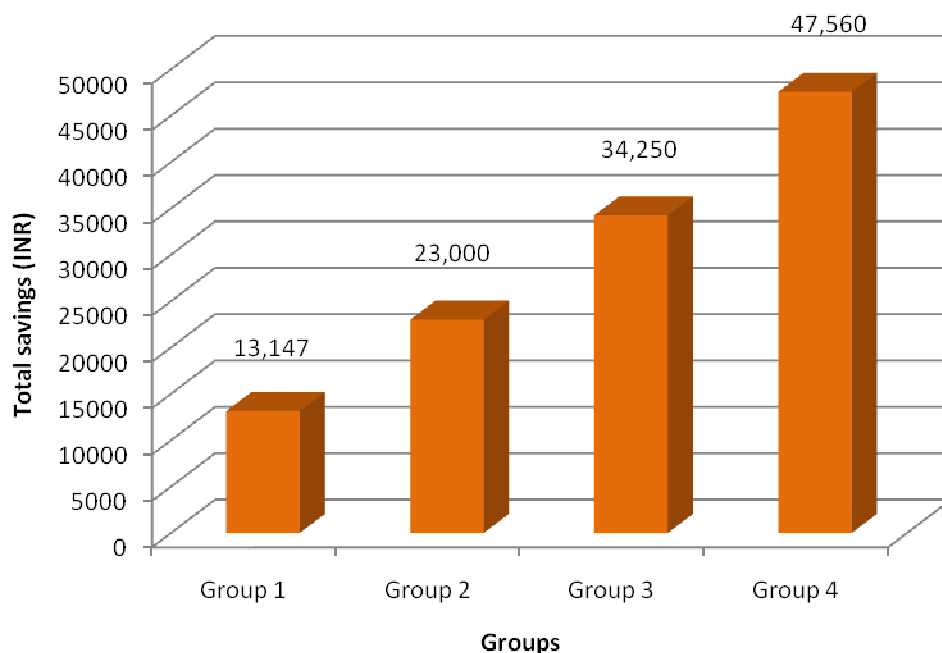


Figure 7: Group savings and Internal lending scheme of four farmer groups

Table 3: Revolving fund allocations of four farmer groups (as at October 2010)

| Description | Group 1 | Group 2 | Group 3 | Group 4 | Overall |
|---|----------------|----------------|----------------|----------------|----------------|
| Date of distribution | 25-Jun-10 | 25-Jun-10 | 25-Jun-10 | 08-Sep-10 | - |
| Number of Recipients | 6 | 6 | 13 | 7 | 32 |
| Total amount distributed (INR) | 26,560 | 25,872 | 56,056 | 35,000 | 143,488 |
| Equity monthly instalment (INR) | 1,476 | 1,437 | 3,114 | 1,944 | 7,971 |
| Loan repayment (INR) | 3,264 | 4,322 | 9,834 | 2,200 | 19,620 |
| Interest earned for the association@ 2% per month (INR) | 1,257 | 1,548 | 3,061 | 700 | 6,566 |
| Loan outstanding (INR) | 23,296 | 21,550 | 46,222 | 32,800 | 123,868 |

CONCLUSIONS

Urban and peri-urban farmers can be important actors of value chains in agriculture production systems. However, there are many constraints that impede their development and recognition, as they often have limited access to information, skills and also access to land. Further, they are poorly organised, and therefore, not aware of many government schemes and opportunities that they may tap to support themselves. This case study showed that the small and marginal farmers of Magadi were poorly organised and have had little access to local support and other benefits that may have helped uplift their social status. The RUAF-FStT programme was able to identify the challenges linked to agriculture production and marketing systems, in this urban/periurban setting, and identify a niche for community action, combining support from local authorities, to strengthen the capacities of poor urban farmers. The programme is being monitored for its sustainability and impacts. At a time when the Indian agriculture sector is looking for further growth, supporting urban/periurban value chain development may be the way forward to feed its growing cities.

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