Farmer led gross root level entrepreneurial initiatives for sustainable sugarcane production system in Tamil Nadu, India

C. Karpagam*, D. Puthira Prathap and P. Moovendan

Central Institute for Cotton Research, Regional Station, Coimbatore–641 003 (Tamil Nadu), INDIA
*Corresponding author. E-mail: karpsicar@gmail.com

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Abstract: The major objective of the study was to explore the rural entrepreneurial initiatives and its socio-economic impact among the sugarcane farmers across Tamil Nadu. Exploratory surveys, Focused Group Discussions (FDGs) and case study methods have been adopted. A total of seven successful entrepreneurial activities initiated by cane farmers, across different districts of Tamil Nadu were selected, purposively. The study revealed that entrepreneurial initiatives accomplished the needs of farmers and these either were developed by farmers themselves or with collaboration of sugar factories. Among seven entrepreneurial initiatives: ‘two wheeler sprayer’, ‘tractor mounted sprayer’, ‘trichogramma production’ and ‘Agricultural Service Provider (ASP)’ were initiated by the sugar factories under the Entrepreneurship Development Programme (EDP) in participatory mode. The other initiatives viz., organic jaggery powder and trash based vermi-compost production were initiated by farmers themselves. Budchip settling production was practiced by individual farmers as well as promoted by factories in participatory mode. It is also found that all seven entrepreneurial initiatives are profitable and sustainable. Further, the study found that the production cost for 1 cc trichogramma is Rs. 16 and selling cost is Rs. 23/cc, thus farmer getting a net profit of Rs. 7/cc of Trico card. In case of budchip settling production, total cost incurred for production of one settling is around 60-85 paisa. Selling cost of one-month old settling is Rs. 1.25. Thus, a farmer gains a net profit of 40 paisa per settling.

Keywords: Entrepreneurial initiatives, Sugarcane production system, Sustainability

INTRODUCTION

Gross root level entrepreneurial initiatives were ever sustainable with the social and economic system of the local people. Modern and outside driven technologies help better in augmenting the productivity, as compared to the local knowledge; but in the long run, the system faces more negative consequences and immense challenges. Promotion of entrepreneurship in rural area is a major step to increase economic development. Rural entrepreneurship is a purposeful activity initiating, promoting and maintaining economic growth. Rural entrepreneurship is not new to our culture. What it needs today is to nurture this spirit and instil it in the present and coming generations of both men and women. (Smitha et al., 2015). Identifying and promoting the entrepreneurial activities in rural area is one of the challenging task for government and policy makers. So, it is better to focus on various innovations developed by the local people and/or farmers at the grassroots, that is, at the field level, before it is too late (Ram Datt, et al., 2014). An alternative view is that local knowledge is a valuable and under-used resource, which can be studied, collected and incorporated into development activities. Neither of these views, though, is entirely satisfactory because of the static view of knowledge implied (Chambers et al., 1989; Warren, 1991; Long and Long, 1992; Scoones and Thompson, 1994 and Karpagam et al., 2014).

It is interesting to note that there are several novel rural entrepreneurial initiatives were taking place in sugarcane production system. Sugarcane is the next best cash crops then cotton. There are 46 sugar mills are involved in sugarcane cultivation in Tamil Nadu alone. Though the area under sugarcane in Tamil Nadu varied widely from 2.3 lakh hectares to 3.9 lakh hectares over the years in the new millennium (2000-01 to 2011-12), the productivity has almost been stabilized at around 105 tonnes/ha during this period (Ramasubramanian and Karpagam, 2014). Problems of stabilised productivity and decreasing remunerative cane prices leads for other allied entrepreneurial initiatives in sugarcane production system. According to Kishor Bhanushali, developing entrepreneurs in agriculture will solve several problem viz. (a) reduce the burden of agriculture, (b) generate employment opportunities for rural youth, (c) control migration from rural to urban areas, (d) increase national income, (e) support industrial development in rural areas, (f) reduce the pressure on urban cities, etc. But in reality; if local farmer initiating a new venture; it is always subjected for large hue and cry by the research system. But, most of the grass root level initiatives generally go unnoticed. However, these initiatives fail at commercialization and dissemina-
cussions (FDGs) were arranged with sugar factories personnel and farmers to identify the resourceful farmers who practice any innovative entrepreneurial practices in sugarcane production system. By using the deliberations, individual farmers were identified. The cases were selected purposively on the basis of the available data on the Sugarcane Breeding Institute, and the primary data collected from the focused group discussion with respective sugar factory personnel and the farmers group at the grass root, etc. Only such entrepreneurial initiatives were selected for this study, which were related to sugarcane production system. The farmers were interviewed in their respective farm filed with the help of an interview schedule. The interview schedule was semi structured and contains more questions about the details of the cases and economics of the entrepreneurial activities.

RESULTS AND DISCUSSION

The selected cases have its own scope, potential and limitations, hence all the cases were analysed for its scope, potential and limitations. Further the farmers’ profile characteristics have also been studied. All the “Cases” were discussed with its’ background, description, cost benefit analysis, social benefits. Further, Institutional interventions and support which required to upscale the initiatives has also been discussed.

Case-I: Organic jaggery powder – a value added business venture: (Individual farmer’s initiative)
Shri. Anthonisamy from Puliangudi of Sivagiri Taluk, Tirunelveli district thought of producing Organic jaggery powder. Organically grown sugarcane was crushed and juice was extracted. The extracted juice was filtered and boiled without adding any chemicals. After removing the scum, the juice was further condensed till it becomes semi-solid and removed from the furnace. The semi-solid paste was cooled in a wide pan and scraped using wooden ladle to prepare organic jaggery powder. This finding has been supported by the study conducted by Nain et al. (2002) and they reported that jaggery production was a major traditional enterprise in sugar cane producing areas. At times, jaggery making was profitable to cane producers, than supply to sugar factory. The cost of sugarcane was the major cost item in jaggery production. The investment in jaggery processing units was found to be profitable.

Case-II: Sugarcane based vermi-compost for organic agriculture I: (Individual farmer’s initiative)
Shri. Gopalakrishnan, a farmer from Panikampatty village of Karur district produce sugarcane trash based vermi-compost for the past five years. Sugarcane trash, pressmud, cow dung, neem leaves, molasses and other farm wastes are spread on the floor in layers and Azospirillum and Phosphobacterium are sprinkled over it. The heap is allowed for twenty days for decomposing. After 20 days, earthworms are released and watered at three days intervals to maintain adequate moisture. After 2-3 months, compost will be ready. The

MATERIALS AND METHODS

As the study demands “case study” method was employed for this purpose. The research team surveyed 10 districts of Tamil Nadu viz., Tirunelveli, Karur, Erode, Theni, Pudukkottai, Coimbatore, Villupuram, Perambalur Thanjavur, and Ariyalur, to explore the ‘grassroot level social entrepreneurial initiatives’ by the sugarcane farmers across Tamil Nadu, wherein, special emphasis was given on the ‘social benefits’ of such initiatives.

Methodology adopted for documentation of the entrepreneurial initiatives in Sugarcane Production System

Focused Group Discussions with sugar factory officials in the respective districts

- Entrepreneurial initiatives by sugar factories / farmers / collaborative were identified

- Focused Group Discussions were conducted with farmers in the respective villages

- Seven successful farmers who practiced entrepreneurial activities in sugarcane production system were identified

- Each identified farmer was interviewed at their field

- Details of the entrepreneurial practices were documented by audio and video gadgets
Table 1. Social Economic Significance of the findings of novel sugarcane based gross root level entrepreneurial initiatives.

<table>
<thead>
<tr>
<th>Socio-economic characteristics</th>
<th>Organic jaggery</th>
<th>Jaggery powder</th>
<th>Trash based vermi-compost</th>
<th>Bud chip setting production</th>
<th>Agricultural Service Provider</th>
<th>Tricho card production</th>
<th>Two wheeler mounted sprayer</th>
<th>Tractor mounted sprayer</th>
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</table>
| **Demand for organic jaggery and its value added products are getting momentum since we people gives more importance for organic products in the health ground.**<br>**Government of Tamil Nadu promoting bud chip settling production under Sustainable Sugarcane Initiative (SSI) scheme because of its advantages over conventional sett planting. It opens up huge demand for bud chip settling production.**<br>**High labour Scarcity leads good scope for ASP. Small and marginal farmers can able to go for mechanisation on rental basis. Therefore, farmers need not purchase the high investment machineries for cultural operations for their own.**<br>**Due to increasing climate change, pest problem in sugarcane is increasing many folds. It demands the necessity of Bio-control agent for pest management in sugarcane cultivation.**<br>**This initiative is more compatible with cane farmers since jaggery is one of the traditional menu in the Indian food habits. Waste trashes can be effectively utilised as vermi compost manure and trash also available freely.**<br>**Instead of using two budded sets, use of budchip settling will be easy and economically viable.**<br>**Mechanised operations through ASP are more comfortable for cane farmers; since, the cultural operations can be carried out easily and timely. Since, ASP from the local area, it is very much comfortable for the farmers to contact him at any time.**<br>**Bio-control agents are economically and ecologically compatible. Since, it is locally available from the factory side and it is to take up the operation on time.**| Demand for organic jaggery and its value added products are getting momentum since we people gives more importance for organic products in the health ground. | Government of Tamil Nadu promoting bud chip settling production under Sustainable Sugarcane Initiative (SSI) scheme because of its advantages over conventional sett planting. It opens up huge demand for bud chip settling production. | High labour Scarcity leads good scope for ASP. Small and marginal farmers can able to go for mechanisation on rental basis. Therefore, farmers need not purchase the high investment machineries for cultural operations for their own. | Due to increasing climate change, pest problem in sugarcane is increasing many folds. It demands the necessity of Bio-control agent for pest management in sugarcane cultivation. | This initiative is more compatible with cane farmers since jaggery is one of the traditional menu in the Indian food habits. Waste trashes can be effectively utilised as vermi compost manure and trash also available freely. | Instead of using two budded sets, use of budchip settling will be easy and economically viable. | Mechanised operations through ASP are more comfortable for cane farmers; since, the cultural operations can be carried out easily and timely. Since, ASP from the local area, it is very much comfortable for the farmers to contact him at any time. | Bio-control agents are economically and ecologically compatible. Since, it is locally available from the factory side and it is to take up the operation on time. | Operating two wheeler mounted sprayer from one field to other field is very compatible because of it can be operated as two wheeler. Therefore Travelling time and drudgery of carrying the spraying equipments are also nullified. | It is very useful for application of insecticide, micro nutrient and weedicides. Small and marginal farmers can utilise the provision in nominal amount on rental basis and need not purchase high cost sprayer etc., | Large scale application of agro chemicals is possible by this initiative.

The entrepreneur has to get work for a minimum of 20 acres/day. Then only it will be more profitable. During the peak season he is able to cover 30 to 40 acres/day, but, during off-seasons it is very difficult to operate to full potential.

Demand for vermicompost is more in present day. Hence, the institution may promote this initiative by bulk purchasing and selling to other farmers who are in need of manure.

Already Tamil Nadu government is promoting the budchip settlings under the Sustainable Sugarcane Initiative (SSI) scheme. Hence large scale dissemination of this initiative is under pipe line.

Sugar factories in the respective area are promoting the Bud Chip Technology initiative. The structural arrangement between three stakeholders can be made explicit.

Trichogramma plays a major role in sugarcane package of practice. Government of Tamil Nadu providing subsidy for the same and sugar factories also providing support for the entrepreneurs.

This initiative is promoted by sugar factories in the respective areas. Hence other institutional support is needed for up scaling the initiative for the benefits of small and marginal farmers.

Case IV: Agricultural service provider - ASP:

The farmers continuing the enterprise in profitable manner. Market facilities required to sell the products. The initiative may be replicated to the other area with institutional support to promote in to large scale.

Shri. R. Raja is a farmer from Anthrapatii village acted as an Agricultural Service Provider (ASP) for sugar factory in his area. Machineries are hired out to take up agricultural operations in other farmer’s field. There is a tripartite agreement between farmers, sugar factory and ASP. The ASP will carry out all the farm operations from preparatory cultivation to transport of harvested cane to the factory. Sugar factories debit the cost to the ASP’s account by reception of receipts signed by the farmers and the same amount is deducted from the concerned farmer while paying cane price to the farmers. Todkari (2012) concluded that Shri Sant Damaji Co-operative sugar factory adopted various agricultural service activities viz., supply of good quality seeds and other inputs welfare programmes. This initiative is promoted by sugar factories in the respective areas. Hence other institutional support is needed for up scaling the initiative for the benefits of small and marginal farmers.

Case V: Tricho card production - a small scale business venture: (Participatory initiative by sugar factory and farmers).

Shri. Karuppaiyan from Balaviduthi village undertakes Trichogramma production under the entrepreneurship development programme of a sugar factory in the area.

The parasitoids are multiplied in the medium which is controlled in an Agricultural Service Provider (ASP) for sugar factory in the area. The farmers continue this enterprise in profitable manner. Market facilities required to sell the products. The initiative may be replicated to the other area with institutional support to promote in to large scale.

Trichogramma plays a major role in sugarcane package of practice. Government of Tamil Nadu providing subsidy for the same and sugar factories also providing support for the entrepreneurs.

This initiative is also promoted by sugar factories. Since it needs higher investment. Banking sector can extend their loan facilities to the entrepreneur.
has the mixture of 2.5 kg pearl millet seed, 100 g groundnut powder, 5 g dry yeast and 5 g sulphur. With this mixture, half cc rice moths (Corcyra cephalonica) are released and kept for 45 days in closed condition. The emerged adults are collected in the test tube and released into a chamber for laying eggs. Eggs are collected in a tray and exposed to ultra violet light in UV chamber to kill the host embryo but at the same time, permit parasitization.

Case-VI: Two wheeler mounted sprayer – an entrepreneurial initiative: (Participatory initiative by sugar factory and farmers).

Shri. S. Angappan from Vallipattu village has converted an old scooter into an effective sprayer by placing a tank in the pillion seat and attaching pump to the scooter’s engine and used as a petrol engine operated sprayer. The spraying lance is around 100 metres long, so it can easily cover long distances as well. The pump inlet is connected to a pesticide container.

Case-VII: Tractor mounted sprayer – an entrepreneurial opportunity: (Participatory initiative by sugar factory and farmers).

Shri. Senthilkumar from Sarakadu village has converted an old tractor into an effective sprayer by placing two 1000 litres capacity tanks in the trailer. Two separate spraying lances of around 600 feet each are attached with each tank. One hp pump fitted nearer to the driver’s seat and attached with the tractor engine. When the tractor engine is on, the pump will be switched on and sprayer can be operated. Since, spraying lance has 600 feet length, it can be operated from faraway places and can cover long distance as well.

Socio-economic significance of the findings: The study found that all the seven grass root level entrepreneurial initiatives were demand driven and successfully meet out the needs of the local farmers. Further, the initiatives were not only beneficial for the farmers who initiated but also it beneficial for society as whole.

Conclusion

The investigation on this research issue is a maiden attempt to explore grass root level entrepreneurial activities in sugarcane production system. The study revealed that different entrepreneurship initiatives opened up avenues for social scientists to promote community based ventures and to develop entrepreneurship in sugarcane based cropping system. In case of budchip settling production; both the stakeholders viz, farmers and factories gains benefit out of it. Farmers can earn money thorough the business and the factories are getting settlings on time to distribute to the other farmers in the area. In another case of ‘vermi-compost’ production; it is an integral part of organic agriculture. Majority of the farmers are not able to take up the vermi-compost production for their own requirement, as it requires more time and labour. But farmers are ready to apply vermi-compost in their field if they get it on cost basis. Even, they are ready to pay Rs. 7000-8000/ tonne. Hence, this entrepreneurial avenue have greater scope for further exploration. Several societal problems in sugarcane cultivation viz. labour scarcity (two wheeler and tractor mounted sprayer), depletion of natural resources (vermi-compost production), stakeholder conflict management (Agricultural Service Provider), human health deterioration (Organic jaggery powder), ill effects of pesticides (Tricho card production) were addressed by the these entrepreneurial initiatives. Among the seven initiatives, budchip settling production and tricho card production are directly supported by the Government of Tamil Nadu and other five initiatives were still in localised confined stages. Therefore, Government and other institutional support are needed for further out-scaling of the initiatives for larger benefit of the society.

The study also found that the grass root level entrepreneurial initiatives needed lesser investment, greater utility, more social benefits (localised benefits are more) and higher sustainability compared to modern high investment entrepreneurial ventures. When these initiatives are recognised by the institution and government then it leads for holistic rural development through sugarcane cultivation. This study has been opened new vistas of extension research apropos ‘novel sugarcane based grass root level entrepreneurial initiatives’ in our country.

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REFERENCES


Nain N., Khatkar, RK. and Singh, VK. (2002). Role of sug-


