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Exploring The Challenges and Prospects of Banana Cultivation in Goalpara District of Assam, India

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Abstract:

India is the largest producer of banana in the world and growing at CAGR 5.04% since 1961 and leading the world production since 1981. To study the various aspects of production of bananas, cost incurred in production, marketing expenses, price of different varieties of bananas, marketing margins earned by various channel members, descriptive research has been carried out among 258 banana cultivators and 142 banana sellers in Goalpara district of Assam, India. This study included the cost–benefit analysis of banana production, problems faced by the banana cultivators, etc. It was found that the banana cultivation is a profitable venture for the cultivators of the region. Daranggiri banana market, the largest banana market in Asia, provides a good platform to the banana growers and sellers to export their bananas to other parts of the country and neighbouring countries like Nepal, Bhutan, Bangladesh, etc.

Keywords: Cost, Banana, problem.

Introduction:

Bananas are one of the most important nutritious foods for human beings since ages. This fruit is known as "Poor man's apple" because of its affordability and availability for common man. In addition to being a major diet for millions of people, bananas are the most significant commercial fruit in the tropical regions of the world. With a production volume of 115 million tons in 2017–19, it is a significant fruit crop for the world. The production has been increased from 69 million ton in 2000–2002 to this level. Banana export generated value of US\$13.5 billion in 2019 (FAOSTAT) per year.

Developing nations produce 98% of the bananas worldwide. Developed nations are typically the ones who import bananas. The banana–producing sector is a significant contributor to global agricultural trade. Production in this industry has registered steady growth since 2010 and by 2021. Global banana production had hit nearly 125 million tons. Today there are approximately 1,000 banana varieties grown across 150 nations, with the most marketable being the Cavendish

banana which accounts for approximately 47% of global production. FAO estimates the global export of banana would grow by 0.3% from 2022 level and will reach 19.2 million tonnes in 2023. India is the leading producer of bananas in the world with an annual production of 46.26 million tonnes. As per the data of FAO, India's banana production accounts for 25.51% of World's banana production. The top 5 Banana producing countries (India, China, Indonesia, Nigeria and Brazil) accounts for more than half of the world's banana production that is 52.28% (FAOSTAT, 2022). Banana cultivation accounts for 13% of the total area under fruit cultivation and 33% of the total fruit production in the country. Andhra Pradesh is the leading producer of bananas, followed by Maharashtra and Gujarat at number two and three position, respectively. Where Assam placed on 9th rank with 1108 MT production (National Horticultural Board of India, 2021–22).

Objective of the paper:

This research paper has been prepared to achieve the following objectives:

1. To study the production of banana, its cost and return analysis, income generation from banana cultivation in the study area.
2. To identify the issues and challenges faced by banana cultivators in the study area.

Research Methodology:

The study was conducted among 400 samples. Among 400 samples, 258 banana cultivators and 142 banana sellers from the study area, Khusdhuwa and Rongjuli Block of Goalpara district of Assam, India who cultivate banana as their main source of earning and do contribute to the state economy by supplying their produced banana to the market. The primary data were collected during 2021– 2022 to analyse the actual process of Banana production, total area of cultivation, total production, expenses made on in various inputs like agricultural tools, making shed, procuring or renting tractors or power tillers etc and their supply to the local market. The Darangiri market is the destination of their produced banana which they directly transported to or carried it to the market by the local aggregator.

Marketing costs

Marketing cost was calculated by estimating the cost incurred in marketing banana. The cost incurred after harvesting the crop until it reaches the consumer's hand generally constitutes the marketing cost. It included transportation costs, handling costs, storage costs, market fees, weighing charges, labor charges for packing, loading, and unloading, etc. The marketing cost at various stages of marketing was calculated and finally, the total marketing cost was computed (Acharya and Agarwal 1999).

Classification of Cultivators

Size classes and broad size groups of holdings:– The different size classes for which the data were analysed as per the Agricultural Census of India (2021–22).

- (i) Marginal – below 0.50 hectare. 0.50 hectare to 1.00 hectare.
- (ii) Small – 1.00 hectare to 2.00 hectares.
- (iii) Semi-medium – 2.00 hectares to 3.00 hectares 3.00 hectares to 4.00 hectares
- (iv) Medium – 4.00 hectares to 5.00 hectares. 5.00 hectares to 7.50 hectares. 7.50 hectares to 10.00 hectares.
- (v) Large – 10.00 hectares to 20.00 hectares. 20.00 hectares and above.

Table 1: Classification of the Cultivators according to their landholding size

Groups	Classification of Cultivators	Land Holding Size (in Ha)	Number of selected Banana Cultivators
I	Marginal cultivators	below 1.00	26
II	Small Cultivators	1.00–2.00	80
III	Semi–Medium Cultivators	2.00–4.00	74
IV	Medium Cultivators	4.00–10.00	61
V	Large Cultivators	Above 10.00	17
	Total		258

Study Area:

Goalpara, a district of Assam, India was the site of this investigation. As to the 2011 census, the Goalpara district of Assam is located roughly between 25°53 and 26°13 North Latitudes and 90°07 and 91°6 East Longitudes, with an approximate land area of 1824 square kilometers. The district of Goalpara is bordered to the north–east by the Brahmaputra River, to the east by Kamrup and Barpeta districts, to the south by the Meghalayan regions of the East and West Garo Hills, to the east by Kamrup district, and to the west by Dhubri district. 1,008,183 people live in the district, which is made up of 8 Community Development Blocks, as of the 2011 census. Most of the people—roughly 90% of them—live in rural areas and are dependent on agriculture. According to the 2011 census, there are 553 people per square kilometer and 67.37 percent of people are literate. Topographically, it is a mix of hills and plains. The district's north–east is essentially flat, but its south–west is dotted with several outflanking spurs of the Meghalaya plateau, which rise as solitary hills all the way to the Brahmaputra River's bank. The Archaean rock of the plateau is covered in layers of fresh alluvium that make up the soils. The plains and hill slopes' clayey, loamy, and sandy soil composition provided good ground for a variety of food crops as well as horticultural cash crops.

Darangiri followed by Dhupdhara in Goalpara district of Assam have turned to be the major trading centers of banana that are grown in the surrounding villages of these centers in Goalpara and East Garo Hills districts. Both the trading centers have been able to attract the farmers, middlemen of the locality and traders from different parts of the states including other parts of India. Different varieties of raw banana are marketed in the area, and hundreds of truckloads go to different places of the country from this area.

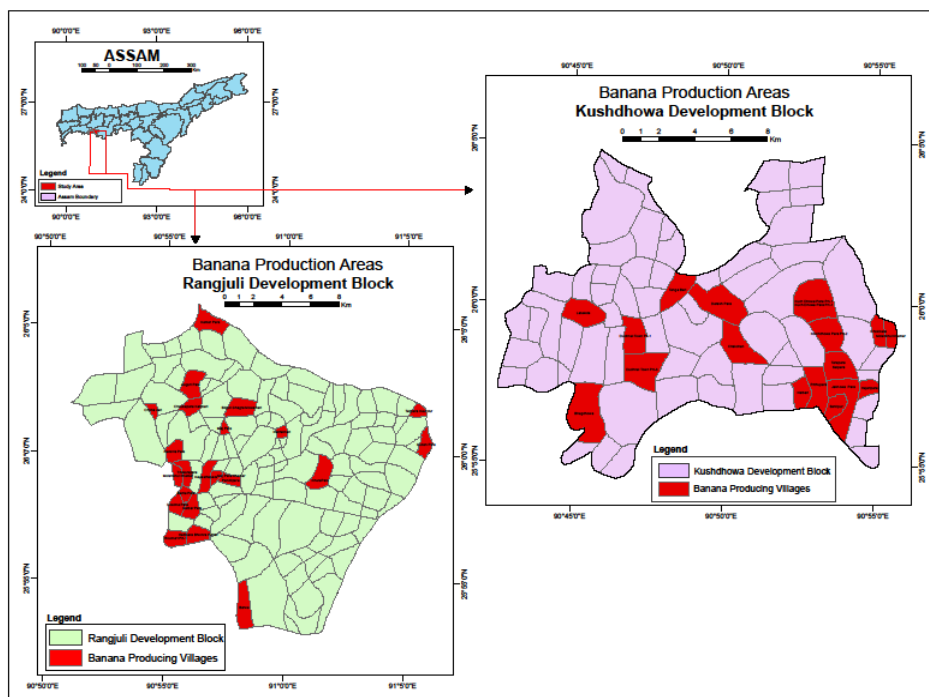


Fig 1: Banana producing villages in selected development blocks of Goalpara district of Assam, India

Results and Discussion:

Demographic Characteristics of the Sample Banana Cultivators:

Study of socio-economic characteristics of sample are important from the point of view understanding the status of the families which help in analysing their cultivation and business and their marketing activities, for proper management and efficient utilization of resources, etc. It also indicates a general overview of the samples. Table 2 shows the distribution of sample population of all size group of banana cultivators. Out of total 258 cultivator’s family 80 cultivator’s family were small cultivators, followed by 74 cultivator’s family were semi medium cultivators, 61 cultivator’s family were medium cultivators, 26 cultivator’s family were marginal cultivators and only 17 cultivator’s family were belonging to large cultivator group. The total population of the sample household were 1083. Out of these, 609 were male and 474 were female. The average family size was found 4.59.

Table 2: Distribution of sample population across various size groups of Banana cultivators

Size Group	Sample Farmers	Population	Male	Female	Average Family size
Marginal	26	106 (100)	62 (58.49)	44 (41.51)	4.08
Small	80	326 (100)	184 (56.44)	142 (43.56)	4.08
Semi-Medium	74	306 (100)	170 (55.56)	136 (44.44)	4.14
Medium	61	267 (100)	152 (56.93)	115 (43.07)	4.38
Large	17	78 (100)	41 (52.56)	37 (47.43)	4.59

Total	258	1083 (100)	609 (56.23)	474 (43.77)	4.20
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The figure in the parentheses indicates percentage to the total

Table 3 shows the educational background of the sample banana cultivators of each group. The Table showed that about 29.09 per cent of the total population was found to be illiterate in the study area. The highest percentage of illiterate was found in Marginal cultivator group, i.e. 47.17 per cent followed by semi-medium cultivator group was 33.66 per cent, medium cultivator group was 25.47 per cent, small cultivator group was 25.46 percent and large cultivator group was 14.10 percent respectively. On the other hand, the overall literacy percentage was found 70.91 per cent in the area. The highest percentage of literacy was observed in large cultivator Group, i.e. 85.90 per cent followed by 74.54 per cent in small cultivator group, 74.53 per cent in medium cultivator group, 66.34 per cent in semi-medium cultivator group and 52.83 per cent in small cultivator group.

Table 3: Educational background of the banana cultivator

Size Group	Total Population			Illiterate			Literate		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
Marginal	62 (58.50)	44 (41.50)	106 (100)	23 (21.70)	27 (25.47)	50 (47.17)	39 (36.79)	17 (16.03)	56 (52.83)
Small	184 (56.44)	142 (43.56)	326 (100)	15 (4.60)	68 (20.86)	83 (25.46)	169 (51.84)	74 (22.7)	243 (74.54)
Semi-Medium	170 (55.56)	136 (44.44)	306 (100)	24 (7.83)	79 (25.82)	103 (33.66)	146 (47.71)	57 (18.63)	203 (66.34)
Medium	152 (56.93)	115 (43.07)	267 (100)	12 (4.49)	56 (20.97)	68 (25.47)	140 (52.43)	59 (22.1)	199 (74.53)
Large	41 (52.56)	37 (47.44)	78 (100)	0	11 (14.10)	11 (14.10)	41 (52.56)	26 (33.33)	67 (85.90)
Total	310 (28.62)	473 (43.67)	1083 (100)	74 (6.83)	241 (22.25)	315 (29.09)	535 (49.39)	233 (21.51)	768 (70.91)

The figure in the parentheses indicates percentage to the total

The family working force and its occupational pattern for the banana cultivators of various size groups are presented in table 4. The total working force of the banana cultivator was found to be 41.37 per cent where the total male working force was observed to be 25.85 per cent which was higher than that of female working force with the percentage of 15.51 per cent of the overall banana cultivator. The working force of the banana cultivators was 45.28 per cent in marginal cultivator group, 42.02 per cent in small cultivator group, 38.89 per cent in semi-medium group, 41.95 per cent in medium cultivator group and 41.02 per cent in large cultivator group respectively.

Table 4: working status of the banana cultivators

WORKING FORCE OF THE SAMPLE POPULATION										
Group	Total Population	Worker			Helper			Non-Worker		
		Male	Female	Total	Male	Female	Total	Male	Female	Total
Marginal	106 (100)	32 (30.19)	16 (15.09)	48 (45.28)	30 (28.30)	18 (16.98)	48 (45.28)	6 (28.30)	4 (37.74)	10 (9.43)
Small	326 (100)	85 (26.07)	52 (15.95)	137 (42.02)	87 (26.69)	80 (24.54)	167 (51.27)	12 (3.68)	10 (3.07)	22 (6.75)
Semi-Medium	306 (100)	78 (25.49)	41 (13.40)	119 (38.89)	86 (28.10)	71 (23.20)	157 (51.30)	6 (1.96)	24 (7.84)	30 (9.80)
Medium	267 (100)	65 (24.34)	47 (17.60)	112 (41.95)	83 (31.08)	61 (22.85)	144 (53.93)	4 (1.50)	7 (2.62)	11 (4.11)
Large	78 (100)	20 (25.64)	12 (15.38)	32 (41.02)	18 (23.07)	20 (25.64)	38 (48.72)	3 (3.84)	5 (62.5)	8 (10.26)
Total	1083 (100)	280 (25.85)	168 (15.51)	448 (41.37)	304 (28.07)	250 (23.08)	554 (51.15)	31 (2.86)	50 (4.62)	81 (7.48)

The figure in the parentheses indicates percentage to the total

The land is one of the major natural resources for agricultural production. It is the primary input providing space for growing crops and other allied activities. The operational landholding for different size groups of banana cultivators were presented in table 5. The results revealed that the banana cultivator’s total available land for the use includes owned land, leased-in land and leased-out land. The Table reveals that the average land holding area was estimated to be 2.30 ha. The average land holding area showed an increasing trend with the increase in farm size which varied from 0.46 ha in group I farm to 7.12 ha in Group V farm. Further, out of total land available for use own land accounted for about 83.68 in the average farm situation which showed a decreasing trend with the increase in farm size. Own land was followed leased in land (18.74 per cent) and leased out land (2.42 per cent) in the average situation.

Table 5: Distribution of sample households according to operational holdings of land across various size groups (in Ha)

Size Group	No. Of Cultivators	Own Land	Leased in Land	Leased out land	Total Land available for use	Average land holding
Group I	26	13.03 (108.31)	0.53 (4.41)	1.53 (12.72)	12.03 (100)	0.46
Group II	80	85.76 (101.26)	1.73 (2.04)	2.80 (3.31)	84.69 (100)	1.06
Group III	74	143.10 (100.09)	6.27 (4.39)	6.40 (4.48)	142.97 (100)	1.93

Group IV	61	217.86 (93.85)	16.53 (7.12)	2.27 (0.98)	232.13 (100)	3.81
Group V	17	36.40 (30.07)	86.00 (71.04)	1.33 (1.10)	121.06 (100)	7.12
Total	258	496.15 (83.68)	111.07 (18.74)	14.33 (2.42)	592.88 (100)	2.30

The figure in the parentheses indicate percentage to the total

Land use pattern of various size groups of banana cultivator was presented in table 6. Out of total land available for use, land under banana cultivation accounted the highest share (32.11 per cent) in the average situation and this was followed by land under plantation crops (18.64 per cent), land under dwelling house (10.06 per cent), Land under cowshed/piggery shed / poultry shed (2.44 per cent) and permanent fallow land (1.11 per cent respectively). The average area under banana cultivation in area was estimated to be 0.74 ha and this was found to be showed an increasing trend with increase in farm size which varied from 0.19 ha in Group I to 1.79 ha in Group V. This was mainly because of higher land holding area in higher size group of banana cultivator.

Table 6: Distribution of households in accordance to Land Use pattern across various size groups (in Ha)

Size Group	Total Land available for use	Land under dwelling house	Land under cowshed/piggery shed / poultry shed	Permanent fallow land	Land under Banana Cultivation	Land under plantation of other crops	Average Area under Banana cultivation
Group I	12.03 (100.00)	1.33 (11.06)	2.13 (17.71)	1.36 (13.30)	5.07 (42.14)	2.40 (19.95)	0.19
Group II	84.69 (100.00)	12.33 (14.56)	2.03 (2.40)	4.13 (4.88)	31.33 (36.99)	34.87 (41.17)	0.39
Group III	142.97 (100.00)	16.53 (11.56)	13.47 (9.42)	12.40 (8.67)	54.20 (37.91)	46.33 (32.64)	0.73
Group IV	232.13 (100.00)	17.87 (7.70)	21.87 (9.42)	37.87 (16.31)	69.47 (29.93)	85.07 (36.65)	1.14
Group V	121.06 (100.00)	12.40 (10.24)	14.93 (12.33)	10.93 (9.03)	30.40 (25.11)	52.40 (43.28)	1.79
Total	592.88 (100.00)	59.67 (10.06)	14.47 (2.44)	6.60 (1.11)	190.40 (32.11)	110.53 (18.64)	0.74

The figure in the parentheses indicate percentage to the total

Table 7 shows highlighted the annual income of cultivators from banana cultivation compare to income from other field crops. Among marginal, small, semi-medium, medium and large was 77%, 81%, 77%, 58% and 28% respectively. It means the cultivator who have lower land for cultivation were more dependent on Banana cultivation for their income compare to medium and large land holding cultivators.

Table 7: Comparison of Average Annual Income from main Field Crop and Banana Cultivation per cultivator

Size Groups	Average Annual Income from Banana Production per bigha	Average Annual Income from Main Field Crop Production per bigha	Total
Marginal Cultivators	104000 (76.53)	31889.00 (23.47)	135889 (100)
Small Cultivators	112000 (80.66)	26848.00 (19.34)	138848 (100)
Semi-Medium Cultivators	115200 (77.40)	33636.00 (22.60)	148836 (100)
Medium Cultivators	116800 (57.60)	85943.00 (42.40)	202743 (100)
Large Cultivators	118000 (27.66)	308571.00 (72.34)	426571 (100)
Total	566000 (53.76)	486887 (46.24)	1052887 (100)

The figure in the parentheses indicate percentage to the total

Table 8 shows the cost and return from banana cultivation. Cost A shows the cost under inputs for agriculture like equipment, preparation for land, irrigation, etc. mostly pre cultivation cost on Capital assets, hiring labour, etc. Cost B includes rental value of owned land and interest on borrowed capital. Cost C include cost of labour of self and family member. The total cost of cultivation per hecter among marginal, small, semi-medium, medium and large was Rs 504023.7, Rs 538763.3, Rs 533177.9, Rs 588762.8 and Rs 601152.5 respectively. Gross income of cultivation per bigha among marginal, small, semi-medium, medium and large was Rs 780000, Rs 840000, Rs 864000, Rs 876000 and Rs 885000 respectively. It means the net income from banana cultivation per bigha among marginal, small, semi-medium, medium and large land holding cultivators were 275976.3, Rs 301236.7, Rs 330822.2, Rs 287237.2 and Rs 283847.6 respectively, in the cost benefit ratio of 1.55, 1.56, 1.62, 1.49 and 1.47 respectively.

Table 8: Cost and Return analysis of Banana Cultivation (Rs. per Ha)

Sl No.	Particulars	Marginal	Small	Semi-Medium	Medium	Large	Total
1	Land Preparation with Tractor, Roller and Cultivator	7500	9375	8250	9750	10125	9000
2	Cost of Bamboo Fencing	18750	22500	18750	20625	24000	20925
3	Cost of Planting Material	72000	75240	78802.5	82987.5	105675	82941
4	Cost of digging of Pit and Planting	26250	33817.5	32145	34875	35640	32545.5
5	Cost of Tools and Implements (Foot Spray and Hand Spray)	18750	18750	18750	18750	18750	18750
6	Cost of irrigation with STW and 5 HP pump Set	37500	34500	37500	39450	41250	38040
7	Cost of Fertilizers	33690.75	23888.93	29249.1	25727.48	16924.35	25896.1

8	Cost of Pesticides	25953.98	35398.43	30949.65	39655.73	38450.63	34081.7
9	Cost of Labour	64736.85	72300	75411.45	95015.33	90644.7	79621.7
10	Interest on Working Capital	16169.63	17106.38	17629.35	20851.8	18982.58	18147.9
11	Land revenue paid	300	300	300	300	300	300
12	Cost A	321601.2	343176.2	347737.1	387987.8	400742.3	360249
13	Rental value of owned land	146250	157500	162000	164250	165937.5	159188
14	Interest on fixed capital	14460	15534.6	15535.8	16515	18835.2	16176.1
15	Cost B	482311.2	516210.8	525272.9	568752.8	585515	535613
16	Imputed Value of Family Labour	21712.5	22552.5	7905	20010	15637.5	17563.5
17	Cost C	504023.7	538763.3	533177.9	588762.8	601152.5	553176
18	Total cost	504023.7	538763.3	533177.9	588762.8	601152.5	553176
19	Gross Income	780000	840000	864000	876000	885000	849000
20	Farm Business Income	458398.8	496823.8	516262.9	488012.2	484257.7	488751
21	Family Labour Income	297688.8	323789.2	338727.1	307247.2	299485	313387
22	Net Income	275976.3	301236.7	330822.2	287237.2	283847.6	295824
23	Return from Management	275976.3	301236.7	330822.1	287237.2	283847.5	295824
24	Benefit Cost Ratio (BCR) based on Variable Cost	2.43	2.45	2.48	2.26	2.21	2.36
23	Benefit Cost Ratio (BCR) based on Total Cost	1.55	1.56	1.62	1.49	1.47	1.53

A second set of study has been conducted among the channel members of Banana. They were basically the retailers and wholesalers/stockiest who do not produced banana of their own but sell and stock bananas for their business purpose. 81 retailers and 61 wholesalers/stockiest were interviewed with a structured questionnaire and result of the interview has been summarized below.

Table 9 shows the monthly business size of the sellers both retailers and wholesalers. For retailers the monthly business size was between Rs 6600 to Rs 300000. For wholesalers it was between Rs 12000 to Rs 3500000. The mean business value per retailer was Rs 57,432 and Rs 1,92,295 for wholesaler.

Table 9: Monthly business size of the sellers (In Rs)

Sellers	Minimum	Maximum	Mean	Std. Deviation	N
Retailers	6600	300000	57432	50692	81
Wholesalers	12000	3500000	192295	445797	61

Table 10 shows the variety of bananas which are basically deals by the retailers and wholesalers. In the study area, out of all variety of Banana Jahaji, Seni-cahmpa and Malbhog banana were the most

demanded and most sellable banana. Both retailer and wholesaler were basically deals with these types of bananas. Out of 81 retailers, 79 (97.88%) deals with Malbhog bananas, 63 (77.78%) deals with Seni-Champa Banana, 70 (86.24%) deals with Jahaji Banana and 63 (77.78%) deals with all the variety of bananas. From table 1 it was found that out of all variety of banana Malbhog Banana was the most popular Banana.

Table 10: Types of Banana deal in

Variety Deals in	Retailers		Wholesalers	
	Frequency	%	Frequency	%
Malbhog	79	97.88	58	95.08
Seni-Champa	63	77.78	48	78.68
Jahaji	70	86.24	53	86.88
All Varieties	63	77.78	48	78.68
N	81	100	61	100

Table 11 shows the amount of Banana marketed through various intermediaries. We can see that the marginal cultivators sell 52% of their produced banana to wholesale market, whereas small, semi-medium and medium cultivators sell majority of their produced banana i.e 54%, 81% and 58% respectively to local traders. On the other hand, large cultivators sell most of their produced banana of their own i.e. 56%. It may be because of the higher volume they produced was more profitable to sell by own than through other intermediaries.

Table 11: Quantity of Banana Marketed through various Intermediaries Across Various Size Groups

Types of Cultivators	Intermediaries / Agencies Involved	Total Bunches Marketed	Percentage of banana marketed (in %)
Marginal Cultivator	Self-Retailed	493	11.55
	Local Traders	1549	36.29
	Prepaid Contracts	3	0.07
	Wholesale Market	2223	52.09
	Total	4268	100
Small Cultivators	Self-Retailed	4333	23.4
	Local Traders	10085	54.46
	Prepaid Contracts	3	0.02
	Wholesale Market	4097	22.12
	Total	18518	100
Semi-Medium	Self-Retailed	1864	8.71
	Local Traders	17299	80.8
	Prepaid Contracts	175	0.82
	Wholesale Market	2071	9.67
	Total	21409	100
Medium	Self-Retailed	6319	12.54
	Local Traders	29250	58.03
	Prepaid Contracts	15	0.03
	Wholesale Market	14818	29.4

	Total	50402	100
Large Cultivators	Self-Retailed	2260	55.95
	Local Traders	1519	37.61
	Prepaid Contracts	-	-
	Wholesale Market	260	6.44
	Total	4039	100
Overall	Self-Retailed	15269	15.48
	Local Traders	59702	60.53
	Prepaid Contracts	196	0.2
	Wholesale Market	23469	23.79
	Total	98636	100

The table 12 (a) and 12 (b) highlighted the retail and wholesale profit earned by the sellers. Malbhog banana is the most demanded local variety in retail and wholesale market. Hence its price is higher than the other two varieties- Jahaji and Cheni-Champa in the market. The mean margin earned by different varieties is also shown in the table 11 a and 11 b. Malbhog variety has mean margin of Rs. 126 in the retail market compare to Jahaji and Cheni-Champa variety where margin is Rs. 112 and Rs. 84 in the retail market. Similarly in the wholesale market also Malbhog has higher profit margin i.e. Rs. 142 per bunches compare to Jahaji and Cheni-Champa variety where profit margin is Rs. 140 and Rs. 106.

Table 12 (a): Retailers’ Profit/Loss statement per bunches of bananas:

Retailers Mean Profit/Loss	Buying price (Mean) in Rs.	Expenses (Mean) in Rs.	Selling Price (Mean) In Rs.	Profit (Mean) in Rs.
Malbhog	427.00	30.00	577.00	126.00
Seni-champa	183.00	23.00	288.00	84.00
Jahaji	360.00	25.00	493.00	112.00

Table 12 (b): Wholesalers’ Profit/Loss statement per bunches of bananas:

Retailers Mean Profit/Loss	Buying price (Mean) in Rs.	Expenses (Mean) in Rs.	Selling Price (Mean) In Rs.	Profit (Mean) in Rs.
Malbhog	260.00	30.00	434.00	142.00
Cheni-champa	123.00	21.00	251.00	106.00
Jahaji	255.00	27.00	424.00	140.00

Banana price fluctuates very frequently in the market. Demand varies over time and become very high during festival times especially during pujas (occasion of worshipping God and Goddesses in particular time in India) like Vishwakarma Puja, Durga Puja, Diwali, etc. because of the demand variation and not synchronized with the supply or production, stockout and under sale is frequent phenomenon in Banana marketing. This is the reason for price fluctuation. Apart from this, there are some important factors which impact the retail and wholesale price. The table 13 highlighted the factors affecting retail and wholesale price. Cost of cultivation including marketing cost was

the major factor as per the opinion of retailers and wholesalers. Quality of banana was considered second most important factor; supply was considered third and seasonality was the fourth important factor which affect the retail and wholesale price.

Table 13: Factor affecting retail and wholesale price of Bananas:

Factors	Retail Price		Wholesale Price	
	Frequency	Percentage	Frequency	Percentage
Supply	32	39	13	24
Expenditure	67	82	18	34
Season	15	18	5	9
Quality	41	50	18	34

The cultivators were asked to identify the issues and challenges they face during banana cultivation. As per the commonalities of the problem found in the mention, they were grouped and ranked as per the problem most cultivators face. Storage was considered the most common problem among cultivators which is faced by 38% of the cultivators followed by insufficient government support and demand fluctuation which were faced by 33% and 26% cultivators respectively. Apart from these three problems, the top 10 problems faced by the cultivators were flood, irrigation, training, brokers, selling price, black spot disease and inadequate labour supply during cultivation.

Table 14: Problems faced by the Banana Cultivation

Problems	No. of Banana Cultivators	Percentage (N=258)	Rank
Storage Problem	98	37.98	1
Insufficient Government support	86	33.33	2
Demand Fluctuation	67	25.97	3
Flood	67	25.97	4
Lack of proper Irrigation	58	22.48	5
Lack of Proper Education and Training	55	21.32	6
Involvement of Middlemen/Brokers	54	20.93	7
Insufficient Selling Price	48	18.60	8
Black Spot in Banana	45	17.44	9
Inadequate labour supply	43	16.67	10
Diseases in Banana Tree	39	15.12	11
Price fluctuation	29	11.24	12
Higher Transportation cost	21	8.14	13
Excess Rain in Summer	21	8.14	14
Birds and Animal Issue	16	6.20	15
Market Access	16	6.20	16
Lack of Local Trading	14	5.43	17
Pest problem and maintenance	13	5.04	18
Higher input Cost	12	4.65	19

Higher Local Tax	11	4.26	20
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Challenges in Banana Cultivation:

Other issues and challenges that were faced by the Banana Cultivators in the Study Area were identified by face-to-face interaction with them. The opinions of Goan-burha and experts were also considered while articulate the main issues faced by the cultivators and along with the opinion of the respondents of banana cultivators, were summarized and discussed below. These are:

a) Problem of credit

Credit poses as a most important limitation in banana production. Non-availability of credit always hampers the banana grower. Some of banana cultivators reported that they had problems in obtaining bank loans. Some of the farmer said that loan amount from bank was not sufficient to cover the expenditures of production. Most of the farmers reported insufficiency of loan amount to obtain better yield and timely completion of banana production.

b) Low prices of output

The most of the banana cultivators were not well organized and educated. Most of the banana cultivators sold their banana through intermediaries like, aggregators, relailers, wholesalers, pre-paid contractors. They usually do not get competitive price for their product.

c) Lack of storage facility

Banana is a perishable fruit crop. So, we cannot store banana for long time without proper cold storages. Storage problem for banana cultivation was another important problem in the study area. Most of the banana were sold after harvest at lower prices due to lacks of cold storage facilities or go-downs. Sometime no one buy the ripen banana, so the cultivators or sellers faces the losses.

d) Lack of Food-Processing units:

Food production unit can be a better solution to use the non-sellable bananas for making Banana chips, powders, chocolate, etc. But the entire area is only known for banana production and there's very little avenues for industry.

e) Lack of research centre

High productivity of banana always demands research centre or laboratory to test the soil fertility, growth and production of banana, need of fertilizer, various disease of banana etc. As an Asian largest banana market, the study area must be a well-equipped testing laboratory or research center for better results.

f) Diseases of Banana tree:

Due to heavy rainfall in the study area, Sigatoka leaf spot (spot in banana leaf) and banana bunchy top caused by virus named Banana Bunchy Top Virus (BBTV) were very common. Restriction on using pesticides in banana cultivation make the problem even worse.

Summary and Conclusion:

The study revealed that Jahaji, Seni-Champa and Malbhog were the three most demanded verity of Banana. Out of all variety of Banana the Malbhog Banana was the most popular Banana among the consumers. For Jahaji and Malabhog verity. Both the variety has higher demand in the market and

is sold at higher price. The climatic conditions prevailing the banana cultivation in the study area, diseases in banana fruit and tree are very common and it cannot be controlled without pesticides. The growers shift their cultivation from one plot of land to another every 2–3 years only to avoid diseases from banana plantation. It also helps them to maintain soil fertility for cultivation. Although it seems not sufficient for both diseases and pests' control and for soil fertility. Banana also has issue of supply chain problem. As the demand varies in a year, the requirement of banana need to be fit with the demand requirement. But in case of banana as it has to go through natural process, seasonal fluctuation creates a lot of problem which leads to supply chain breakdown. Wastage was more when there is no/low demand and there is a shortage of banana during festival season and there is a sale lost because of not fulfilling the order using chemicals. Cold storage and food processing units can resolve this issue for a limited period but unavailability of both creates more problem for growers and sellers. We suggest government intervention in resolving these issues.

References:

1. Acharya, S. S. and Agarwal, N. L (1999). Agricultural marketing in India. Oxford & IBH Publishing in India.
2. Directorate of Economic and Statistics, 2014. Economic Survey, Assam 2013–14. Planning and Development Department, Govt. of Assam.
3. Dukpa, P. and Ezung, Z. T. (2020). *Economics Affairs*. 65(3). Pp: 427–432.
4. Food and Agricultural Organization, 2022.
5. Jeyanthi, P. (2018). *Advanced Statistical Methods and Computational Software for Fisheries research and Management*.
6. Kalidas, K., Mahendran, K., Palanisamy, V. N., Senthinathan, T., and Kavithambika, B. (2021). *Frontiers in Crop Improvement*. 9(5). Pp: 2184–2188.
7. Patowary, M., Kumar, S. and Singh, V. (2022). A Study on Marketing aspect of Banana in Goalpara District of Assam. *Agriculture and Veterinary Science*. 5(15). Pp: 01–08.
8. National horticultural Board (NHB), 2021–22.
9. Randev, A. K., 1986. Economics of Horticultural Crops in Tribal Areas of Himachal Pradesh: A study of Kinnaur District. Unpublished Ph.D. Thesis, Department of Agricultural Economics, Himachal Pradesh Krishi Vishva Vidyalaya, Palampur.
10. Tripathi, A.K., Mandal, S., Dutta, K.K and Verma, M.R (2006). *A study of marketing of ginger in RiBhoi District of Meghalaya*. Indian Journal of Agricultural Marketing, 20(2). Pp:106–226.