IMPROVING THE SUPPLY CHAIN EFFICIENCY OF MARIGOLD THROUGH CONTRACT FARMING: AN EMPIRICAL EVIDENCE FROM TAMILNADU

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ABSTRACT

This study focus on performance of marigold supply chains in contract and non contract farming by analyzing primary data collected from randomly selected 50 contract and 50 non contract farmers of Sathyamangalam block in Erode district through personal interview method. The results revealed that efficiency of supply chain (channel I and II) in non contract farming were affected by exploitation of middlemen, lack of assured price, timely availability of inputs, lack of advanced technologies (farmers) and access to raw materials (processors) and higher retail price (consumers). The contract farming system improved the efficiency of supply chain by eliminating the above constraints and the farmers were getting higher net price in contract farming channel III. Assured price, higher yield and return were the important reason for participation in contract farming. Labour problem and lack of insurance cover were the major problem faced by the farmers in contract farming system.

Key words: Contract farming, Supply chain, Market channel, price spread and marketing efficiency

INTRODUCTION

The post WTO regime on liberalization, privatization and globalization creates new opportunities and challenges especially in agricultural sector. This leads to the paradigm shift in its focus and approach towards agricultural as a whole. Contract farming is one of the veritable instruments to address many of the constraints affecting the agricultural sector and the farmers,
such as fragmentation of land holdings, involvement of unproductive market intermediaries, ignorance about the requirements of the buyers, low farm mechanization, inadequacy of capital and distress sale and consequent heavy losses to farmers etc.

**CONTRACT FARMING SYSTEM**

Contract farming is an agreement between a farmer and a firm, either a simple verbal commitment or one based on written documents where the farmer produces a fresh or partially processed product and the firm is committed to buying it under certain stipulated conditions (Grosh, 1994). The commercial crops like Sugarcane, Cotton, Tea, Coffee, Flower crops etc., have always involved some forms of contract farming.

After the implementation of economic reforms in 1991 the agro marketing system undergone a dramatic change and it creates potential opportunities to the millions of small and marginal farmers to diversify their portfolio into commercial crops (Weinberger, 2005). Lack of market access, capital, improved technology, quality input and information has limited the farmers to exploit the potential opportunities created by the economic reforms (Holloway, 2000).

The establishment of modern supply chain management requires high quality produce from the producers, but the small farmers not able to meet this strict quality requirement which leads to exclusion of small farmers from modern supply chains. Evidence shows that in Thailand the number of farmers selling their vegetables to top super markets has fell from 250 in 2001 to 60 in 2003 (Reardon 2003). In this situation the contract farming system emerges as possible mechanism for supply chain governance strategy to link the smallholders to high value markets.

Under contract farming, the farmers grow selected crops under a buy back agreement with an agency called sponsor engaged in trading or processing and the latter contributes directly to the management of the firm through input supply including planting materials as well as technical guidance through intermittent crop supervision and also markets for the produce. Thus, farmers assume the production related risks, and the price risk is transferred to the company. It is one of the ways by which small farmers can participate in the production of high value crops like fruits, vegetables, flowers etc., and benefit from market-led growth.

**MERITS OF CONTRACT FARMING**

In India contract farming has considerable potential where small marginal farmers can no longer be competitive without access to modern technologies and support. These small and marginal farmers constituting 86% of the farmer population of the country, or generally capital starved and can’t make major investment in land improvement and modern inputs (Government of India, 2006a)

Contract farming can fill up this gap by providing the farmers with quality inputs, technical guidance, management skills, credit as well as knowledge of new technologies (Miyata 2007). Pricing arrangements can significantly reduce the risk and uncertainty of market place although the company deals only with contract crop, the farmers overall management skill may improve, thereby helping him to raise the yields of both contract and non contract crops.

From the stand point of corporate bodies, farming reduces the supply risk, while the farmers enter into contractual arrangements with companies in order to minimize market and
price risks. It contributes to value addition by facilitating the emergence of agro-processing industry which otherwise would not exist if supplies were not forth coming in an organized manner. Furthermore, it enables export of the produce from small farmers who otherwise would not be able to access the demanding markets. It encourages higher quality production and better handling and sorting, thereby increasing the value of the produce emanating from the small farmers.

PROBLEM FOCUS

Marigold was important flower crop in Tamil Nadu. Marigold flowers were marketed through local markets through different channels. But the farmers in these channels were affected by exploitation of middlemen, lack of assured market price lack of advanced production and post harvest technologies and timely availability of inputs etc. Apart from the producers, the processors in the supply chain were also constrained by availability of raw materials (marigold flowers) both in terms of quantity and quality for continuous operation of the firm. The consumers in the traditional channels were also affected by increased retail price of flowers. In this scenario contract farming system emerges as one of the potential mechanism to eliminate all those constraints in the traditional supply chain of marigold. Keeping these things in mind, the present study would focus on the intervention of contract farming in marigold cultivation and it its supply chain management. This study would compare the supply chain of marigold in contract and noncontract farming system. The specific objectives of the study are:

- To identify and analyze the different marketing channels involved in contract and non contact farming
- To estimate the price spread and marketing efficiency of different marketing channels involved in contract and non contract farming
- To examine the problems and constraints in contract farming system.

REVIEW OF LITERATURE

Pandit (2009) studied the performance of potato contract farming in West Bengal among 139 non contract and 144 contract growers. The results revealed that the farm gate price of contract variety is higher than non contract variety. The cost of cultivation was higher in contract farming (Rs. 74909/ha) as compared to non contract farming (Rs. 70705/ha) and the contract farming gave good return of Rs. 15000 per hectare while non contract farming gives loss to the farmer.

Begum (2005) identified the incentives for poultry farmers to participate in contract farming in Bangladesh. It was revealed in the study that contract farmers get several incentives from the vertically integrated firm, which includes credit, production and price risk reduction, marketing assistance, technical know-how etc. It also concluded that contract farmers were better off in terms of net income by getting a high net return from the poultry farm.
Gnanakumar (2007) compared the returns of vertically integrated contract farming system in broiler production and independent poultry system in Tamil Nadu and Andhra Pradesh. He estimated that the net returns in the vertically integrated contract farming system in broiler production were 1.7 times higher as compared to the independent farming system.

RESEARCH METHODOLOGY

The present study was conducted in Sathyamangalam taluk of Erode district. The Erode district was purposively selected as the area under marigold cultivation is higher in this district and it accounts 15% of the total area in the state. The data were collected through a well structured and pretested interview schedule. Totally 100 farmers selected through random sampling (50 contract and 50 non contract farmers) were contacted individually at their fields and the objectives of the study were clearly explained to them to ensure their cooperation and accuracy in their response. Apart from the farmers the market intermediaries such as wholesalers and retailers (each ten numbers) were also contacted for this study. Collected data were analyzed using percentage analysis, Rank Based quotient (RBQ) and price spread analysis.

RESULTS AND DISCUSSION

General characteristics of sample farmers

The general characteristics of the sample farmers were age, education status, and occupational status, farming experience, operational land holdings, size wise distribution and crops grown by sample farmers. The study reveals that most of the contract farmers were marginal farmers, having less than one acres of land with agriculture as primary occupation. They were young and middle aged (31 to 40 years), completed higher secondary level of education and had medium level of farming experience (11 to 20 years).

Majority of the non contract farmers were small and marginal farmers having agriculture as primary occupation with 21 to 30 years of farming experience, belonged to 41 to 50 years of age group and completed primary school level of education. Hence, it could be concluded that, the young, highly educated, small and marginal farmers with medium level of farming experience were participated in marigold contract farming.

Reasons for participation in contract farming

The major factors influencing the participation in contract farming system in the study area were collected, analyzed and the results are furnished in table 1.

<table>
<thead>
<tr>
<th>S. No</th>
<th>Reasons</th>
<th>Mean score</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Assured price</td>
<td>76.53</td>
<td>I</td>
</tr>
<tr>
<td>2</td>
<td>Higher yield</td>
<td>59.83</td>
<td>II</td>
</tr>
<tr>
<td>3</td>
<td>Better returns</td>
<td>53.26</td>
<td>III</td>
</tr>
<tr>
<td>4</td>
<td>Timely input availability</td>
<td>44.41</td>
<td>IV</td>
</tr>
<tr>
<td>5</td>
<td>Consultancy services</td>
<td>37.46</td>
<td>V</td>
</tr>
</tbody>
</table>
From the above table 1 it could be inferred that the main reasons for participation of the sample farmers in contract farming was assured price given by the sponsoring company followed by higher yield and better returns. The other reasons for participation in contract farming were timely input availability and consultancy services provided by the firms involved in contract farming.

**Marigold supply chain**

The supply chain represented the full range of activities from the selection of seed through processes along the chain, to delivery of the final product to the consumer. It included input suppliers, producers, processors, packers and movers, wholesalers, traders, retailers, and final consumers.

Marigold is valued as a loose flower for making garlands and also it is used to extract the Oleoresins and Xanthophyll for export purpose. M/s. AVT Natural Products Ltd. And Synthite was the companies involved in contract farming of marigold for Xanthophyll production. Following three important supply chains were identified in the study area in case of marigold marketing. These channels were transmitting more than 70 per cent of the marigold flowers traded in the study area.

**Supply chain of marigold in non contract farming**

**Channel I**

Producer → Commission Agent → Retailer → Consumer

**Channel II**

Producer → Commission Agent → Wholesaler → Retailer → Consumer

**Supply chain of marigold in contract farming**

**Channel III**

Producer → Processor cum exporter → Consumer

The channel I and II were the important channels in non contract farming, because major portion of the produce was marketed through these channels. Channel III is another important channel where the farmers were selling the flowers directly to the processor through the contract farming system.

**Price Spread of Marigold**

The price paid by the consumer and the price received by the farmer is not the same and as the crop produce passes through marketing channel the produce is reprised again. In the marketing of agricultural commodities, the difference between the price paid by the consumer and the net price received by the producer for an equivalent quantity of the crop produce is known as price spread. This represented the difference between the net price received by the producer-seller (PNP) and the price paid by the ultimate consumer i.e. difference between Producer’s Net Price (PNP) and Retailer’s Selling price (RP).

\[
PS = RP - PNP
\]

In other words, it includes (I) the total costs of marketing (TMC) incurred by producer-sellers and market intermediaries excluding the commission agent and (ii) the net profit (NP).
accrued to the intermediaries in the process of moving the produce from the producer-seller to consumer (Chole, 2003).

\[ PS = TMC + NP \]

**Producer**

From the Table 2, it could be inferred that producer was getting a net price of Rs. 372.5 per quintal of marigold in channel I and II and Rs. 600 in channel III. Marketing cost incurred by the producer is Rs. 27.5 in non contract farming channels I and II, but in channel IV marketing cost is nil because they directly sell the flowers to processor through contract farming. The channel IV gives the highest net price (Rs. 600) to the producer because of the contract farming arrangement between producer and processor.

**Commission agent**

A commission agent does not take the title of the flowers traded and they receive the commission of 1-2 per cent from the wholesaler and retailer in non contract farming. The involvement of middlemen is nil in contracts farming channel III.

**Wholesaler**

The wholesalers incurred marketing cost of Rs. 10 and get the marketing margin of Rs. 100 which is 11.97 per cent of consumer’s price in channel II.

<table>
<thead>
<tr>
<th>Table 2 Price Spread of Marigold (Amount in Rs / Quintal)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Particulars</strong></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td><strong>Producer</strong></td>
</tr>
<tr>
<td>Gross Price</td>
</tr>
<tr>
<td>Marketing cost</td>
</tr>
<tr>
<td>Net price</td>
</tr>
<tr>
<td><strong>Commission Agent</strong></td>
</tr>
<tr>
<td><strong>Wholesaler</strong></td>
</tr>
<tr>
<td>Purchase price</td>
</tr>
<tr>
<td>Marketing cost</td>
</tr>
<tr>
<td>Marketing margin</td>
</tr>
<tr>
<td>Sale price</td>
</tr>
<tr>
<td><strong>Processor</strong></td>
</tr>
<tr>
<td><strong>Retailer</strong></td>
</tr>
<tr>
<td>Purchase price</td>
</tr>
<tr>
<td>Marketing cost</td>
</tr>
<tr>
<td>Marketing margin</td>
</tr>
<tr>
<td>Sale price</td>
</tr>
<tr>
<td><strong>Price paid by consumer</strong></td>
</tr>
<tr>
<td><strong>Price Spread</strong></td>
</tr>
<tr>
<td><strong>Marketing Efficiency</strong></td>
</tr>
</tbody>
</table>
Retailer
The marketing cost incurred by the retailers in various channels are worked out to be Rs. 22 and Rs. 25, whereas marketing margins worked out to be Rs. 250 and Rs. 300 respectively for the channels I and II. This accounts for 37.20 and 35.92 per cent of the consumer’s price.

Consumers
Consumers purchase the flowers from the final retailers for Rs. 672 and Rs. 835 in channel I and II and III respectively.

Processor cum exporters
The companies such as AVT Natural Products Ltd, Synthite etc, were involved in contract farming of marigold for xanthophyll production and they were directly purchasing the flowers from producers at Rs. 600 per quintal.

Grading and standardization
In absence of scientific grading and sorting mechanism, the quality of flowers is graded to different classes based on colour and flower size in non contract farming. Under contract farming the producers have to follow certain guidelines given by the sponsoring company in plant protection aspects.

Packaging and Handling
After harvesting, the flowers are packed in the gunny bags and transported to the flower market. From the flower market, flowers were packed in large sized gunny bags with proper ventilation and transported to the Bangaluru, Hyderabad and Coimbatore markets under non contract farming. In contract farming the flowers are packed in gunny bags and transported to the processing industry through trucks and vans.

Supply chain improvement through contract farming
The supply chain represented the full range of activities from the selection of seed through processes along the chain, to delivery of the final product to the consumer. It included input suppliers, producers, processors, packers and movers, wholesalers, traders, retailers, and final consumers.

Traditionally marigold flowers are marketed mostly in the local markets through two different channels (Channel I and II). But the farmers in these channels were affected by exploitation of middlemen, lack of assured market price lack of advanced production and post harvest technologies and timely availability of inputs etc. Apart from the producers the processor cum exporter in the supply chain were also constrained by availability of raw materials (marigold flowers) both in terms of quantity and quality for continuous operation of the firm. The consumers in the traditional channels were also affected by increased retail price of flowers.
Contract farming system emerges as one of the potential mechanisms to eliminate all those constraints in the traditional supply chain of marigold. According to the contract, the farmer is required to plant the marigold crop on his land, and to harvest and deliver to the contractor a quantum of produce, based upon anticipated yield and contracted acreage based on a pre-agreed price. Towards these ends, the contractor supplies the farmer with selected inputs, including the required technical advice. In contract farming system the farmers were enter into written contract with the sponsoring company, here the harvesting is done by farmers and transportation and processing are done by the sponsoring company.

Under contract farming the farmers were able to get required inputs timely, input credit, advanced production technologies and advisory services from the sponsoring company. Farmers were also getting assured price Rs. 6 per kg of marigold, through contract farming by the way of elimination of middlemen in the marketing channel. In this way the contract farming in marigold cultivation tremendously improved the efficiency of marigold supply chain by improving the efficiency of individual participants in the supply chain.
Problems and constraints in contract farming

<table>
<thead>
<tr>
<th>S. No</th>
<th>Particulars</th>
<th>Number</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Poor quality planting material</td>
<td>12</td>
<td>24.0</td>
</tr>
<tr>
<td>2</td>
<td>Delayed payments</td>
<td>4</td>
<td>8.0</td>
</tr>
<tr>
<td>3</td>
<td>Delay in supply of inputs</td>
<td>8</td>
<td>16.0</td>
</tr>
<tr>
<td>4</td>
<td>Lack of insurance cover</td>
<td>24</td>
<td>48.0</td>
</tr>
<tr>
<td>5</td>
<td>Inadequate field visits</td>
<td>17</td>
<td>34.0</td>
</tr>
<tr>
<td>6</td>
<td>Labour problem</td>
<td>35</td>
<td>70.0</td>
</tr>
</tbody>
</table>

From the above table 3 it could be inferred that shortage of labour was the important problem as noted by the most of the farmers (70%) in the study area followed by lack of insurance cover (48%), inadequate field visit by the company staffs (34%) and poor quality materials (24%). Other than these constraints delay in payment and input were the minor problems faced by the marigold contract farmers.

CONCLUSION

The present study was conducted in sathyamangalam block of Erode district among 50 contract and 50 non contract farmers to examine the different marketing channels in marigold supply chain. The study reveals that majority of the contract farmers in the study area were relatively young, belongs to 31-40 years age group compare to the non contract farmers. The educational levels of contract farmers were also higher than that of non contract farmers. Most of the contract farmers were less experienced and belongs to small and marginal farmer category when compared to non contract farmers. Assured price, higher yield and return were the important reason for participation in marigold contract farming.

In marigold supply chain three channels were identified, Channel I and II in non contract farming and channel III in contract farming. In non contract farming channels the performance of supply chain was affected by lack of assured price, timely availability of input, input credit and lack of advanced production technologies etc to the farmers, lack of quantity and quality of raw materials to the processors and higher price to the final consumers. The supply chain efficiency was improved through contract farming system (channel III) where the farmers were getting timely inputs, technologies and advisory services from sponsoring company and the company also gets right quantity and quality of raw materials from producers. Labour shortage, lack of insurance cover and inadequate field visits by the company staffs were major problem faced by the farmers in marigold contract farming. Even though the farmers face few constraints in contract farming they like to continue with the contract farming arrangement in the future.
REFERENCES


