Contract Farming of Medicinal Plants and its Impact on Farmers

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ABSTRACT

The Model Contract Farming Act,2018 is a revolutionary step which promises a win-win situation for both farmers and ayurvedic firms. By entering into contract farming agreement, it provides an assured income and market which promotes sustainable development for rural farmers. The Census method was used to collect data, and population size is 196 farmers. Statistical Package for Social Sciences (SPSS) software has been included in the study to analyse data by using tests like Factor analysis and Multiple regression methods. To measure the reliability of the questionnaire, Cronbach's Alpha method was employed and obtained the value **0.862.**The results indicated that the increased demand for local input, easy access to credit and incentives, assured market, access to local and reliable market and promote export quality are the significant factors which lead to the farmer's perception towards contract farming. This study will help for extensive cultivation of medicinal plants that will generate more job opportunities in rural areas and promote the sustainable development of rural farmers.

Keywords: Contract farming, Technology, Marketing, Sustainable development

1.INTRODUCTION

Medicinal plants have significantly influenced the socio-cultural and spiritual lives of the rural population in Kerala. It has two-fold dimensions; one from an industrial and health care perspective and another from a sustainable rural development perspective. Medicinal plant sector is commonly projected as one of the potential industries of employment promotion in rural areas, mainly because of the growing demand for Ayurveda. Rising demand for Ayurveda has paved the way for too many manufacturing units in Kerala. There are around 700 Ayurvedic drug industries producing medicines worth 1,000 crores a year in Kerala. Medicinal plants are the primary raw materials used for the preparation of drugs in these ayurvedic industries. It is a source of living for many rural populations which makes an earning through medicinal plant cultivation. Aside from this even in many of the modern medicines, the elemental content is extracted from the medicinal plant base, and these have become very well recognized due to fewer aftereffects, less price, lasting therapeutic properties and nature -friendly attitude. This has further intensified the demand for medicinal plants. Therefore, cultivation of medicinal plants to meet the growing demands can be a potential provider of returns to the rural farmers in Kerala. It is a labor-intensive activity which involves the preparation of land, planting and weeding, collection of plants, drying, harvesting and processing, packing, transporting and selling of plants. In addition to industries-based jobs, medicinal plant cultivation also enhances the possibilities by value-added processing method, which increases the cash earnings of the rural farmers and helps to gain sustainable development in the economy.

In order for this purpose, a study was done to figure out the farmer's perception and important factors that influence farmers towards contract farming. This study will help for large scale cultivation of medicinal plants that will generate more job opportunities in rural areas and promote the sustainable development of rural farmers.

2. RESEARCH BACKGROUND

Even though there is a rise in demand for medicinal plants, which is evolved from the demand for Ayurvedic medicines has not upgraded the standard of living of the farmers. This is because there is no relation between the price paid to farmers and the actual wholesale price prevailing in the medicinal plant market. The cultivators of the medicinal plants get only a fraction of the amount paid by the ayurvedic industries. This is because, there involve many players in the supply chain like private traders, commission agents, wholesalers, final consumers etc. and price of these plants varies when it passes from one player to another. The players in the supply chain usually increase their profit margin by purchasing the medicinal plants at a lower cost because of the less bargaining ability and ignorance of farmers about the market price. So, this will ultimately end up in the exploitation of farmers in the supply chain.

Considering the problems faced by farmers, the State Medicinal Plant Board (SMPB) encourages large scale cultivation of medicinal plants by forming a direct link between the farmers and ayurvedic manufactures through a contractual agreement. By entering into contract farming agreement, the farmers ensure to cultivate medicinal plants according to the specified quantity and quality standards stipulated by the company. The company will get supplies of right quality, which is otherwise difficult in case of medicinal plants collected from the forest. In return, farmers receive a fixed remuneration from the company at the time of delivery. It provides the farmers with an assured income and market. Availability of assured markets and a remunerative price for the products are two essential aspects that play a major role in encouraging farmers. The contract contains clauses which provide inputs like planting material, fertilizers, monetary incentives, technology and training from experts. Contract farming will increase their yield in substantial quantity and thereby, farmers could sell the plants directly to ayurvedic companies without depending on intermediaries.

As the market system of medicinal plants is highly complexed, the farmers will not be successful alone without the help of an efficient cooperative society. A cooperative society can function as a reliable agency for marketing with a direct bind to ayurvedic companies and protect the interest of farmers. Oushadhavanam is a tripartite model of contract farming agreement, implemented by a cooperative labour society based at Thrissur district in Kerala for the past few years has been proposed as a model to be emulated. Tripartite model is a combination of private companies, non – governmental organizations and farmers who were necessary to coordinate and manage the contract farming system (Eaton & Shepard, 2001). The society has a tie-up with farmers to cultivate medicinal plants, which they are buying back and selling through contract farming agreement to ayurvedic manufactures for long-standing business. By forming clusters of farmers, it would help them in gaining economies of scale by cultivating plants in bulk quantities and easily avail subsidies from the government; thereby it will help to improve the sustainable development of farmers. The State Medicinal Plant Board (SMPB) is providing funds for procuring seedlings. The Kerala Forest Research Institute (KFRI) had been appointed as a nodal agency for the project, and they would offer technical help on the feasibility of cultivation considering the agroclimatic conditions of respective regions. This institute would also ensure the quality of the medicinal plants cultivated by farmers.

3. REVIEW OF LITERATURE

The contract farming of medicinal plant cultivation is a recent phenomenon in India and research in this field is still at the early stages. In a study on contract farming on medicinal plants (Choudhary Balram,2012) observed that the fall in the collection of wild herbs threatens the growth of the ayurvedic industry. Due to continued collection and increasing market demand, numerous plant species are threatened with extinction (Petra Van De Kop and Ghayur Alam,2006). This has a particularly negative impact on the incomes of the poorest sections of rural societies. A majority of India's marginal farmers, already reeling under debt and wide price fluctuations for regular harvests of rice, wheat or vegetables, are unwilling to risk herb cultivation. For organised collection, strict governmental control measures are required. This brings to the possibility that cultivation of medicinal plants offers a greater opportunity for poor people. It is important that the potential of cultivation of medicinal plants is investigated and the possibilities of contract farming are explored through action-research programmes. In such circumstances, a research-oriented multinational health science company, Sami Labs, has taken over 4000 acres of land under medicinal plant cultivation and restated its commitment to contract farming for medicinal plants by acquiring nearly 20,000 acres of land in various places. The study analyses that through contract farming, there

has been tremendous development in medicinal plants sectors. It also provides various benefits to farmers like improved access to local markets, assured income, enhanced farmer access to production inputs, mechanization and transport services and extension advice.

Many studies have reported that it is the farmer's perception of high returns and low risk involved, that influences farmers decision to contract. Access to credit and timely supply of inputs are the other important factors that induce farmers to join contract farming. Arumugam et al. (2010), further notes that access to marketing information and transfer of technology as another important reason to join CF. (Eaton & Shepherd, 2001; Deshpande, 2005; Singh & Ashokan, 2005; Guo (2008), Wang et al. (2011); Barrett et al., 2012).

4. METHODOLOGY

4.1 PARTICIPANTS

The study is a descriptive one, and the census method was used to collect data from 196 participants. The data was collected from medicinal plant farmers in the state of Kerala in India. The study was operated in Thrissur, Malappuram, Palakkad, Wayanad and Ernakulam districts of Kerala. There were two main reasons for the selection of these districts: firstly, because these districts were purposively selected because of the highest achievable medicinal plants and secondly, because of the quality and yield are exceptional, and the soil is suited for medicinal plant production in these areas. The demographical characteristics of the farmers are summarized in table 1: mostly female farmers, with matriculation education, having 10-20 years of farming experiences.

TABLE 1

Demographical characteristics of the farmers

Variables	Category	Count	Percentage
Gender	Male Female	83 113	42.3 57.7
Education	Below matriculation Matriculation Higher sec Diploma Graduate PG	39 76 21 23 33 4	19.9 38.8 10.7 11.7 16.8 2.1
Farming Experience (years)	10-20 21-30 Above 30	126 49 21	64.3 25 10.7

Source: Primary Survey

4.2 INSTRUMENTS

The data were collected from 196 medicinal plant farmers through a structured questionnaire and interview schedule. The items were measured using Likert five-point rating scale, ranging from strongly disagree (1) to

strongly agree (5). To measure the reliability of the questionnaire, Cronbach's Alpha method was employed and obtained the value **0.862**. From this study, hypothesis was generated, and a principal component factor analysis has been used to reduce its size and conducted a regression analysis to test the hypothesis using Statistical Package for Social Sciences (SPSS) software.
The research objectives and hypothesis of the study are illustrated below.

Objective 1*:* To understand the farmers' perception of contract farming of medicinal plants
Objective 2: To find out the important factors of contract farming among medicinal plant farmers.
Objective 3: To examine the strong predictor of contract farming among medicinal plant farmers

Hypothesis: There is a positive relationship among the factors that have an impact on medicinal plant farmers towards contract farming.

5.RESULTS AND DISCUSSIONS

5.1. Factor Analysis

KMO AND BARTLETT'S TEST

For the purpose of study 16 factors which impact on contract farming of medicinal plants was examined through factor analysis method and the reliability was tested to find its internal consistency for grouping of each item. The factors were presented in the form of statements with a five-point Likert scale to collect response from contract farmers. The factor analysis has been used to reduce the data collected on 16 variables into a smaller number of manageable variables by exploring common dimensions existing among the variables.

TABLE 2

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.780
Bartlett's Test of Sphericity	Approx. Chi-Square	2270.373
	df	120
	Sig.	.000

Values between 0.6 to 1.0 shows that factor analysis is appropriate. Values below 0.6 imply that factor analysis may not be appropriate. Here, the value of Kaiser-Meyer-Olkin Measure of Sampling Adequacy index is .780, which indicates that factor analysis is useful for the present data set. The significant value is 0.000, which is less than 0.05 and it indicates that there is a significant relationship among the variables.

TABLE 3

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	6.150	38.440	38.440	6.150	38.440	38.440	3.540	22.123	22.123
2	2.352	14.697	53.137	2.352	14.697	53.137	2.871	17.945	40.068
3	1.615	10.092	63.229	1.615	10.092	63.229	2.035	12.716	52.784
4	1.200	7.499	70.728	1.200	7.499	70.728	1.969	12.303	65.087
5	1.027	6.420	77.148	1.027	6.420	77.148	1.930	12.061	77.148
6	.842	5.262	82.410						
7	.723	4.521	86.931						
8	.579	3.619	90.550						
9	.375	2.347	92.897						
10	.293	1.832	94.730						
11	.205	1.283	96.012						
12	.178	1.112	97.125						
13	.154	.964	98.089						
14	.130	.811	98.900						
15	.108	.675	99.575						
16	.068	.425	100.000						

Extraction Method: Principal Component Analysis.

The number of factors for which 'Eigen values' with greater than unity is taken by using Principal Component Analysis method. In this study there are 16 factors that impact on contract farming of medicinal plants. The extraction sums of squared loadings give data about the extracted factors. Here from the below table it is inferred that the extraction of sum of loading gives 5 major factors.

TABLE 4

Rotated Component Matrix (a)					
	Component				
	1	2	3	4	5
Assured market	.890				
Promote export quality	.807				
Access to local &reliable market	.737				
Increase demand for local input	.655				
Easy access to credit and incentives	.499				
Production and Marketing training		.773			
Improvement in skills		.759			
Providing technical advice		.752			
Guaranteed pricing system	.579	.588			
Women empowerment	.534	.570			
Provide self-employment opportunities			.921		
Provision better input			.889		
Improved local infrastructure				.873	
Reduce unemployment among youth				.859	
Improving management skills					.947
Application of better technology					.935

The five factors with Eigen value greater than 1 are 77.14 percent and the rest of the variance is explained by other variables. Among the five factors, the first factor has 22.12 percent of variance which is the prime factor considered by any contract farmers. From the table it is inferred that the following factors namely assured market, promote export quality, access to local &reliable market, increase demand for local input, easy access to credit and incentives are **Factor 1** with the factor loading value of 0.890,0.807,0.737,0.655 and 0.499. In **Factor 2** production and marketing training, improvement in skills, providing technical advice, guaranteed pricing system, women empowerment with factor loading value of 0.773,0.759,0.752,0.588 and 0.570. In **Factor 3** provide self-employment opportunities and provision better input contributes with the factor loading of 0.921 and 0.889. In **Factor 4** improved local infrastructure and reduce unemployment among youth contributes with the factor loading value of 0.873 and 0.859. In **Factor 5** improving management skills and application of better technology contributes with the factor loading value of 0.947 and 0.935.

5.2 MULTIPLE REGRESSIONS

TABLE 5

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.745[a]	.554	.515	.705

a. **Predictors**: (Constant), Provide self-employment opportunities, Improving management skills, Reduce unemployment among youth, providing technical advice, easy access to credit and incentives, Assured market, Increase demand for local input, Women empowerment, production and marketing training, improvement in skills, improved local infrastructure, promote export quality, provision better input, Application of better technology, Access to local &reliable market, guaranteed pricing system

b. **Dependent Variable**: Farmers motivated towards contract farming

The correlation of R and its value is 0.745 and R square is degree of determination, its value is 0.554.The degree of determination shows the extent to which improvement of management skills, provide self-employment opportunities, reduce unemployment among youth, providing technical advice, easy access to credit and incentives, assured market, increase demand for local input, women empowerment, production and marketing training, improvement in skills, improved local infrastructure, promote export quality, provision better input, application of better technology, access to local &reliable market and guaranteed pricing system influence the factors towards contract farming.

TABLE 6

ANOVA						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	110.774	16	6.923	13.918	.000[b]
	Residual	89.042	179	.497		
	Total	199.816	195			

The above ANOVA table shows that the significant value is less than 0.01, which means dependent variable, that is, factors motivates towards contract farming is predicted significantly by independent variables such as improvement of management skills, provide self-employment opportunities, reduce unemployment among youth, providing technical advice, easy access to credit and incentives, assured market, increase demand for local input, women empowerment, production and marketing training, improvement in skills, improved local infrastructure, promote export quality, provision better input, application of better technology, access to local &reliable market and guaranteed pricing system at 99 % of confidence level.

6.CONCLUSION

The uneasiness of the people with western medicines due to its after-effects and flying increase in price has enforced people to consider and revive their faith in traditional medicines, especially Ayurveda. The rural population also depend upon traditional medicines, chiefly medicinal plants for their primary health care. This rejuvenation in traditional insight had led to an expansion in the large-scale production of Ayurvedic medicines. The Oushadhavanam tripartite model of contract farming will help for large scale cultivation of medicinal plants that will create job opportunities in rural areas and promote the sustainable development of rural farmers.

Easy access to credit and incentives, assured market, increase demand for local input, promote export quality, access to local and reliable market are the significant factors which motivated farmers towards contract farming.

REFERENCE

Arumugam, N., Fatimah, M. A., Eddie, F. C., & Zainalabidin, M. (2010). Supply chain analysis of fresh fruits and vegetables (FFV): Prospects of contract farming. *Agricultural Economics*, *56*, 435-452.

Barrett, C. B., Bachke, M. E., Bellemare, M. F., Michelson, H. C., Narayanan, S., & Walker, T. F. (2012). Smallholder participation in contract farming: Comparative evidence from five countries. *World Development*, *40*(4), 715-730.

Choudhary Balram (2012), Contract Farming of Medicinal Plants in India, International Journal of Pharmaceutical Erudition,1-5

Deshpande, C. S. (2005). *Contract farming as means of value-added agriculture*. Occasional Paper - 42, National Bank for Agriculture and Rural Development, Department of Economic Analysis and Research, Mumbai.

Dileep B.K., Grover R.K. and Rai K.N. (2002), Contract Farming in Tomato: An Economic analysis, Indian Journal of Agricultural Economics,21

Eaton, C., Shepherd,A, et al. (2001), Contract farming: partnerships for growth, Food and Agriculture Organization of the United Nations.

Glover, D. (1990), Contract farming and outgrower schemes in East and Southern Africa. Journal of Agricultural Economics,Volume 41(3), 303-315.

Guo, J. (2008). An empirical study of farmers cooperative behavior in agricultural marketing – based on farmers in Jiangxi province. PhD thesis, Huazhong Agricultural University, Wuhan.

Hiremath,S.S and Kadam,K.R. (2012), A Study on Contract Farming in Medicinal Plants: A Case Study, Agricultural Situation in India, 211-212

Jagdish Kumar and Prakash Kumar K. (2008) ' Contract Farming: Problems, Prospects and its Effect on Income and Employment,' Agricultural Economics Research Review ,21 ,243-250

Joy, P and Thomas, J., Samuel Mathew and Baby, P. (2001) "Scope of Medicinal, Aromatic and Dye Yielding Crops in Kerala", (Online) https:///www.researchgate.net/publication/305655888,2-6

Karuppasamy, S.P, Varghees Prabhu,S, Jayaprakash,S.,An Empirical Investigation on contract farming and its impact on farmers in India ,https://www.academia.edu/1315402/

Petra Van De Kop and Ghayur Alam (2006), Developing A Sustainable Medicinal-Plant in India, Agro-food chains and networks for development, 191-202

Rajendra Singh Chauhan (2010), Socioeconomic Improvement through Medicinal and Aromatic Plants Cultivation in Uttarakhand, Journal of Sustainable Agriculture, pg no: 647-658

Rangi, P. S. and Sidhu, M.S (2000), A study on contract farming of tomato,Agricultural Marketing,15-23

Singh (2002), Contracting out solutions: Political economy of contract farming in the Indian Punjab. World Development, Volume 30, No. 9, pp. 1621-1638.

Singh, G., & Asokan, S. R. (2005). *Contract farming in India: text and cases.* New Delhi: Oxford & IBH Publishing Co. Pvt. Ltd.

Singh Sukhpal, (2000), 'Theory and practice of contract farming: A review'. Journal of Social and Economic Development, 2(1) ,228-246.

Tiwari, Gaytri, and Ruchi Galundia.(2018) Coping Strategies among Rural Youth from Selected States of India,Indian Journal of Health and Wellbeing,9(6),810.

Wang, H., Zhang, Y., & Wu, L. (2011). Is contract farming a risk management instrument for Chinese farmers? Evidence from a survey of vegetable farmers in Shandong. *China Agricultural Economic Review, 3*(4), 489-504.