Importance of Red Rice (Deep water rice) production and its potential of export from Dhemaji district of Assam

ABSTRACT

Red kernelled rice is gaining importance in recent years due to its higher nutritive content as well as health advantages. It is rich in fibre, iron, Vitamin B1 & B2, iron and calcium. Because of its importance and a good potential for export the present study was undertaken in Dhemaji district of Assam with the objective to find out the economics of production and scope of marketing of red kernelled rice. From the investigation it was found that red kernelled rice is cultivated in deep water areas of the district and 40% of the total rice area is under red kernelled rice. The production very low with an average production of 21q/ha. The benefit cost ratio was found to be 1.29 and only two marketing channels existed in the district. A company viz. Nature Bio Foods Ltd. (NBFL) was the main company which procured all the production of red kernelled rice from the producers in Dhemaji district which has its Office at Gogamukh. About 10000tons of red rice is being exported outside the district every year to other states and even other countries like California. The price spread was found to be high though there are few intermediaries in the marketing channel. From the investigation it can be concluded that there is much scope of increasing the area, production and productivity of red kernelled rice in the district provided processing centersare set up in the district so that the farmers can get a better price for their produce.

Key words : Red kernelled rice, production, marketing, company.

Introduction

Red rice is a variety of ricethat is so named due to its distinct red colour because of the presence of anthocyanin content. The colour of husk of this particular rice is reddish I and it can be eaten eitheras un-hulled or partially hulled. The flavour of red rice issimilar to that of nuts andthe total carbohydrates contents was reported to be 42 g of as a whole of which it contains 37 g of starch, 4 g of dietary fibre and 1 g of sugar. Anon (2019) reported that red rice is rich in fibre content, Vitamin B1 & B2, iron and calcium. Due toits higher nutritive content and because of its good health advantagesred rice is suggested for heart patients as well as diabetics. Besides, red rice is also rich in zinc mineral content which helpsin healing wound faster and develop the body's defense mechanisms to function effectively. Zinc is rich in anti-oxidants that helps the body to safeguard against free-radicals that can cause damage to tissues and cells within the body.One serving of red/brown rice can provide 23 percent of vitamin B6 required for the functioning of the body organ, reducing LDL cholesterol levels which helps in protecting the chance of heart problems and also control the blood sugar levels.

In Assam red kernelled bao rice is grown in different districts and Dhemaji is one of the district which is a flood prone area and some of the rice area is deep water where normal Sali rice cannot be grown.Deepwater rice are varieties of rice (*Oryza sativa*) grown in flooded conditions with water more than 50 cm (20 in) deep for at least a month (Catling, 1992). In Dhemaji district 40% of the rice area is under bao rice (deep water rice) and farmers are cultivating different types of red rice varieties. The farmers are growing these rice varieties because of their distinctive character which can survive in flooded areas as the internodes get elongated if the water level rises. In recent years this red rice is gaining importance due to its high nutritive value and good for health. Due to the importance of red kernelled rice and its great demand in the international market this study was undertaken in Dhemaji district with the following objectives :

Objectives :

1. To examine the costs and returns of red kernelled rice production
2. To examine the marketing channels involved in the marketing of red kernelled rice.
3. To find out the problems and constraints in production and marketing of red kernelled rice.

Methodology

Selection of villages was carried out in consultation with officers of State Department marketing agents and farmers. From the list of red kernelled bao rice farmers obtained from the District Agriculture Office, Dhemajifour villages having highest number of red kernelled rice producers was selected viz. Adyutgaon, Berbhonga, Bothadai and Kahikusi and 25% farmers out of the total red rice producers were selected from each village and the total sample farmers included in the study is 145. The primary data were collected from the sample farmers using a pre structured questionnaire and the data were analyzed using simple statistical tools such as averages and percentages.

The marketable surplus of red kernelled rice was worked out using the formula :

MS = P – C

Where MS is the marketable surplus, P is the total production and C is the total requirements (family consumption, farm needs and payment to labour.

The marketing channels prevailing in the study area were identified and the price spread and producer's share in consumer's rupee was worked out as (Acharya and Agarwal,1978:

$$\text{Producer's share in consumer's rupee} = \frac{\text{Producer's Price}}{\text{Consumer's Price}} \times 100$$

The marketing margin was calculated by using the following formula : (Baruah *et.al*., 2001)

$$A_m = P_m\, a - (P_b\, a + M_c)$$

Where A_m is the absolute margin of the middlemen or traders

P_m is the selling price of the traders

P_b is the buying price of the traders

M_c represent the marketing costs of the traders

The marketing efficiency of the channel identified was estimated with the help of slightly modified Acharya's formula (Acharya and Agarwal, 2009) as given below :

MME = FP/(MC+MM)

Where, MME = Modified measure of marketing efficiency

MC = Marketing costs

MM = Marketing margin of intermediaries

Result and Discussion :

From the study it was observed that more than 70% farmers belong to marginal and small farmers while rest are medium and large farmers and the average size of holdings was 1.69 ha (Table 1).

Table 1. Size holdings of sample farmers

Sl. No	Size group	No of Farms	Avg. Size of holding (ha)
1	< 1 ha	38 (26)	0.87
2	1- ≤2 ha	74 (51)	1.62
3	>2 - 4 ha	33 (23)	2.79
	Total	145 (100)	1.69

Figures within parentheses indicate percentages to total

Table 2 showed that about 45 to 50% of the total rice area is under bao rice and Table 3 showed that among the red kernelled rice varieties Amona, Negheri and Kekua are the most

prominent local red rice varieties in the study area as the percentage area under these varieties is higher than the other varieties.

Table 2. Percentage of bao rice area to total rice area

Total rice area (ha)	Avg. area under Bao rice (ha)	% Bao Area to total rice area
33.06	15.1	45.6
119.88	60.5	50.5
92.1	43.1	46.8
245.14	**118.7**	**48.4**

Table 3. Common Red kernelled local rice varieties grown by the farmers

Variety	% Area
Amona	27.5
Negheri	18.2
Kekua	16.7
Dol bao	8.1
Duburi bao	7.4
Sonamukhi	6.5
Other bao varieties	15.6

The production cost and return of red kernelled rice is given in Table 4 which revealed that the production of red rice is very low at 21q/ha. This is because as red rice is grown in deep water areas and always subjected to flood every year. Even if the production is low but it is also profitable as the benefit cost ratio of red kernelled bao rice is 1.29 (Table 4).

This is because red kernelled rice is direct seeded and do not involved any transplanting cost as compared to normal transplanted rice.

Table 4. Cost of production and returns of red kernelled rice

Sl. No.	Particulars	Cost of production/ha (Rs)
1	Total Human labour	23550
a)	Male	7500
b)	Female	11250
2	Bullock Labour	4800
3	Seeds(Kg)	750
4	Total cost	24300
5	Production (21q/ha)	31500
6	Return	5700
7	B C Ratio	1.29

In the present study the marketable surplus of red rice was also analysed. The marketable surplus of red kernelled bao rice varies is presented in Table 5 and it was observed that the marketable surplus among the sample farms varied between 73 in marginal farmers to 86% in medium and large farmers.

Table 5. Marketable Surplus of red kernelled bao rice (%)

Size Group	Production	Consumption	Marketable Surplus
≤ 1ha	100	26.9	73.1
>1-2ha	100	16.6	83.4
≥ 2-4ha	100	14.4	85.6

From the present investigation it was found that only two marketing channel of red kernelled rice exist in Dhemaji district as shown in Figure 1. Most of the farmers sold their

products to the Company Nature Bio Foods Ltd, Haryana (NBFL) with a branch Office at Gogamukh, Dhemaji district.

Channel I = Producer – Company Agents – NBFL – Consumer

Channel II = Producer – NBFL – Consumer,

In Channel I more than 90 % farmers use this channel where the company agents collected the produce directly at the farmer's doorstep. The marketing cost and the transportation cost is directly borne by the Company while in Channel II less than 10% farmers use this channel where the producers directly dispose their products to the Company. About 10000 tons of red kernelled rice is being purchased by this Company every year and is being exported to California and other parts of USA.

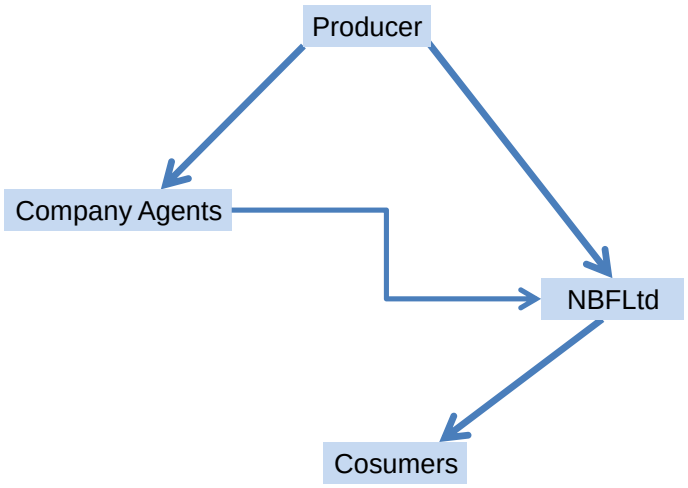

Figure 1. Marketing Channel of red kernelled rice in Dhemaji district

The marketing cost and marketing margin involved in the marketing of red kernelled rice is given in Table 6. From this Table it was observed that most of the

marketing cost was borne by the Company NBFL(23.9 %) while the farmers' contribution in cost is minimal at less than 1 %. The consumer price or selling by the Company is not available therefore the minimum consumer price of red rice prevailing in the market is consideredto calculate the marketing margin. The marketing margin estimated showed that famers are getting only 18.3 % of the marketing margin while the Company received more than 50 % of the margin at 54.7 %. From the result it can be indicated that there is an increase in the price spread even though there were few intermediaries involved in the marketing of red kernelled rice in Dhemaji district. The marketing efficiency was found to be 0.18 which is very low.

Table 6: Marketing cost and marketing margin involved in marketing of red kernelled rice

Particulars	₹ /qtl	% share in consumer rupee
Net price received by the producer	**1466**	18.3
Cost incurred by the producer		
Cost of gunny bags	24	0.3
Loading & Unloading charges	10	0.13
Transportation	0	
Total cost	**34**	**0.43**
Producer sale price/Company purchase price	**1500**	**18.8**
Cost incurred by the company		
Transportation	800	10
Loading & Unloading charges	10	0.12
Assembling/Weighing	50	0.62
Cleaning/Drying	200	2.5
Commission to Agent	400	5
Market charge	50	0.62
Sale Tax	100	1.25

Cost of processing, Packing and packaging	300	3.75
Total Cost	**1910**	**23.9**
Margin of Company	**4590**	**57.37**
Company sale price	8000	100
Consumer price in California	250/kg	
Marketing Efficiency		**0.18**

The main problem of production and marketing of red kernelled rice as cited by the farmers is that the production & productivity of red kernelled bao rice is very low as compared to other Sali rice varieties.

Conclusion and Policy Implications

From the present investigation it was found that 40% of the total rice area in the study area is under red kernelled rice with different types of varieties. The production of red rice was found to be very low at it is cultivated in deep water areas where it is subjected to severe flood every year but the production cost was very less and hence it was found to be quite profitable. There existed only two marketing channels for red rice in Dhemaji district and the price spread was high in spite of having few intermediaries in the Channels as a result of which the producers received less than 20% of producer's price in consumer's rupee. The marketing efficiency was very low due to lack of processing unit in the vicinity area and lack of knowledge on the importance and value of red rice in the market by the farmers. About 10000tons of red kernelled rice is being exported outside the district every year. From this study the following conclusion and policy implications can be drawn:

- There is a good scope for increasing the area, production and productivity of red kernelled rice in the district by cultivating it in normal condition and not as deep water rice condition.
- There is a great scope for export of red rice from Assam in the international market which would bring a good revenue for the state.

- Govt & Non Govt institution of Assam should take the initiation steps for setting up an industry for processing, value addition and export of red rice and its by-products.
- If processing industry is established in the state then farmers would get a better price for their product.
- Training and awareness programme is needed for the farmers on the impotance of red rice in the international market as well as value addition

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