



E-ISSN: 2278-4136

P-ISSN: 2349-8234

www.phytojournal.com

JPP 2020; Sp 9(3): 80-84

Received: 21-04-2020

Accepted: 25-05-2020

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A study on davanam under contract farming in Karnataka

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Abstract

The research study was conducted during 2019-20 in Chikkaballapur district of Karnataka, India. In total 80 Davanam farmers under contract farming constituted the sample size of the study. The data were collected by employing personal interview method using pre-tested interview schedule. Ex-post-facto research design was used for the research study. Mean, Standard Deviation, Frequency, Percentage Grouping, t-test and Garrett's ranking statistical tools were used for analyzing the data. The results revealed that in Rabi season farmers grow Davanam in 71.67 per cent of total grossed cropped area. The Davanam has the highest B:C ratio at 2.73 with the cost at Rs.87,290, gross returns at Rs.2,37,800 and net returns at Rs.1,50,642. The farmers were happy with the higher returns realized from Davanam compared to other crops. The contract farming had positive and significant impact on the social variables- organizational participation and extension contact and economic variables-annual income, savings and material possession. Cent per cent of Davanam farmers had written agreement with the companies and cent per cent of payment was made through cheque. Cent per cent of the farms were visited by the supervisors of the contracting company during seedbed preparation, Plant protection (85.00%), planting (82.50%) and weeding (63.75%). The major production problems reported were non-availability of skilled labours (75.15%), high wage rate (70.21%), incidence of pests and diseases (55.75%) and lack of technical guidance (50.90%). The major marketing problems were irregular payment by the company (70.63%) and manipulation of norms by the firms (56.01%). The major environmental problems were high water requirement (76.55%) and high intake of inputs (69.51%). Advance to the farmers by the company to take up timely production (97.50%), higher price to the produce (95.00%), regular payment by the company (93.75%), on time supply of inputs by the company (88.75%) and crop loan by the financial institutions (73.75%) were suggested by majority of farmers to make contract farming more effective.

Keywords: Davanam, contract farming, cropping pattern, socio-economic status, modus operandi

1. Introduction

Indian population majorly depends on agriculture for their basic necessities. Large number of farmers are small and marginal farmers. If the farmers would able to make an effective production choice then they will not be constrained to the optimal input and output levels. Increased production may not essentially lead to generate higher incomes, particularly in which there may be variation in price, markets are not properly planned and controlled and inefficient access into the market is restricted. There is a feeling that in the era of liberalization and globalization small farmers are neglected they are unable to get higher benefits due to their shattered and unprofitable size of land holdings and inadequate access to the external inputs and output services. Against this backdrop, vertical coordination through established arrangements is much needed to link the product features and production processes to the choices of the consumer. This has led to the concept of 'Contract Farming'. Contract Farming defined as a system of production and supply of agricultural produce by farmers under forward contracts. Such arrangements are being a commitment to provide agricultural produce of a type, at a specified price and in a specified quantity to a known buyer. Indian farmers are facing threats at present situation. It can solved through contract farming could be one of the best solutions which may decrease the polarization of rich and poor. This may encourage Indian farmers to compete with the very large, rich and highly indirect subsidized western farmers. The contract farming system forms the most heartening part of the vision of the National Policy on agriculture.

Davanam (*Artemisia pallens*) is well known for its aroma and is generally known as scent crop. It is a native of South India. India holds key position in production of Davanam oil and acquired considerable reputation in international trade. Annual production is about 2 tons/annum and mostly grown in Kashmir valley, Simla, Nainital Hills, Karnataka, Tamil Nadu, Uttar Pradesh and Andhra Pradesh.

Davanam cultivation under contract farming is highly profitable, even small farmers can practice it. Risk involved due to fluctuation in market price is minimized through contract farming. Farmer is assured of better returns compared to other field crops as the companies offer remunerative prices. There are no reported studies holistically addressing Davanam production under contract farming. Hence, the present study is undertaken with the following specific objectives.

1. To study impact of contract farming on Socio-Economic Status of Davanam Farmers.
2. To analyze the Cropping Pattern of Contract Farming Farmers.
3. To analyze Modus Operandi in Contract Farming in Production of Davanam
4. To document problems and suggestions of Davanam farmers under contract farming to make it more effective.

2. Methodology

The research study was conducted in Chikkaballapur district of Karnataka, India. Based on the high production two taluks viz., Gauribidanur and Chikkaballapur were purposively selected. From each selected taluk 40 Davanam contract farming farmers were randomly selected. Thus, the total sample size for the research study was 80 respondents. The data were collected by employing personal interview method using pre-tested interview schedule. Ex-post-facto research design was used for the study. The data were scored as per the

set standards and tabulated. Keeping in view the objectives of the study and amenability, the data were subjected to different statistical tests. These tests includes mean, standard deviation, frequency, t-test, percentage grouping and Garrett's ranking.

3. Results and Discussion

3.1 Impact of Contract Farming on Socio-Economic Status of Davanam Farmers

The results presented in Table-1 indicates that all the indicators of social variables viz; organizational participation (9.28), extension contact (6.46), mass media exposure (1.88), and extension participation (1.72) had shown positive change due to contract farming in Davanam. If we look at the overall improvement in socio-economic status of farmers it showed that mean difference is increased due to contract farming. It is very curious to know that there was a good economic impact with respect to annual income (Rs. 2, 37, 800) which is evident in the mean difference increase. On the other hand it was interesting to note that there was a decrease in draft power (Rs. 3650) had shown mean difference decrease due to contract farming. In savings there was an increase (Rs. 96,625) due to contract farming from farmer's income which was more compared with the other variables except annual income (Rs.4, 03,253). But when we saw the overall social and economic impact all the indicators were found to be significant at one per cent level, whereas extension participation, mass media exposure were non-significant. The findings are in conformity with the findings of Sahana (2013).

Table 1: Impact of Contract Farming on Socio-Economic Status of Davanam Farmers

Sl. No.	Variable	Mean score		Mean difference due to contract farming	Paired t-value
		Before contract farming	After contract farming		
1.	Social Variable				
a.	Extension Contact	5.10	11.56	6.46	8.07**
b.	Extension participation	12.75	14.47	1.72	0.68NS
c.	Mass media exposure	5.25	7.13	1.88	0.71NS
d.	Organizational participation	12.75	22.03	9.28	8.48**
2.	Economic Variable				
a.	Annual income (Rs.)	165453	403253	237800	515**
b.	Savings (Rs.)	16700	96625	79925	3.71**
c.	Material possession				
	i. Draft Power (Rs.)	6975	10625	3650	4.46**
	ii. Farm implements(Rs.)	9275	27457	18182	3.59**
	iii. Household materials	5723.75	45930	40206.25	5.49**

(n=80)

3.2 Cropping Pattern of Contract Farming Farmers

The Cropping pattern of Davanam contract farming farmers is presented in Table-2. It is evident that 16.10 per cent of the total gross cropped area is under maize, 16.09 per cent is under field bean, 10.32 per cent is under tomato and 0.37 per cent is under other vegetables in Kharif season, In Rabi season Davanam occupies 17.61 per cent, followed by carrot (17.04%), In summer season carrot occupies 8.00 per cent, followed by maize (7.18%) and other vegetables (7.29%). As compared with the three seasons Kharif has a major cultivation of crops followed by Rabi and Summer.

Cropping pattern followed by farmers in a particular area

depends on rainfall condition, irrigation facilities and commercial importance of crops, food habit and climatic conditions of the area. It is evident that Davanam farmers diversify their cropping pattern mainly to minimize the risk of crop failure, since major proportion of their operational holdings was under rabi season. As they have taken up labour intensive and highly risk oriented production activity on their farm, they were not in a position to include other crop enterprises, which requires more investment. As a result, the cropping pattern was mainly maize, followed by tomato and vegetables. The findings of present study are in line with the findings of Keshavamurthy (2005) ^[3].

Table 2: Cropping pattern of contract farming farmers

Sl. No.	Particulars	Area (ha)	Per cent to Gross Cropped Area
I	Kharif		
1	Maize	53.01	16.10
2	Field bean	53.00	16.09
3	Tomato	34.00	10.32
4	Other Vegetables	1.22	0.37
II	Rabi		
5	Davanam	58.00	17.61
6	Carrot	56.11	17.04
III	Summer		
7	Carrot	26.36	8.00
8	Maize	23.64	7.18
9	Other Vegetables	24.00	7.29
IV	Gross cropped area	329.34	100.00
V	Net cropped area		141.23
VI	Cropping intensity (%)		233.194

(n= 80)

3.3 Incremental BC ratio (IBCR) of Davanam over other Competing Crops

The data in Table-3 reveals that the Davanam has the highest B: C ratio at 2.73 with the cost at Rs.87,290, gross returns at Rs.2,37,800 and net returns at Rs.1,50,642. Followed by Field bean with B: C ratio at 2.67 with the cost at Rs.37,050, gross returns at Rs.98,800 and net returns at Rs.61,750. The carrot with B: C ratio at 2.61 with the cost at Rs.56,810, gross returns at Rs.1,48,200 and net returns at Rs.91,390. Maize with B: C ratio at 2.50 with the cost incurred at Rs.44,460, gross returns at Rs.1,11,150 and net returns at Rs.66,690. The Tomato with B:C ratio at 2.32 with the cost incurred at Rs.74,471, gross returns at Rs.1,72,900 and net returns at Rs.98,430.

As per the results the farmers were happy with the higher returns from Davanam compared to all other crops. The incremental BCR is more in tomato followed by maize, carrot and field bean, So Davanam is higher when compared with other crops, for every rupee of incremental cost incurred on growing maize is giving an incremental benefit of rupee 2.96 followed by tomato where every rupee of additional cost is earning 5.07 rupees of additional income, followed by carrot at 2.94 and field bean at 2.77.

Table 3: Incremental BC Ratio (IBCR) of Davanam over Other Competing Crops/Hectare

Sl no.	Crop	Cost	Gross returns	Net returns	B:C ratio
1	Maize	44460	111150	66690	2.50
2	Tomato	74471	172900	98430	2.32
3	Carrot	56810	148200	91390	2.61
4	Field bean	37050	98800	61750	2.67
	Davanam	87290	237800	150642	2.73
		Incremental cost	Incremental benefits	Incremental net returns	IBCR
1	Maize	42830	126650	83820	2.96
2	Tomato	12820	64900	52081	5.06
3	Carrot	30480	89600	59120	2.94
4	Field bean	50240	139000	88760	2.77

(n= 80)

4. Modus Operandi in Contract Farming in Production of Davanam

The company selects the contract farming farmers through facilitators of the company based on the locality of the farm, size of holdings, field history, economic conditions of the farmers, source of irrigation, willingness to cultivate and his

level of commitment to the contract. The contractual arrangement between the company and farmer is presented in following paragraphs.

4.1. Type of Agreement

From Table-4 it is clear that cent per cent of Davanam farmers were undergone contract farming in written agreement with the companies and none of the farmers undergone with oral agreement. In the agreement farmers were entitled to produce the crop within the time period which was agreed during the contract signing with the company. The written agreement referred to a signed confirmation from the farmer that he/she wished the company to reserve a contract for him/her. The technical aspects of the agreement were drafted in short, simple terms, clarifying the responsibilities of both farmer and the firm. Agreements for many farmers were only a formality or perhaps, involved just a change of name of a family member. The firm's field extension staff must also have a clear understanding of terms of the agreement. The results are in line with the studies of Vinayaka (2005) ^[6] and Pramod Kumar (2018) ^[4].

The Farmers expressed that while making written agreements the firms must consider the possibilities of abnormal situations occurring that were beyond their control, such as drought, floods, cyclones, pests and diseases. Farmers expressed that the farmers and their representatives must be given an opportunity to contribute in drafting the agreement and assist in wording of specifications in terms that farmers can understand. The firms expressed that in contract farming, it is unlikely that a firm will take legal action against contract grower for breach of the contract. The costs involved were inclined to be far excess of the amount claimed and legal actions threatens the relationship between the firm and farmers, not just those against whom action was taken. Action by a farmer against a company was similarly improbable. However, the improbability that a contract or agreement will be used as the basis for legal action does not mean that contract agreements should not be used. They can benefit both the parties by clearly spelling out the rules of relationship. However, the terms of contract seems bonding on the part of the farmer and not the company. The farmer after his willingness to undertake contract farming has to sign the agreement along with witness. The agreement was with contracting firm until the termination of contract. Invariably, the agreement between producers and the company was written and hence the terms and conditions of contract is binding on the part of both farmers and the company.

4.2 Mode of Payment

From Table-4 it is clear that the cost fixed by the companies for production by the farmers was mainly based on the total cost incurred for production by the farmers and by estimating the fluctuation in price. The price fixed by the companies for Davanam was different from company to company. After the harvest of the crop the company procures the produce by the farmers. The company takes under some essential steps like cleaning, drying and undertake extraction of essential oil and will check with the laboratory conditions and confirm the percentage of the essential oil. Once the oil passed with the lab test and confirmed essentiality of the oil then the companies pay the amount through cheque (100%) which was agreed between the farmers and the company. The findings are in line with the findings of Pramod Kumar (2018) [4].

After the extraction of Davanam oil the firm will conduct purity test and physical test. Usually after the harvest it will take two to three months to make payment as the company will take necessary processing activities like cleaning, drying, homogeneity test and physical test, if the farmers produce failed to pass the minimum homogeneity test and physical test as set by the companies then the farmers won't get any payment from the company. The payment to the farmers was done through the cheque two to three months after harvest, so most of the farmers expressed their opinion that companies must give advance to carry out the production activities like land preparation, seedbed preparation, planting, weeding, plant protection chemicals and harvesting.

4.3 Field Visits by Field Officers of the Contracting Company

Table 4: Modus Operandi Prevailing in Davanam Production under Contract Farming (n=80)

Sl No.	Particular	No.	Per cent
1.	Type of Agreement		
a.	Written	80	100.00
b.	Oral	-	-
	Total	80	100.00
2.	Mode of Payment		
a.	Through Cheque	80	100.00
b.	In Cash	-	-
	Total	80	100.00
3.	Field visits by field officers of contracting company		
a.	Land Preparation	13	16.25
b.	Seed bed Preparation	80	100.00
c.	Planting	66	82.50
d.	Weeding	51	63.75
e.	Plant protection	68	85.00
f.	Harvesting stage	31	38.75

In contract farming the company has full right to visit the field of farmers at any time and supervise all the operations carried out during the production and advices were given to the farmers by the company supervisor. From the Table 4 it is clear that cent per cent of the farms were visited by the supervisor during seedbed preparation (100.00%), plant protection (85.00%), planting (82.50%), weeding (63.75%), harvesting (38.75%) and land preparation (16.25%). The findings are in line with findings of Pramod Kumar (2018) [4]. Regular field visits by the company personnel's will help the farmers to take up all the field operations timely and in a proper way. The Company staff will give suggestion to

farmers to take up all agricultural operations like land preparation, sowing, planting, weeding, plant protection and harvesting. The regular field visit of company personnel's benefits both farmers and the company.

5. Perceived Problems of Davanam Contract Farming Farmers.

The perceived problems of Davanam production under contract farming presented in Table-5 were categorised into Production problems, marketing problems and Environmental problems. The production problems on the order of ranking were non availability of skilled labours (75.15%), high wage rate (70.21%), incidence of pests and diseases (55.75%), lack of technical guidance (50.90%), non-availability of high yielding varieties (45.13%), climatic factors (40.82%), non-availability of seeds on time (35.88%). The marketing problems on the order of ranking were irregular payments by the company (70.63%), manipulation of norms by the firms (56.01) and low contract price (49.54%). The environmental problems on the order of ranking were high water requirement (76.55%) and high intake of inputs (69.51%). These findings are in conformity with the findings of Harish (2018) [2] and Pramod Kumar (2018) [4].

Table 5: Perceived Problems of Davanam Contract Farming Farmers

Sl. No.	Problems	Garret Score	Rank
I. Production Problems			
1	Non availability of skilled labours	75.15	I
2	High wage rate	70.21	II
3	Incidence of pests and Diseases	55.75	III
4	Lack of technical guidance	50.90	IV
5	Non availability of high yielding varieties	45.13	V
6	Climatic factors	40.82	VI
7	Non availability of seeds on time	35.88	VII
II. Marketing Problems			
1	Irregular Payments by the Company	70.63	I
2	Manipulation of norms by the firms	56.01	II
3	Low contract price	49.54	III
III. Environmental Problems			
1	High water requirement	76.55	I
2	High intake of Inputs	69.51	II

(n=80)

6: Suggestion of Davanam Contract Farming Farmers to make it More Effective

The suggestions of contract farming farmers for improvement in contract farming were presented in Table-6 shows that the advance to the farmers by the company to take up timely production (97.50%), higher price to the produce (95.00%), regular payment by the company (93.75%), on time supply of inputs by the company (88.75%), crop loan by the financial institutions (73.75%) were suggested by majority of the farmers. These findings are in accordance with the findings of Harish (2018) [2].

Majority of the farmers are small and marginal farmers and they don't have more capacity for investment therefore they suggested for providing advance by the company to take up production, supply of inputs by the company and crop loan to the farmers by the financial institution. In addition, the source of water to majority of the farmers was bore well and cultivation mainly depends on availability of water in the bore well and tanks which intern depends on climate and rain fall which makes production under risk.

Table 6: Suggestions of Davanam Contract Farming Farmers to make it More Effective

SL. No	Particulars	No	Per cent	Rank
1	Advance to farmers by the company to take up timely production	78	97.50	I
2	Higher price to the Produce	76	95.00	II
3	Regular payment to the Farmers by the company	75	93.75	III
4	On time supply of inputs to the Farmers by the company	71	88.75	IV
5	Crop loan to Farmers by the financial institutions	59	73.75	V

(n = 80)

Conclusion

Contract farming can indeed may be a vehicle for modernization of agriculture in India. The agro-based industries require timely and adequate inputs for good quality agricultural produce. This underlying paradox of the Indian agricultural scenario has given birth to the concept of contract farming which promises to provide a proper linkage between farm and the market. Contract farming could be one of the best solutions which may decrease the polarization of rich and poor and thus encourage Indian farmers to compete with the very large, rich and highly indirect subsidized western farmers. The contract farming system forms the most heartening part of the vision of the National Policy on Agriculture. The farmers were happy with higher returns from Davanam compared all other crops. Its impact on socio-economic status of farmers is positive and significant. Further, as majority of farmers suggested the firms may supply critical inputs on time with advance facility and regular payment to farmers to make Davanam contract farming more effective.

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