



Agribusiness prospects and challenges of black rice produced in North- East India

LH Changde Catherine and Deepak Bhagat*

Department of Management, North-East Hill University, Tura Campus- 794002, Meghalaya

*Corresponding author e-mail: dip19bhagat@gmail.com

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Abstract

Black Rice, a variety of rice from the species *Oryza sativa* L. subspecies *indica*, is known for its high nutritional and medicinal values and of high antioxidant properties. It is also known as purple rice, forbidden rice or king's rice. In India it is mostly cultivated in north - eastern region of India. Though, it is reported to be cultivated in small quantity by the villagers, there are also some of the agri-entrepreneurs, who have realized its agribusiness potential, and presently have been engaged in the business of black rice very successfully. Their achievements have been reported in local and national newspapers and websites. The present study is an attempt to trace those successful agri- entrepreneurs, compile, analyse and present the details to a wider audience. The paper also tries to identify various brands of black rice sold through online marketing platform, like Amazon, Flipkart, Indiamart etc. and identify the various companies/traders involved in it. Finally, the paper also makes a SWOC analysis of black rice production and marketing, so that suitable policies can be formulated. Due to its medicinal properties, with proper consumer awareness and marketing policies along with government support, the farmers of north-east can reap high economic benefits by cultivating black rice.

Keywords: Black rice, agribusiness, online marketing, SWOC

Introduction

Black rice refers to a variety of rice from the species *Oryza sativa* L. Subspecies *indica*. It has high levels of nutrients, high antioxidant property and is glutinous in nature. It is also known as purple rice, heaven rice, imperial rice, king's rice, prize rice and forbidden rice. Recently it was referred as "Super Food" (Saha, 2016). It is cultivated in South - East Asian countries (Kong *et al.*, 2008). The specific data for this coloured rice date back to 2003, where Chaudhary (2003) quoted China as the richest country in Black rice resources (62%) followed by Sri Lanka (8.6%), Indonesia (7.2%), India (5.1%), the Philippines (4.3%), Bangladesh (4.1%), and few in Malaysia, Thailand and Myanmar (Chanu, 2015; Sompong *et al.*, 2011).

Even though it has a long history of cultivation, only recently Black rice is recognized for its medicinal values (Chanu, 2015). The dark purple colour of Black rice is due to the high anthocyanin content, located in the pericarp layers (Takashi *et al.*, 2001). Anthocyanin pigment which is present in black rice has been documented as health promoting food ingredients because of antioxidant activity (Nam *et al.*, 2006; Philpott *et al.*, 2006), can reduce the risks of cardiovascular diseases and cancer with anti-

inflammatory, antioxidant and chemoprotective properties (Park *et al.*, 2008; Hyun and Chung, 2004; Tsuda *et al.*, 2003; Tsuda *et al.*, 2002). Due to growing demand, there has been increased interest in the alternative sources of anthocyanin, which is inexpensive sources of natural and stable pigments (Hu *et al.*, 2003). The Black rice was also reported as good source of fiber, minerals, and several important amino acids (Zhang *et al.*, 2005). Black rice also contains higher levels of proteins, vitamins and also relatively richer in the mineral contents such as Fe, Zn, Mn and P as compared to common white rice (Suzuki *et al.*, 2004; Qiu *et al.*, 1993; Liu *et al.*, 1995; Zhang, 2000).

In an era, where value added agriculture became an important strategy to both agricultural entrepreneurship and rural development (Coltrain *et al.*, 2000; Kilkenny and Schluter, 2001; Womach, 2005), the Black rice comes with its own value added properties. It's processing and enhancing value through the focus on identity characteristics (including local and organic destinations), will double its worth, and may play a great role in doubling farmer's income. However, despite rising consumer interest in Black rice, little is known about the variety of value chain relationships that move Black rice from farms

to consumers and consequently the economic and social performance of these Black rice value chains are also not well understood.

In India, though Black rice is not cultivated in large area for commercial purpose as compared to other rice varieties, there are evidences that it has been grown in India for centuries in different states with maximum concentration in North- East region. The present paper is an attempt to compile the reported success stories of people involved in cultivation of Black Rice to have a clear understanding of the agribusiness opportunities it creates. It also compiles the different brands and the rates of Black rice sold to popular online marketing platforms like amazon, flipkart and indiamart among many.

Methodology

This paper is a compilation of various success stories of Black rice cultivation from north- east India reported in different media (both print and electronic). The basic objective is to bring all the reported success stories under single compilation. After compilation of the reported success stories, a SWOC analysis of NE Black Rice is done.

The present study is an attempt to trace those successful agri- entrepreneurs, compile, analyse and present to a wider audience. The paper also tries to identify various brands of black rice sold through online marketing platform, like Amazon, flipkart, indiamart etc. and identify the various companies/traders involved in it. Finally, the paper also makes a SWOC analysis of Black rice production and marketing, so that suitable policies can be formulated.

Case I: Black Rice Success Story of Mr. Upendra Rabha, Assam

The Google search engine finds information about Mr. Upendra Rabha in minimum six websites <https://assam.mygov.in>, <http://www.nezine.com>, <http://www.drbhupensaikia.com>, <http://www.ianslive.in>, <https://www.tribuneindia.com> and <https://www.newsgram.com>. Out of these three websites one is Government of Assam website. Mr. Upendra Rabha, a resident of Amguripara village near Dudhnoi in Goalpara district, was reported by Assam Government website (<https://assam.mygov.in>) as a progressive farmer who is the pioneer of black rice in Assam. With the guidance of Krishi Vigyan Kendra, Dudhnoi, he started cultivation of black rice. According to an article published in <https://www.newsgram.com> on 27th May, 2016, in the year 2011, Mr. Upendra planted a sole seedling in the corner of his paddy field, from which he

harvested 150 gram seed. In 2012, he harvested about 48 kg of paddy from the 150 gram seeds. In 2013, he harvested 1500 kg of paddy by cultivating black rice in five bighas of land. In 2014, he cultivated black rice with 50 farmers as community farming in about 100 bighas of land and produced 300 kg of rice per bigha of land which gave them total earning of Rs.300,000.00. In 2015, about 100 farmers of Dudhnoi area got into cultivation of black rice in 500 bighas of land with a very good yield. In 2015, around 100 quintals (10,000 kg) of black rice was purchased by a Mumbai based organization for exporting to different European countries. The farmers are now getting queries from different organizations in the US, Japan and Korea who want to buy the black rice from them. In an article published on 6th Jan, 2016 in <http://www.nezine.com>, it was reported for his contribution to innovative technology pertaining to black rice conservation and production, the Meghalaya based Indian Council of Agriculture Research Complex for the NEH Region has recognized him as an outstanding innovative farmer. Having seen the success of Rabha and fellow villagers, farmers from many districts of Assam are now coming to him to purchase the seed (Talukdar, 2016).

Case II: Black Rice Success Story of Mr. Potshangbam Devakanta, Manipur

The Google search engine finds information about Mr Potshangbam Devakanta in minimum seven websites <https://www.agricultureinformation.com>, <https://www.rediff.com>, <https://farmeruncle.com>, <https://explorers.zizira.com>, <https://rochaktathya.wordpress.com>, <https://www.downtoearth.org.in> and <http://www.e-pao.net>. He was also mentioned by Lambalmayum (2018) in *Journal of Innovation for Inclusive Development*. An article about him was also published in SAARC Agri News in 2015. He was also one of the farmers' representing various Biodiversity Hotspots in '1st International Agro- biodiversity Congress: Science, Technology and Partnership', New Delhi, India, November 6-9, 2016. He also won the PPFVRA (Protection of Plant Varieties and Farmers Rights Act) conservation award in 2012. He cultivates five varieties of the rare and highly nutritious variety of black rice, called 'chakhao poireiton' by following organic agricultural practices. He is currently working with about 200 farmers to increase the cultivation of chakhao poireiton in their farms as well (<https://www.rediff.com/business/report/pix-special-manipur-farmer-grows-black-rice-that-cures-cancer/20151028.htm>).



Case III: Black Rice Success Story of Mr. Kerli Shylla, Meghalaya

The success story of Mr. Kerli Shylla as resident of Larnai village in Jaintia hills district was documented by Zizira explorers and reported on <https://explorers.zizira.com/story-progressive-farmer-turned-tradition-profitable> in 2016. He harvested 60-70 bags of black rice in a year with a weight of 100 Kg per bag. He sold it to Wahiajer and Ummulong, closest market of Larnai.

Major constraints of black rice production in North East India

Though, recently black rice is known as “super food”, the production of black rice in North East India is less as most of the farmers grow in small plot of land. Regarding consumption of black rice, people of North East India consumed less as compared to white rice due to contained

of more fats. It is used as delicacy and consumed only during ceremonial feast, traditional practices and occasionally (Chanu, 2015). Though, black rice is served as high rated dishes for its scented and dark purple color and much demand in domestic market and possibilities of export farmers in North East India neglected to grow it as it has low yield (Asem *et al.*, 2015). In North East India most of the farmers followed traditional way of cultivation which is another constraint that lower the production of black rice.

Online Marketing of Black Rice

In addition to the above success stories, a number of companies/traders across India are in Black rice business. Some of those along with brand and online marketing platform is given below.

Table 1: Black Rice Brands Sold on Online Platforms

Sl No.	Brand	Rate	Sold by	Sold on
1	FOR8 Aromatic Black Rice - Forbidden Rice - 500g	Rs. 260.00	FOR8	https://www.amazon.in
2	FOR8 Aromatic Black Rice - Forbidden Rice - 1000g	Rs. 500.00	FOR8	https://www.amazon.in
3	FOR8 Black Rice Flour- 500g	Rs. 280.00	FOR8	https://www.amazon.in
4	Neotea Black Rice with Forbidden Rice Nutrition (1 Kg)	Rs. 549.00	Neotea	https://www.amazon.in
5	KisaanMaitreya Organic Hand Pounded Black Rice (1 Kg)	Rs. 210.00	Kisaan Maitreya	https://www.amazon.in
6	Green Habit Black Rice 1 KG	Rs. 325.00	Green Habit	https://www.amazon.in
7	Green Habit Wild Black Rice 4.5 kg (aka Forbidden Rice)	Rs. 1450.00	Green Habit	https://www.amazon.in
8	Green Habit Wild Black Rice 3 kg (aka Forbidden Rice)	Rs. 950.00	Green Habit	https://www.amazon.in
9	Green Habit Black Rice 900 gm	Rs. 295.00	Green Habit	https://www.amazon.in
10	Green Habit Black Rice 500gm	Rs. 175.00	Green Habit	https://www.amazon.in
11	Green Habit's Black Rice 1.5KG	Rs. 495.00	Green Habit	https://www.amazon.in
12	Home of Spices Wild Black Rice 1KG	Rs. 375.00	Home of Spices	https://www.amazon.in
13	Mystique Hills Black Rice (Premium Quality)1 Kg	Rs. 440.00	Mystique Hills - Organic Living	https://www.amazon.in
14	Original Indian Table Black Rice, 400g	Rs. 121.60	Original Indian Table	https://www.amazon.in
15	The Forbidden Rice - Black Rice 500 gm	Rs. 260.00	himalaya2home (H2H)	https://www.amazon.in
16	SpiceMart Organically Grown Black/Khasi Rice 200 g	Rs. 84.00	SpiceMart	https://www.amazon.in
17	Sri Sri Ayurveda Black Rice, 1Kg	Rs. 299.00	Sri Sri Ayurveda	https://www.amazon.in
18	Eliva Black Rice (Emperor Rice), 500gm	Rs. 300.00	Eliva	https://www.amazon.in
19	Purvai Black Rice - 500 Gms	Rs. 135.00	Purvai	https://www.amazon.in

SI No.	Brand	Rate	Sold by	Sold on
20	Paraman The Supernatural Paraman Black Rice 500 Gms	Rs. 175.00	Paraman The Supernatural	https://www.amazon.in
21	Aromatic Black Rice Veg Beneficial For Health 500g	Rs. 299.00	Ayushmaanbharat	https://www.amazon.in
22	Seeds village Paddy OryzaSativa Linn Black Forbidden Rice with Herbal Properties and Nutrient, Fragrant Value	Rs. 700.00	Seeds village	https://www.amazon.in
23	Seeds village Rarest Paddy/Black Rice Seeds -Pack of 0.5 kg	Rs. 1975.00	Seeds village	https://www.amazon.in
24	seeds village Rarest Jasmine Black Rice Paddy Seeds for Growing -250 g	Rs. 1250.00	Seeds village	https://www.amazon.in
25	Seeds village 100 Seeds of Rarest Paddy Black Rice Forbidden Seeds/ Grains for Sowing	Rs. 200.00	Seeds village	https://www.amazon.in
26	“Our Organik Tree” ORGANIC Black Rice	Rs. 335.00	Our Organik Tree	https://www.amazon.in
27	Black Rice - Healthy Alternatives - 500 g	Rs. 285.00	Godrej Natures Basket	https://www.naturesbasket.co.in
28	True Elements Black Rice 1000gm	Rs. 400.00	HW Wellness Solutions Pvt Ltd	https://www.healthyworld.in
29	Chahao 500 gram Black Rice	Rs. 145.00	High Vision Consultants	https://www.indiamart.com
30	B&B Navara Rice 3 Kg Black Navara Rice (Medium Grain, Parboiled) (3000 g)	Rs. 1157	B & B Organics	https://www.flipkart.com
31	BnBkarunkuruvai Black KavuniArisi Rice (Medium Grain, Boiled) (3 kg)	Rs. 665.00	B & B Organics	https://www.flipkart.com
32	Millet Valley Gluten Free Black Rice Black KavuniArisi Rice (Medium Grain, Parboiled) (800 g)	Rs. 245.00	Millet Valley	https://www.flipkart.com
33	El World Organic Aromatic Black Rice (Medium Grain) (500)	Rs. 140.00	ELWORLD	https://www.flipkart.com
34	Fields Of Gold Rice Black Rice (Medium Grain) (1000)	Rs. 190.00	Pristine	https://www.flipkart.com
35	Millet Valley Black Rice (1.8 Kg) Black KavuniArisi Rice (Medium Grain, Unpolished) (1800 g)	Rs. 470.00	Millet Valley	https://www.flipkart.com
36	Chahao Rice Black Raw Rice (Medium Grain) (1 kg)	Rs. 279.00	High Vision Consultants	https://www.flipkart.com
37	Chahao 500gm Black PoreitonChakhau Rice (Raw) (10)	Rs. 145.00	High Vision Consultants	https://www.flipkart.com
38	Truefarm Organic Black Rice (Medium Grain, Unpolished) (750 g)	Rs. 140.00	Truefarm	https://www.flipkart.com
39	Hathmic Wild Black Rice, 500g Black Wild Rice (Small Grain, Raw) (500 g)	Rs. 294.00	Hathmic	https://www.flipkart.com
40	Hathmic Wild Black Rice, 1kg Black Wild Rice (Small Grain, Raw) (1 kg)	Rs. 430.00	Hathmic	https://www.flipkart.com
41	Manipuri Black Rice (CHAK-HAO) - 500g	Rs. 140.00	Assamica Agro	https://www.assamicaagro.in
42	Aromatic Black Rice (ChakHao) - Manipur - 450 g	Rs. 165.00	Giskaa	http://www.giskaa.com
43	Chahao Black Rice; Glutenfree Black Rice; Raw Black Rice	Rs. 279.00	High Vision Consultants	https://www.indiamart.com

Note: Data collected on 08/01/2019 at 8 PM from the respective websites



In addition some companies/traders like High Vision Consultants, Shalimar Bagh, Panchkula; Vedusha Foods, Govindpuri, New Delhi; Kisaan Maitreya, Yerwada Society, Pune; Pathway India, Amalpada, Phulabani; Vishal Trading Co., Vashi, Navi Mumbai; Home Of Spices, Palam Colony, New Delhi; Thiva Exim, Muthuramalingapuram, Madurai; Resource Foyer, Syed Ali Guda, Hyderabad; Prakrati Organic Foods, Indira Nagar, Lucknow; Brightcrop Agro Products Private Limited, Ballygunge, Kolkata; Pradhan Agrico, GopalPura, Agra; The Taj Urban Grains, Govindpuram, Ghaziabad; Forest Products, Vashi, Mumbai; Green India Future, Virugambakkam, Chennai; Crop Connect Enterprises Private Limited, LadoSarai,

New Delhi; Amedi Greens Pvt Ltd, Pune; Shree Lakhi Narayan Enterprise, Tinsukia; Pachaa Traders Organic Traditional Natural Wholesalers, Koyambedu Wholesale Market Complex, Chennai; Agro One, Kalyan Nagar, Bengaluru; GVL Traders, Woraiyur, Tiruchirappalli; Sakaria Trade Corporation, Mukund Nagar, Pune; Glorious Enterprise, Dergaon, Golaghat; Pro Organic Farmacy, Near Redhills, Chennai; Green Connection Agro, Parnasree Bazar, Kolkata; Oganic Foods Private Limited, D.L Khan Road, Kolkata; Folkspice LLP, Jorhat; Zikra Green Farm, Haibargaon, Nagaon etc. market black rice through <https://www.indiamart.com> platform under different brand name and packing sizes and different prices.

The SWOC Analysis of North East Black Rice

The SWOC analysis of NE Black rice is presented in the Figure 1.

- Strengths** : As people are becoming more conscious on health, research was done on black rice. It was found that black rice is a good source of antioxidant (Park *et al.*, 2008) and has medicinal properties. It helps in preventing a risk in diabetics, obesity and heart disease problem which naturally also known as detoxifier. Black rice which is rich in protein and fibre helps the consumer to stay fit and healthy.
- Weaknesses** : Black rice, though a good source of antioxidant, minerals, fibre having numerous medicinal properties but it is still cultivated in less quantity as compared to white rice. The consumption of black rice is in less quantity as compared to normal white rice. Mostly, people of North East India mainly consume it during festive season and occasionally. Due to this, the demand of black rice is not constant in whole year as compared to other normal rice.
- Opportunities** : Due to its medicinal property black rice has potential of Agri enterprenuership. As people are more conscious of their health recently, there is a huge demand especially in developed countries which automatically helps to increase the economic status as well as the social status. Due to technology advance it can be traded online giving employment opportunity by easy earning at home.
- Challenges** : In North East India, most of the farmers are illiterate and reluctant to adapt with the changes. Farmers must be aware about the medicinal property of black rice with the help from government and Agriculture Department. As most of the farmers are day-to-day life earners, incentives from government is needed in order to go for large scale cultivation. They must be aware about the potential of Agribusiness and also the post-harvest processing and value addition.

<p>Strengths</p> <ul style="list-style-type: none"> • Rich Source of Antioxidant • Natural Detoxifier • Good Source of Fiber • Prevents Risk of Diabetics • Prevents Risk of Obesity • Rich in Protein • Good for Healthy Heart 	<p>Weaknesses</p> <ul style="list-style-type: none"> • Cultivated in Less Quantity • Can't be Consumed in Large Quantity • No Proper Supply Chain/Value Chain • No Proper Marketing Platform • No Constant Demand
<p>Opportunities</p> <ul style="list-style-type: none"> • Can be used as Natural Medicine • Have Agripreneurship Potential • Huge Export Potential Especially in Developed Countries • Can Double Farmers Income • Can be Traded Online 	<p>Challenges</p> <ul style="list-style-type: none"> • Medicinal Properties Need to be Popularised • Cultivators to be Explained about its Agribusiness Potential • Post-harvest Processing and Value Addition Should be Ensured • Government Support is needed for Large Scale Cultivation and Marketing • Black Rice Based Efficient Value Chains should be Developed

Figure 1: The SWOC Analysis of N-E Black Rice

Conclusion

Based on the above success stories, it is concluded that even though black rice is not consumed in large quantity as compared to white rice but after knowing the medicinal properties, farmers can motivate fellow farmers to grow the variety in order to produce in large quantity to meet the need of the market and consumers demand. It is not only beneficial to health, but also with value addition, uplifts the economic and social status of the farmer.

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