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Economics of marketing of black scented rice (Chak-Hao): A study in Imphal East and Thoubal districts of Manipur

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Abstract
The present study was carried out in Imphal East and Thoubal districts of Manipur to study the present status, marketing channels, marketing costs, marketing margins, problems and prospects of marketing of black scented rice in the state. A multistage, purposive cum proportionate random sampling design was adopted for the study in order to select 100 black scented rice farmers and 20 nos. of market functionaries. Both primary and secondary data were collected for the study purpose. The study identified three different marketing channels in the study area. It was revealed that the highest quantity of black scented rice was disposed through channel II which accounted for 36.99%. The highest marketing cost was observed in Channel II accounting for Rs. 5.01 per kg while the highest marketing margin was shown in channel I as compared to other channels. The highest producer's share in consumer's rupee of 97.29% was in channel III. The marketing efficiency for black scented rice was found much higher in channel III as compared to other remaining channels. Thus, the study revealed that channel III is the most efficient channel among the three marketing channels. From the point of farmers perception, low selling price at the farmers' level was found to be the major constraint in the marketing of black scented rice whereas absence of storage facilities was the major constraint faced by the marketing functionaries in the study areas.

Keywords: Black scented rice, constraints, marketing channels, marketing efficiency, marketing costs

Introduction
India is famous for rich diversity of rice germplasm. Among others the aromatic rice or scented rice (*Oryza sativa* L.) varieties are important and preferred types of rice varieties traditionally grown across the country in selected regions. These rice varieties are found to have flavor of various types and grain size also varies from short, medium to long. Other than Basmati rice, which has international demand most of these rice varieties are basically preferred in regional and local markets. The pleasant aroma and taste of many rice varieties when cooked, is caused by the chemical compound 2-acetyl-1-pyrroline (Buttery *et al*. 1983).India is one of the largest exporters of basmati rice in the world (Husaini *et al.* 2009) [4]. The consumer demand has increased markedly to pay a premium price for its fragrance (Louis *et al*., 2005) [5]. Aromatic rice cultivars constitute a small but special group of Indian rice cultivars and are considered best in terms of quality and aroma. These are rated best in quality and fetch much higher price than high quality non-aromatic rice in domestic and international market (Singh *et al*. 2000) [9]. Other than Basmati rice some preferred rice varieties are the scented short grained rice *Jaha* in Assam, *Badshah Bhog* in Bihar, *Ambemohar* in Maharashtra, *Gobind Bhog* in West Bengal, *Jeerakshala* in Kerala, in Uttar Pradesh. Among the medium grained *jeeragasamba* in Andhra Pradesh, *Achhu* in Himachal Pradesh, Gopal Bhog in Bihar and *Chakhao* a black scented rice in Manipur are famous aromatic rice varieties. The state Manipur is one of the important wild rice growing areas in the country and important among them is the black scented rice. During the year 2020, this rice variety has got the GI (Geographical Indication) tag due to its aroma and unique colour. Black scented rice is locally known as *Chak-hao* in Manipur. The area under cultivation of this rice variety in the state was extended to over 4.5 thousand hectares. The literal meaning of *Chak-hao*is delicious rice (Chak-rice: hao-delicious).It is highly nutritious with high mineral content including iron, amino acids and vitamin E with high antioxidant content is considered to be the healthiest rice variety. There are four varieties of black scented rice identified by the Department of Agriculture which are found in Manipur namely *Chak-hao Poreiton*, *Chak-hao Amubi*, *Monkhang Chak-hao*, Chak-hao *Poreiton Arangbi*.

Among these four black scented rice varieties, *Chak-hao Poreiton* is rated best in quality. The demand for black scented rice has been increasing over years. At present, there is a big demand of black scented rice from abroad and outside Manipur due to its peculiar desirable characters like colour, taste, aroma etc.

Though, this rice variety has earned fame for the state, the marketing system of this rice variety has yet to find a suitable place in the departmental stores in the major markets of the state and nearby states. There is a lack of marketing linkages between the growers and rice markets. As a part of major initiatives taken up by the Government of Manipur, one metric tons of this aromatic black rice was exported in the Europe during the month of August, 2021. In Manipur, one kilogram of this rice variety costs between Rs.50/- to Rs 60/- in rural areas while major markets in cities it cost around Rs. 100-130/- per kg. On e-commerce market platform its cost ranges from Rs. 300/- to 350/- per kilogram (Singh, 2018) [10].

The present study was undertaken to know the present status of marketing system, its associated problems and prospects of marketing of black scented rice in Manipur.

Materials and methods

The study was conducted in Imphal East and Thoubal districts of Manipur as these districts were one of the major producers of black scented rice. A multistage, purposive cum proportionate random sampling design was used for selection of samples. From these two districts, two blocks namely Sawombung and Thoubal were selected randomly and again from these blocks 10 villages viz., Seijang, Nongada, Leimakhong mapal, Pungdongbam and Sabungkhok from Imphal East district and Thoubal Khunou, Wangjing, Heirok, Charangpat and Thoubal Athokpam from Thoubal district were selected randomly. Thus, a total of 100 farmers were interviewed personally for collection of information which were again divided into three category viz., marginal, small and semi-medium. Two major markets within the district i.e. Lamlong Bazar for Imphal East and Thoubal Bazar for Thoubal districts were selected for collecting market information. Ten respondents from each market were interviewed randomly making a total of 20 market functionaries. Thus, making a cumulative respondent of 120 market functionaries.

Data sources

The study was based on both the primary data as well as secondary data. Secondary data were collected from government publication and Directorate of Agriculture, Government of Manipur. Primary data were collected with the help of pre-tested personal interview schedule during the month of June 2021.

Analytical framework

Marketing cost: The total marketing cost incurred by the producer-seller and the various intermediaries involved is computed as

$$TC = Pc - \sum Mci$$

Where,
TC = Total cost of marketing
Pc = Cost paid by the producer in the marketing of the produce
Mc_i= Cost incurred by the i^{th} middleman

Marketing margin

Absolute marketing margin of middleman was calculated as the difference between the total payments (cost + purchase price) and receipts (sale price) of the middleman.

$$Am_i = P_{Ri} - (P_{Pi} + C_{mi})$$

Where,
A_{mi}= Absolute marketing margin of i-th middlemen
P_{Ri}= Total value of receipts per unit
P_{Pi}= Purchase value per unit
C_{mi}= Cost incurred on marketing per unit

Price spread

Price spread was estimated as:
Price spread= Price paid by the consumer- Price received by the producer

Producer's Share in the Consumer's Rupee

Producer's Share in the Consumer's Rupee (P_s) is the price received by the farmer expressed as a percentage of the retail price and was calculated as

$$P_s = \frac{\text{Producer's price}}{\text{Consumer's price}} \times 100$$

Marketing efficiency

The marketing efficiency of the different marketing channels of Black scented rice was computed using Acharya's modified measure of marketing (2003) efficiency approach as below.

$$MME = FP \div (MC + MM)$$

Where,
FP= Prices received by the farmer
MC= Marketing cost
MM= Marketing margin

Marketing constraints

Garret's ranking technique was used to analyze the major problems faced by the farmers and the market functionaries. Various factors that relates to the constraints in marketing of black scented rice were interviewed and ranks were given by the respondents. The orders of the merit provided by the respondents were converted into ranks by using the formula:

$$\text{Percent Position} = 100 \times (R_{ij} - 0.5)/N_j$$

Where,
R_{ij}=Rank given by the i^{th} factor by j^{th} individual
N_j = number of factors ranked by j^{th} individual

Results and Discussions

Majority of the farmers in the study areas were in the age group between 15-59 years, which could be considered as the potential labor force accounted for 71.62 per cent of the total population of 525. Similar pattern was also observed across farm size. The population with age between 15-59 years varied from 73.64 per cent in semi medium farms to 69.23 per cent in marginal farms. Among the farm sizes, marginal farm recorded the highest population below 15 years (20.28%) while semi medium farm recorded the lowest (14.54%). And again, among the population between 15-59 years, female

population was highest in semi medium farms (40.91%) and lowest in small farms (38.97%). The percentage of literacy varied from as high as 80.51 per cent in small farms to as low as 73.64 per cent in semi medium farms. The average operational land holdings under black scented rice was found to be highest in semi-medium farms (2.27 ha) followed by small and marginal with 1.16 and 0.60 ha.

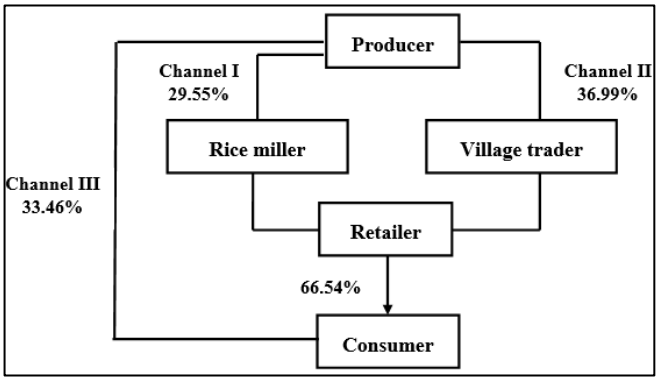
Identified marketing channels of black scented rice *chak - hao*

Channel-I: Producer- Rice Miller- Retailer- Consumer
Channel-II: Producer- Village Trader- Retailer- Consumer
Channel III: Producer- Consumer.

Table 1: Channel wise distribution of black scented rice according to farm size

Farm size	No. of households	Production (in kg)	Marketing channel		
			Channel-I	Channel-II	Channel-III
Marginal	27	15850 (100)	950 (5.99)	5300 (33.44)	9600 (60.57)
Small	53	45150 (100)	14600 (32.34)	15850 (35.10)	14700 (32.56)
Semi medium	20	28350 (100)	10850 (38.27)	11900 (41.97)	5600 (19.75)
All farms	100	89350 (100)	26400 (29.55)	33050 (36.99)	29900 (33.46)

Perusal of the table 1 revealed that about 5.99 per cent, 32.34 per cent and 38.27 per cent of marginal, small and semi medium farms respectively was dispatched through channel I while about 33.44 per cent, 35.10 per cent, 41.97 per cent of marginal, small and semi medium farms respectively are sold through channel II and the highest amount of black scented rice was transacted through this channel which accounted for 36.99%. Again, around 60.57 per cent, 32.56 per cent and 19.75 per cent of marginal, small and semi medium farms respectively were disposed through channel III.



Identified marketing channels of black scented rice *chak -hao*

Marketing cost and marketing margins of black scented rice

Table 2 represents the marketing costs and margins incurred for one kg of black scented rice by the producer, rice miller, village trader and retailer operate at different distribution channels were estimated. The highest marketing cost Rs. 5.01 per kg of black scented rice were observed in Channel II, which might be due to the involvement of more numbers of intermediaries in this channel. The lowest marketing cost of Rs. 3.25 per kg of black scented rice was observed in Channel III, where producer directly sold their product to its ultimate consumers.

The marketing margins earned by different intermediaries in different black scented rice in different marketing channels represented in table 3. The rice miller were found to have involved in channel I, where they sold rice to retailers and earned a margin of Rs. 39.20/kg of black scented rice and in channel II, village trader earned a margin of Rs. 37.65/kg of black scented rice. It is evident from the analysis that rice millers' margin was highest in channel I as compared to other channels.

Price spread

Table 3 indicates the price spread of black scented rice marketed through different channels. The producer's share in consumer's rupee for black scented rice was highest in channel III (97.29%) followed by Channel I (48.12%) and Channel II (49.04%) respectively. The producers who sold their produce through Channel I, Channel II and Channel III received a net price of Rs. 57.75, Rs. 58.85, and Rs. 116.75 per kg respectively.

Table 2: Marketing cost of intermediaries in different channels of marketing (/Kg)

Intermediaries	Channel I	Channel II	Channel III
Producer			
1. Transportation	1.10	-	1.10
2. Loading/ unloading	0.30	0.30	0.30
3. Weighing	0.05	0.05	0.05
4. Packing	0.80	0.80	0.80
5. Milling	-	-	1.00
Sub total	2.25 (49.34)	1.15 (22.95)	3.25 (100)
Rice miller			
1. Transportation	-	-	-
2. Loading/ unloading	0.20	-	-
3. Weighing	-	-	-
4. Packing	0.60	-	-
Sub total	0.80 (17.55)	-	-
Village trader			
1. Transportation	-	1.10	-
2. Loading/ unloading	-	0.20	-
3. Weighing	-	0.05	-
4. Packing	-	-	-
5. Milling	-	1.00	-
Sub total	-	2.35 (46.91)	-
Retailer			
1.Transportation	1.20	1.20	-
2. Loading/ unloading	0.20	0.20	-
3. Weighing	0.05	0.05	-
4.Packing	-	-	-
5.Market fee	0.06	0.06	-
Sub total	1.51 (33.11)	1.51 (30.14)	-
Total marketing cost	4.56 (100)	5.01 (100)	3.25 (100)

Table 3: Marketing cost, margin and price spread in different marketing channel

Sl. No	Particulars	Black scented rice (`/kg)		
		Channel I	Channel II	Channel III
1	Net price received by producer	57.75	58.85	116.75
2	Marketing cost incurred by producer	2.25	1.15	3.25
3	Rice miller purchase price	60	-	-
4	Village trader purchase price	-	60	-
5	Marketing cost incurred by Rice miller	0.80	-	-
6	Marketing cost incurred by Village trader (Milling charge + Marketing cost)	-	2.35	-
7	Retailer purchase price (in rice form)	100	100	-
8	Marketing cost incurred by Retailer	1.51	1.51	-
9	Total marketing cost	4.56	5.01	3.25
10	Rice miller margin	39.20	-	-
11	Village trader margin	-	37.65	-
12	Price paid by the consumer	120	120	120
13	Retailer margin	8.42	18.42	-
14	Total marketing margin	57.62	56.07	-
15	Price spread	62.25	61.15	3.25
16	Producer's share in Consumer's Rupee (%)	48.12	49.04	97.29

Marketing efficiency of different channels of operation

It was evident that marketing efficiency for black scented rice was much higher in channel III (35.92) than that of the channel II (0.96) and channel I (0.93). Thus, the study revealed that channel III is the most efficient channel among the three marketing channels as shown in table 4. This was due to the absence of middlemen and consequently the cost incurred in this channel was much lower as compared to other channels.

Table 4: Marketing efficiency of black scented rice in different marketing channels of operation

Particular	Black scented rice(`/kg)		
	Channel I	Channel II	Channel III
Net price received by producer	57.75	58.85	116.75
Total marketing cost	4.56	5.01	3.25
Total marketing margin	57.62	56.07	-
Price paid by consumer	120	120	120
Marketing efficiency	0.93	0.96	35.92

Constraints in marketing

Constraints faced by producer in marketing of black scented rice

Table 5 showed the problems encountered by the farmers in disposing their products. Low selling price was the major constraint encountered by the farmers in marketing of black scented rice because of their low bargaining power. Also, it is generally believed that the growers do not get remunerative prices for their produce, while the consumers have to pay higher prices for the same. In most of the villages, the price varies from Rs. 50 to 60 per kg. But when it reaches the major markets in urban areas in the state and outside, the sale price shoots upto as high as Rs. 100/- to Rs130/- per kg. The second problem identified was the lack of producer's organization. Black scented rice grower farmers are unorganized and they market their produce individually. Because of their low bargaining power, and as they had to deal with traders having a strong organization, they could not, therefore, insist on a reserve price for their produce. The producers watch the auction of the produce as silent spectators and are exploited by traders. The third issue faced by the farmers was the lack of suitable government policy and market regulation such as procurement from the farmers at reliable price or through arrangement of contract farming, appropriate storage, processing, packaging, transportation and setting up of agreement between buyers and sellers. Absence of such policy has stifled the sector that caters to the poorest. Another problem is the lack of storage facilities. Most of the farmers practiced several traditional methods for storing black scented rice. One of the common methods was that, they stored black scented rice in main house or in storage structure, by reducing their moisture content. However, this storage system could not fulfill the quality aspects to sell at higher price. Involvement of middlemen has been prominent in the study area and farmers revealed their problem of dependence on middleman for disposal/selling of their produce due to which farmers received low price of their product as large numbers of middlemen were involved in the marketing of their product. Non-availability of sufficient market information also affects operational efficiency of the markets. Farmers do not have latest information about the market prices, changes in the demand and prospective prices. Thus they miss the opportunities to sell their produce at the right time and at right place so as to obtain the most remunerative price for their produce and also to get sufficient margins. The least problem is the poor transportation facilities due to which farmers were reluctant to go and sale at distant market places.

Constraints faced by the market functionaries

The market intermediaries identified four major constraints faced by them in marketing of black scented rice in the study area. Among the problems, absence of storage facilities ranked first followed by transportation and storage risk, high transport charges, low quality produce and poor road conditions. The farmers are very much reluctant to adopt proper cleaning and dehusking of paddy grains which lowers the product quality. Various constraints according to their rank are listed in table 6.

Table 5: Problems encountered by producers in marketing of black scented rice

Particulars	Percent position	Rank
Low selling price	41.63	I
Lack of producers' organisations	32.52	II
Lack of suitable government policy and market regulation	26.12	III
Lack of storage facilities	20.23	IV
Dependence on middleman for disposal/selling	18.26	V
Lack of awareness about market news and Intelligence	15.03	VI
Poor transportation facilities	12.36	VII

Table 6: Problems encountered by market intermediaries in marketing of black scented rice

Particulars	Percent position	Rank
Absence of storage facilities	51.32	I
Transportation and storage risk	38.76	II
High transport charges	21.26	III
Low quality produce	18.93	IV
Poor road conditions	16.71	V

Suggestions to cope up the constraints

The following suggestions were made taking into consideration the perception of the farmers and findings of the study. Cultivation on traditional way are still going on and farmers are very much dependent on the stored paddy grains at farmers level to be used as seeds for cultivation. Research on hybridization, mutation breeding, molecular breeding on the crop need to be carried out so as to study the aroma genes and other desirable traits to be improved upon. To narrow down the existing huge gap in price differentiation effective marketing system should be well established from village level to major markets in the cities as well as to fetch a premium price at the international market, to harmonize demand and supply and stimulate production. It is also expected that commercial cultivation of this rice variety would encourage marketing across the globe if marketing system is developed and streamlined in a right way. Establishment of regulated market either at block level or e-marketing system could help in increasing the selling price of black scented rice. Setting up of FPO's, FIG's, CIG's and SHG's etc. could help in increasing the selling price through collective marketing as it support the bargaining power and sells the produces in bulk. Farmers need to be trained on proper mechanized cleaning and dehusking of paddy after harvesting so as to enhance the rice grain quality and fetch good market price. Government intervention is needed on pricing policies in the interest of the farmers through price fixation and crop insurance so that at the time of crop failure due to natural calamities loss could be covered and at the time of good harvest, farmers are assured of a remunerative price for their product. Establishment of market infrastructure such as storage structure, grading and processing unit, value addition etc so as to maintain the quality for longer period. Time to time market information should be provided at social media platform to update the farmer's knowledge regarding the price. Proper marketing location and platform should be established so as to minimize the marketing transportation costs and lessen the dependency on middlemen during the sale of their produce.

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