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THE IMPACT OF PUBLIC-ASSISTED CONTRACT FARMING PROGRAMMES IN MALAYSIA

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ABSTRACT

Under the Ninth Malaysia Plan (9MP), contract farming was introduced as a high-impact project under the Ministry of Agriculture and Agro-based Industry (MoA) to revitalise the agricultural sector as Malaysia's third pillar of economic growth. The programme had the objectives of providing assured markets and of increasing producers' incomes. Eight departments/agencies under the MoA were given the responsibility to provide assistance and facilitate farmers to ensure the success of the contract-farming programme. The objective of this study was to evaluate the contract farming programme to determine whether it had fulfilled its objectives in terms of production, number of farmers involved, and incomes of farmers. Face-to-face interviews using semi-structured questionnaires were carried out with 107 contract farmers located in the states of Kelantan, Terengganu, Selangor, Johor and Perak. This study revealed that the contract farming programme had improved the production of agricultural products and increased farmers' average total incomes after five years. It was also found that after involvement with the contract farming programme, majority of the farmers marketed their entire produce through the Federal Agricultural Marketing Authority (FAMA).

Keywords: Contract farming, income, farmer, high impact project, Malaysia

INTRODUCTION

Contract farming has gained growing interest in many developing countries in recent years as an institutional innovation to improve agricultural performance. Although contract farming has existed in Malaysia as a private-sector initiative since the 1980's, in recent years, it has seen the involvement of the public sector in the form of planned intervention programmes to assist rural population.

In the earlier days, contract farming was a means for multinational corporations to procure a specific quality and quantity of produce from a dependable source to ensure reliable deliveries of raw materials for local industries and for markets. Nestle Malaysia, for example, sourced for raw material needs locally, if economically feasible, with the aim

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of improving farmers' incomes and promoting good agricultural practices (GAP) (Nestle, 2013). Nestle established a chilli contract farming scheme in the state of Kelantan in 1995.

Contract farming has also been practised in the broiler chicken industry since the 1980's where large companies or integrators obtained their supply of full-grown broilers from contract farmers who operated on small to medium scale (Tan, 1989). Contract farmers were reported to have supplied about 55% of broiler output in 2001 while the remaining 45% were supplied by independent farmers (Sulaiman, 2001). The type of contract farming practised in this country was where the integrator provided all basic inputs (i.e. day-old chicks, feed rations, and veterinary service) to the farmer who agreed to sell back the fully grown broilers to the integrator at mutually agreed prices.

Government involvement in contract farming in Malaysia is a fairly recent development. Under the Ninth Malaysia Plan (9MP), which is a comprehensive blueprint for the country's economic development from 2006 to 2010, the Contract Farming Programme was introduced under the New Agriculture Programme as a high-impact project to revitalise the agricultural sector as the country's third pillar of economic growth (Economic Planning Unit, 2006). The objective of this programme was to provide assured markets and increase producers' income, enhance fruit and vegetable production, ensure quality agricultural production while meeting market needs, and improve technology transfer along the entire supply chain. According to the Programme Charter, problems within the national horticultural industry that included inconsistent and unplanned production, quality that did not meet market needs, less than efficient and unorganised marketing, uncompetitive farm prices, too many market intermediaries and gluts in agricultural produce, were the driving forces that led to the implementation of contract farming under the Ministry of Agriculture and Agro-based Industry (hereafter referred to as MoA) (Ahadiah & Shahiida, 2012).

The Contract Farming Programme involved eight departments/agencies under MoA, namely the Federal Agricultural Marketing Authority (FAMA), Department of Agriculture, Farmers' Organisation Authority, Malaysian Pineapple Development Board, Malaysian Agricultural Research and Development Institute (MARDI), AGROBANK, Ministry of Agriculture and Food Industry State of Sabah, and Ministry of Modernisation of Agriculture Sarawak, with the overall governing body being placed under a committee of the MoA. This integrated approach was taken to ensure that farmers received all the assistance they required to make a success of the contract farming programme while FAMA was entrusted with marketing the produce.

The present study was carried out with the general objective of evaluating the contract farming programme implemented under the MoA. The specific objectives were to study whether the programme had fulfilled its objectives in terms of production, number of farmers involved, and incomes of farmers. The study was approved by the Institutional Review Boards (IRB) whereby the researchers had to ensure that the protection of respondent identity is taken care of as per the guidelines and code of ethics while doing the research. The rest of this paper is organised as follows. Section 2 provides a brief

review of literature on contract farming in less developed countries to provide context for the study. This is followed by a presentation of the methodology used for the study in Section 3. Section 4 presents the results and discussion of the findings. Finally, Section 5 concludes and discusses policy implications.

LITERATURE REVIEW

According to the Food and Agriculture Organisation (FAO), contract farming is an agreement between farmers and processing and/or marketing firms for the production and supply of agricultural products under forward agreements, frequently at predetermined prices (Eaton & Shepherd, 2001). This arrangement usually involves the purchaser in providing a degree of production support through, for example, the supply of inputs and the provision of technical advice. According to Singh (2002), contracts usually involved advance agreement between producers and purchasers on some or all of four parameters, namely, price, quality, quantity, and time of delivery.

Contracting is basically a way of sharing risks between the producer and the contractor; the former takes the risk of production while the latter assumes the risk of marketing (Baumann, 2000). Each party depends on the other and contributes in some way towards the end result: the produce that is needed by the marketing system.

In an age of market liberalisation, globalisation, and expanding agribusiness, there is a danger that small-scale farmers will find difficulty in fully participating in the market economy and as a result, become marginalised (Eaton & Shepherd, 2001). Many income-generation activities for rural people have seen poor results because the necessary backward and forward market linkages are lacking, for example, extension advisory services, mechanisation, seeds, fertilisers, credit, and guaranteed and profitable markets for their output (Eaton & Shepherd, 2001). Against this background, contract farming fills the gap by providing such linkages, and thus provides a channel for smaller producers to meet market requirements.

There are many advantages of contract farming. For the contractor or buyer, there are advantages in terms of a reliable source of supply, which meets requirements in terms of quality, quantity, and timing. For the farmers, advantages include access to production services and credit, technology transfer, reduction of risk and uncertainty, opportunities to diversify into new and more lucrative crops, and guaranteed markets (Kumar & Kumar, 2008; Nagaraj, Chandrakanth, Chengappa, Roopa, & Chandakavate, 2008; Swain, 2009). However, against these benefits, there are several difficulties associated with contract farming. For the farmers, there are the risks associated with the cultivation of a new crop, such as production problems, the possibility that the buyers may not honour their commitments and the danger of indebtedness if problems arise. Also, some contracts are not based on fixed prices but are dependent on the market prices at the time of delivery in which case the farmer may still be subject to price volatility. For the buyer/contractor, problems may arise if the farmers sold their output to outsiders; if the production does not

meet specifications in terms of quantity, quality and the rigid farming calendar; and the possibility of farmers diverting inputs supplied on credit to other purposes (Chang, Chen, Chin, & Tseng, 2006; Freguin-Gresh, Anseeuw, & D'haese, 2012; Kalamkar, 2012; Setboonsarng, 2008).

There are many examples of the implementation of contract farming in less developed countries. However, these are usually carried out by the private sector, unlike the Malaysian scenario where the government is directly involved as the contractor or buyer of produce from the smallholder farmers. It is also uncertain whether these contract farming programmes on the whole have benefited smallholder farmers.

Setboonsarng (2008) points to contract farming of organic crops as a promising option for poor farmers in Lao PDR and Cambodia; this was linked to traditional practices and lower health and environmental risks. Senanyake (2006) notes that contract farming has led to the promotion of cash cropping and commercialization of agriculture in many less developed countries, particularly in Africa and Latin America. There is also evidence that such schemes have encouraged local processing and export of non-traditional crops (Maxwell, 1988); introduced new crops and farming techniques; and improved farm incomes (Glover, 1983; Goldsmith, 1985; Minot, 1986). Contract farming is said to be beneficial to smallholder farmers because it enables farmers to access ready markets, including global markets (Gulati, Birthal, & Joshi, 2005; Key & Runsten, 1999; Warning & Key, 2002). As such, contract farming could assist in enhancing the income of farmers through the economies of scale enjoyed in contract farming.

Risk reduction is a major incentive for producers to enter into contract farming (Covey & Stennis, 1985). However, the reduction in price risk is usually due to the use of a pre-determined price rather than the market price (Martinetz, 2005).

Kumar, Devender, Chakarvarty, Chand and Dabas (2007) in a study in Haryana, India, concluded that contract cottonseed farming had emerged as a viable alternative farming in the post-WTO regime, but changes in the socio-economic and legal frameworks of government policies were needed to encourage the active participation of private sector in cottonseed business and contract farming. Miyata, Minot and Hu (2009) found that contract farming raised incomes in China even after controlling for observable and unobservable household characteristics.

Setboonsarng (2008) noted that with globalisation, market liberalisation, and the rapid development of rural infrastructure, there are many new market opportunities for high-value crops and livestock production in both developed and developing countries, resulting in the increased popularity of contract farming to establish market linkages for the poor in developing countries.

However, contract farming has also received criticisms. According to Singh (2002), unequal bargaining power may lead to exploitation of farmers by large agribusiness firms and the latter may break the contractual terms at the expense of the smallholder due to the

unequal market power. Guo, Jolly and Zhu (2005) argued that contract farming is only beneficial for large-scale farmers and may push smallholder farmers out of the market, leading to rural inequality and entrenching poverty among the rural smallholder farmers. In a study on South Africa, Freguin-Gresh *et al.* (2012) pointed out that on the one hand, contract farming derived benefits such as improved agricultural production and increased incomes for contract farmers, enabled better access to services and resources, and created new opportunities to participate in markets. However, on the other hand, contract farming remained limited and mostly involved those who had already benefited from specific development paths and public support. They concluded that contract farming by itself did not provide an efficient means of reducing poverty, nor provide an institutional tool to improve rural livelihoods.

Nagaraj *et al.* (2008) identified several constraints in the contract farming programme in Karnataka, India, including payment delays, delays in delivery of inputs, manipulation of grades by buyers, and high input costs. In a study on the Tumkur district of Karnataka state, India, Kumar and Kumar (2008) noted that while there were several benefits such as increased incomes of farmers and employment generation, several major constraints were faced by farmers and contracting agencies. While farmers mentioned basic problems like water scarcity, erratic power supplies, lack of credit, and lower prices, contracting agencies faced violations of contractual terms by farmers and price fluctuations on international markets.

However, there are a few cases reported in the literature where researchers have found that contract farming has achieved improved welfare of farmers. For instance, Morrison, Murray and Ngidang (2006) in a study on poultry contact farming in Sarawak, Malaysia, concluded that the state-administered scheme was a success as it had assisted in raising incomes and purchasing power as well as improved the productivity of the participants. In a case study of Orissa, Swain (2009) concluded that the contractual arrangement had increased the income level of farmers and the overall employment level in the rural economy despite several problems faced by the farmers. Similarly, Simmons, Winters and Patrick (2005) found that contract farming in Indonesia had increased farm returns for seed corn and broilers.

METHODOLOGY

To address the research objectives, the project team sought approval from the institutional review boards before conducting face-to-face interviews with the targeted contract farmers in the five states, namely Kelantan, Terengganu, Selangor, Johor, and Perak. The interviewers were selected by the project team to make sure that they did not belong to any organisation. Before the actual data collection was conducted, a one-day training programme was provided to the interviewers. The aim of the training programme was to increase the knowledge of the interviewers in carrying out the interview session with the farmers. The list of farmers practising contract farming was obtained from the FAMA database. Face-to-face interviews were conducted over a period of five days to collect a total of 107 contract farming responses.

A semi-structured questionnaire was selected as the main research instrument for this study. The questionnaire was designed keeping in mind the objectives of this study, and comprised four sections. Section one consisted of questions for demographic profiling of the farmer respondents. The second section consisted of questions related to the respondents' involvement in contract farming activities. The third section consisted of 5-point Likert scale statements, related to issues faced by respondents on production. The 5-point Likert scale ranged from 1 (strongly disagree) to 5 (strongly agree). The questions on cost and yield performance pre- and post-contract farming programme were included in the fourth section.

Throughout this study, the term 'contract farming programme', is synonymous to the Contract Farming Programme conducted by MoA. Prior to the actual survey, a pilot test was conducted with 10 farmers to validate the reliability of the questionnaire and to reduce biasness and inconsistency in the responses. Descriptive analysis was used to get a better understanding of socio-demographic profiles of the respondents, and mean ranking to rank major issues in production and farm yield under contract farming.

RESULTS AND DISCUSSION

Socio-Demographic Profiles of Respondents

The socio-demographic profiles of the respondents are given in Table 1. The results revealed that majority of the respondents were male (93.46%) and the remaining were female (6.54%). The imbalanced figures in the gender of respondents who took part in this study could be a reflection of the domination by male farmers in the agricultural farming sector. Majority of the respondents were older (> 40 years), with 31.78% belonging to the age group of 41-50 years, 26.17% from the age group of 51-60 years, and only 9.35% from the age group of 21-30 years old. In terms of educational level, more than half (53.27%) of the respondents had secondary school education, 34.58% respondents received primary school education, 8.41% had a certificate or diploma level education, and only 3.74% respondents were degree holders. About 89.72% of the respondents were married, and the remaining 10.28% were single. About 98.13% of the respondents were Malay, and the remaining 1.87% were Chinese. About 85.05% of the respondents did farming full time, while 14.95% only did farming part-time. Approximately 46.73% of the respondents were relatively new to the agricultural sector (<10 years of experience), when compared with 3.74% of respondents with 41-50 years of experience in this sector.

Table 1: Socio-demographic Profiles of Respondents

Variables		Frequency (n)	Percentage (%)
Gender	Male	100	93.46
	Female	7	6.54
Age (year)	≤ 20	0	0.00
	21-30	10	9.35
	31-40	19	17.76
	41-50	34	31.78
	51-60	28	26.17
	> 60	16	14.95
Educational Level	Primary school	37	34.58
	Secondary school	57	53.27
	Certificate/Diploma	9	8.41
	Degree/Bachelor	4	3.74
Marital Status	Married	96	89.72
	Single	11	10.28
Race	Malay	105	98.13
	Chinese	2	1.87
Farmer's Status	Full time	91	85.05
	Part time	16	14.95
Experience in the Agricultural Sector (year)	≤ 10	50	46.73
	11-20	26	24.30
	21-30	18	16.82
	31-40	9	8.41
	41-50	4	3.74
	Above 50	0	0.00

Note: n = 107

Farmers' Perception of Involvement in Contract Farming Programme

Table 2 lists the respondents' perception of the contract farming programme. Majority of the respondents indicated an increase in technology utilisation from 66.36% to 75.70% (9.34% increment) within five years of involvement with the contract farming programme. An increase in farmer involvement (25%) was also observed, a result of the incentive of guaranteed market for farmers in the contract farming programme. An increasing number

of farmers also observed an increment in effective sales and purchase agreements (37%), affordable prices (19.63%), participation in farm training (6.55%), and consultation with technical assistance (11.22%) after involvement in the contract farming programme. The above results outline the advantages enjoyed by farmers towards enhanced production and income from participation in the contract farming programme.

Table 2: Farmers' Perception of Involvement in Contract Farming Programme

Incentive		Before (%)	After (%)	Increment (%)
1.	Technology utilisation	66.36	75.70	9.34
2.	Guaranteed markets	72.00	97.00	25.00
3.	An effective sales and purchase agreement *(Forward Agreement)*	42.00	79.00	37.00
4.	Acceptable selling price	69.16	88.79	19.63
5.	Participation in farm training	63.55	70.10	6.55
6.	Consultation and technical assistance	70.09	81.31	11.22

Note: n = 107

Market Segmentation of Contract Farming

Table 3 outlines the pre- and post-contract farming programme market segmentation, covering retailers, wholesalers, and FAMA markets. During the pre-contract farming programme period, majority of the farmers (57 farmers) chose to market about 81-100% of their agricultural produce to retailers because of the high market purchase price offered. However, the post-contract farming programme period saw a decrement (-25.2%) in farmer dealings with retailers. The wholesale markets saw an increment of 5.6% post-contract farming programme, in farmers selling less than 20% of their produce in wholesale markets. However, the number of farmers selling all their produce to wholesale markets showed a decrement of 4.7% post-contract farming programme. Meanwhile, FAMA markets saw an increment of 21.5% post-contract farming programme, with 35 farmers choosing FAMA as the market for 81-100% of their produce. From the findings, it was revealed that about 54.2% of the total contract farmers sold most of their produce to FAMA and the remaining 45.8% of farmers sold their produce in the open markets or other markets like 'pasar tani', 'pasar malam', and 'pasar pagi'. These markets were the alternative market for these farmers due to some reasons such as uncompetitive price by FAMA and the farmers had just been involved in the contract farming in which they did not have enough information yet on the benefit of getting involved in the contract farming programme.

Table 3: Market Segmentation Pre- and Post-Contract Farming Programme

	Retailer			Wholesaler			FAMA		
	Before	After	Increment/ decrement (%)	Before	After	Increment/ decrement (%)	Before	After	Increment/ decrement (%)
Below 20%	26	44	16.8	89	95	5.6	79	46	-30.8
21-40%	3	3	0	6	7	0.93	4	3	-0.93
41-60%	11	20	8.4	3	2	-0.93	8	16	7.5
61-80%	10	10	0	1	0	-0.93	6	7	0.93
81-100%	57	30	-25.2	8	3	-4.7	12	35	21.5

Note: n = 107

Issues Related to Production Costs and Yields in Contract Farming

Table 4 highlights the responses of farmer respondents to issues faced in costs of production and yield. The responses to the 5-point Likert scale statements were analysed using mean ranking method to obtain the mean score and standard deviation for each statement. Nine statements were identified for production cost issues, and eleven statements for issues in yields. The production issues of *'increase in fertiliser price', 'increase in pesticide price' and 'increase in seed price'* were identified as the main issues, with mean scores of 4.30, 4.14 and 3.70 respectively. Most of the farmers faced cost problems particularly an increase in input prices which subsequently increased the total production costs of the farms. The statement of *'increase of land rental price',* had the lowest mean score (2.48), indicating it to be a minor production cost issue for these respondents. The overall mean score for the statements related to costs of production was 3.28, which indicated that the farmers moderately agreed on costs of production being the main element to consider in contract farming.

'Unpredictable weather' was the major issue identified to farm yield, with the highest mean score of 4.14. Malaysia, being a tropical country has always experienced unpredictable weather especially during the monsoon and drought seasons, thereby affecting agricultural production and yield. This condition also hindered the easy production planning by farmers, which directly affects the farm yields and their income. The statement of *'dependence on single market'* was identified as the lowest issue (mean score of 2.54) to farm yield, experienced by the farmers. This result could thus be interpreted that farmers used multiple marketing platforms for their produce, probably side-selling in local markets. The overall mean score for issues in contract farming was 3.36, which indicated that most of the farmers were in agreement on the issues in contract farming that might reduce their farm yields.

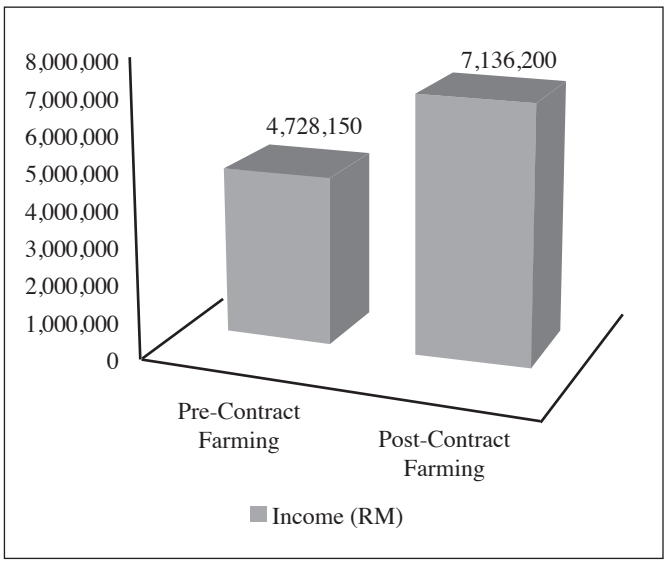
Table 4: Issues Related to Production Costs and Yields in Contract Farming

Statement	1	2	3	4	5	Mean*	Standard Deviation
Production Costs							
1. Increase in fertiliser price	0.7	6.5	1.4	44.2	47.1	4.30	0.851
2. Increase in pesticide price	0.7	11.6	2.2	44.2	41.3	4.14	0.976
3. Increase in seed price	5.1	13.8	3.6	61.6	15.9	3.70	1.058
4. Uncontrolled pest and disease attack	4.3	23.2	6.5	55.8	10.1	3.44	1.088
5. Lack of technology exposure	22.5	17.4	2.2	49.3	8.7	3.04	1.387
6. Lack of agricultural information	25.4	13.8	0.7	54.3	5.8	3.01	1.393
7. Lack of skills	25.4	22.5	2.2	47.1	2.9	2.80	1.341
8. Lack of local labour	22.5	36.2	2.9	30.4	8.0	2.65	1.333
9. Increase of land rental price	28.3	35.5	0.7	31.2	4.3	2.48	1.308
Overall Mean						**3.28**	**0.802**
Yields							
1. Unpredictable weather	2.2	3.6	4.3	58.0	31.9	4.14	0.830
2. Improper fertilisation method	20.3	5.1	1.4	50.7	22.5	3.50	1.426
3. Uncertain purchase price	13.8	13.8	6.5	49.3	16.7	3.41	1.300
4. Do not practice crop scheduling	21.0	5.1	25.3	33.4	15.2	3.42	1.387
5. Inconsistent supply and quality	21.7	4.3	1.4	60.1	12.3	3.37	1.373
6. Incomplete budget preparation	19.6	7.2	1.4	60.9	10.9	3.36	1.334
7. Uncompetitive production cost	21.0	5.1	1.4	63.8	8.7	3.34	1.332
8. Lack of understanding about crop rotation	21.7	9.4	0.7	50.7	17.4	3.33	1.441
9. No SOP for planting	19.6	9.4	30.0	30.9	10.1	3.33	1.341
10. Unsuitability of the land	21.0	15.2	3.6	44.9	15.2	3.18	1.426
11. Dependence on single market	37.7	18.8	1.4	36.2	5.8	2.54	1.446
Overall Mean						**3.36**	**1.06**

*Note: n = 107; 1=Strongly Disagree, 2=Disagree, 3=Neutral, 4=Agree, 5=Strongly Agree

Differences in Farmers' Total Income

Figure 1 shows the results of 107 respondent incomes from production of major and secondary crops pre- and post-contract farming programme. The results indicated that for pre-contract farming programme, the average total income of farmers for five years from period of 2008 to 2012 was only RM 4,728,150. However, after five years post-contract farming programme, the farmers' average total income increased to RM 7,136,200. This was a 33.74% increment in the farmers' total income. This result indicated that with greater involvement in the contract farming programme, the farmers increased their livelihood from being a low level earner to a medium level earner. This indirectly shows that the contract farming programme has achieved its objective of increasing farmers' income within a couple of years of their involvement.



n =107

Figure 1: Total Income Pre- and Post-Contract Farming Programme

Farmers' Opinions of Contract Farming Programme

Table 5 presents the farmers' opinions on the contract farming programme. As seen from Table 5, majority of the farmers (59.8%) felt that the contract farming programme was good and gave them confidence. Contract farming provided many benefits to the farmers such as increased incomes, guaranteed markets, and improved production. About 35.5% of the farmers indicated they felt good and confident about contract farming, while 24.3% of farmers indicated satisfaction, and 9.4% suggested that the floor price should be increased.

Table 5: Farmers' Opinions on Contract Farming Programme

Items	Frequency (n)	Percentage (%)
Satisfied	26	24.3
Good and confident	38	35.5
Very good and confident	64	59.8
Floor price should be increased	10	9.4

Note: n = 107

CONCLUSION

Contract farming has potentially provided for farmers and producers, aside from guaranteed markets, the access to inputs, loans and credit, extension and technical advice, updated technology, and management systems. This study was initiated to measure the success and target achievement of the Contract Farming Programme developed by MoA, Malaysia. The results of this study suggest that farmers are aware of the significance of the contract farming programme and benefits obtained from participation in the programme. There is enough evidence to support that farmers got involved in the contract farming programme for utilisation of modern technology, guaranteed market, effectiveness in sales and purchase agreement, acceptable selling price, and the consulting and technical assistance from other departments or agencies. The study also revealed that farmers' income increased after their involvement in the contract farming programme. It was also observed that post-contract farming programme, majority of the farmers marketed their entire produce through FAMA. This showed that FAMA has become an important mechanism or platform to help small- and medium-scale farmers to improve their marketing strategy and sell their produce. Majority of the farmers were satisfied by this programme, and confident about its results. The other departments and agencies involved in this programme could multiply the above results by increasing and improving the training programmes, courses, and campaigns to encourage more farmers to get involved in contract farming, to improve their yields and increase their income. Besides, the government could undertake and promote the contract farming programme by developing necessary policies and regulations to enable increased participation of farmers under the contract farming programme, for socio-economic development in this sector.

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