"Organic food production has existed for thousands of years (since the beginning of agriculture) and it will continue as long as humans live on the planet." …. David Wolfe (American author).

Chapter VI: IDENTIFICATION OF VARIOUS CONSTRAINTS AND OPPORTUNITIES FOR UPGRADING THE VALUE CHAIN.

6.1. Introduction

This chapter discusses constraints faced by various chain actors and upgrading opportunities from the farmer's perspective for the organic value chain. This chapter consists of five sub-sections that present the constraints and opportunities for organic crops considered for the study. The first sub-section presents the constraints and opportunities for the organic pineapple value chain. The second, third, fourth, and fifth sub-sections present the constraints and upgrading opportunities for organic pumpkin, organic non-basmati rice, organic red rice, and organic turmeric value chains.

6.2 Constraints and Opportunities in Organic Pineapple Value Chain

This section briefly discusses about various constraints faced by farmers, wholesalers, commission agents, retailers in the organic pineapple value chain in Cachar district. The constraints are identified and ranked in accordance with level of severity. In addition to this, various opportunities to upgrade the existing value chain is identified and analysed.

6.2.1 Constraints Faced by Farmers in Organic Pineapple Value Chain

Farmers rank "Policy support" as a major constraint (Garrett's Mean = 71.08) followed by "Inadequate quality standards" and "Involvement with farmers associations/organizations" with Garrett's mean scores of 65.88 and 65.54. Farmers face various problems in maintaining an end-to-end organic chain, and thus, efficient policy support will help the farmers strengthen the value chain. Lack of market for organic produce (rank iv) is also a prime constraint as the supply of organic pineapple to distant traders depends on their special orders and farmers mostly sell the organic pineapple on the street side and through various actors with conventional chains. Farmers rank "Lack of organic marketing channel" (rank x) and "Disease and pest control management" (rank xi) as the least constraint in the organic pineapple value chain. The list of constraints (rank from high to low) is shown in the following table.

Table 78: ***Showing Constraints Faced by Farmers in the Organic Pineapple Value Chain.***

Factors	Constraints	Garrett's Mean Score	Rank
F1	Policy Support	71.08	I
F2	Inadequate quality standard	65.88	II
F3	Involvement with farmers association/organization	65.54	III
F4	Lack of market for organic produces	61.06	IV
F5	Lack of working capital	49.7	V
F6	Consumer unwillingness to pay premium price	49.44	VI
F7	High cost of input materials	44.74	VII
F8	No training facility	43.3	VIII
F9	Low yield during conversion	36.5	IX
F10	Lack of marketing/ export channel	31.68	X
F11	Disease and Pest Control Mgt. (Herbicide)	31.04	XI

Source: Compiled by author.

6.2.2 Constraints Faced by Commission Agents in Organic Pineapple Value Chain

Commission agents in the pineapple value chain rank "Lack of marketing network to trade organic products" as the topmost constraint, followed by "Lack of infrastructure facilities to handle organic products", with Garrett's mean scores of 78.80 and 76.80. Lack of value-added organic products and lack of government policy support ranked as the third and fourth constraints by commission agents in the chain. Commission agents rank "Lack of working capital" as the least constraint followed by "Lack of storage facility" in the existing value chain. The details of the constraints (from high to low) are shown in the below table.

Table 79: ***Showing Constraints Faced by Commission Agents.***

Factor	Constraints	Garrett's Mean Score	Rank
F1	Lack of marketing network to trade organic products	78.8	I
F2	Lack of infrastructure facilities to handle organic products	76.8	II
F3	Lack of value-added organic products	63.4	III
F4	Lack of government policy support	63	IV
F5	Buyers' trust issue in buying organic products	60.2	V
F6	Inadequate labelling of organic products	57.1	VI
F7	Certification issues	56.4	VII
F8	Compliance with organic standards	49.3	VIII
F9	Costly packaging material for organic products	46.1	IX
F10	Lack of awareness about organic products	42	X
F11	Consumer unwillingness to pay a premium price	39.7	XI
F12	Lack of market for organic producers	39	XII
F13	Inadequate and untimely supply of organic products	37.5	XIII
F14	Lack of storage facility	21.6	XIV
F15	Lack of working capital	20.2	XV

Source: Compiled by the author.

6.2.3 Constraints Faced by Wholesalers in Organic Pineapple Value Chain

Wholesalers rank “Inadequate and untimely supply of organic products” as the major constraint followed by “Lack of marketing network to trade organic products” with Garrett’s mean scores of 75.60 and 72.20 respectively. Wholesalers mostly have a contract agreement with farmers to buy the organic pineapple. Pineapples are traded through the usually established network, and no separate chain is maintained for organic produce. Apart from basic value-adding activities like grading and cleaning, wholesalers do not undertake any other value-addition activities, and the profit margin is determined by the difference between the buying and selling prices. Wholesalers rank “Lack of storage facility” and “Lack of working capital” as the least constraints with mean scores of 17.50 and 29.70 respectively. The details of the constraints faced by wholesalers in the organic pineapple value chain are shown in the below table.

Table 80: ***Showing Constraints Faced by Wholesalers in Organic Pineapple Value Chain***

Factor	**Constraints**	**Garrett’s Mean Score**	**Rank**
F1	Inadequate and untimely supply of organic products	75.6	I
F2	Lack of marketing network to trade organic products	72.2	II
F3	Lack of value-added organic products	64.3	III
F4	Lack of infrastructure facilities to handle organic products	62.5	IV
F5	Buyers’ trust issues in buying organic products	61.1	V
F6	Inadequate labelling of organic products	60	VI
F7	Lack of government policy support	53.7	VII
F8	Lack of awareness about organic products	48.1	VIII
F9	Compliance with organic standards	46.1	IX
F10	Certification issues	43.3	X
F11	Costly packaging material for organic products	40.6	XI
F12	Consumer unwillingness to pay a premium price	38.3	XII
F13	Lack of market for organic producers	34.3	XIII
F14	Lack of working capital	29.7	XIV
F15	Lack of storage facility	17.5	XV

Source: Compiled by author.

6.2.4 Constraints Faced by Retailers in Organic Pineapple Value Chain.

Retailers rank “Buyer’s trust issue in buying organic products” as a major constraint in the pineapple value chain with Garrett’s mean score of 72.10, followed by “Inadequate labeling of organic products” with a score of 65.90. Retailers buy the organic pineapple from commission agents and wholesalers and mix the same with a conventional chain and no separate chain for organic produce is maintained. Organic pineapples are sold in fresh form, and consumers have trust issues paying a premium price as no proper labeling is done. Lack of market linkage is also an important factor as retailers are forced to sell the organic pineapple in the local market or on the street side. Retailers do not engage in value-added activities, and their margin is defined solely by the difference between the selling and buying price. “Lack of storage facilities” is ranked as the least constraint from the retailer’s perspective, followed by “Costly packaging material for organic products” and “Inadequate and untimely supply of organic products”, with a score of 26.55, 29.65, and 29.75 respectively. The details of constraints from high to low are shown in the table below.

Table 81: ***Showing Constraints Faced by Retailers in Organic Pineapple Value Chain***

Factor	Constraints	Garrett’s Mean Score	Rank
F1	Buyer's trust issue in buying organic products	72.1	I
F2	Inadequate labelling of organic products	65.9	II
F3	Lack of marketing network to trade organic products	63.95	III
F4	Compliance with organic standards	61.55	IV
F5	Lack of value-added organic products	60.95	V
F6	Consumer unwillingness to pay a premium price	59.6	VI
F7	Lack of infrastructure facilities to handle organic products (transportation, handling, and grading)	57.15	VII
F8	Lack of awareness about organic products	50.65	VIII
F9	Certification issues	49.3	IX
F10	Lack of Market for organic producers	44.5	X
F11	Lack of government policy support	43.6	XI
F12	Lack of working capital	33.18	XII
F13	Inadequate and untimely supply of organic products	29.75	XIII
F14	Costly packaging material for organic products	29.65	XIV
F15	Lack of storage facility	26.55	XV

Source: Compiled by author

6.2.5 Opportunities for Upgrading the Organic Pineapple Value Chain (Farmer Perspective)

Farmers sell fresh organic pineapple mostly to wholesalers and commission agents through the traditional conventional channel. Only special orders (from distant states and other countries) are processed through the FPC "Hmar Agro Organic Producer Company Ltd". The organic pineapple value chain is still in its early stages, as value-added activities such as the establishment of production and packaging facilities per organic standards have yet to begin. To upgrade the existing value chain, farmers strongly agree to improvement in aspects like improving market information, support for new technology development, strengthening producer organization, and developing extension services for production and processing with mean score ranges from 4.51 to 5. Despite engaging in contract farming, especially with wholesalers, farmers are not motivated to do so because they do not receive premium prices for organic produce, and farmers moderately agree to contract farming and agripreneur involvement in the existing organic pineapple value chain. The details of the various opportunities from farmers' perspectives in upgrading the organic pineapple value chain with mean score and verbal interpretation are shown in the table below.

Table 82: ***Showing Opportunities for Upgrading the Pineapple Value Chain.***

Sl. No	Opportunities	Mean	Min.	Max.	Standard deviation	Verbal Interpretation
1	Improving market information	4.61	4	5	.517	Strongly agree
2	Support for new technology development	4.60	3	5	.519	Strongly agree
3	Strengthen Producer Organisation	4.60	4	5	.493	Strongly agree
4	Develop extension services for production and processing	4.56	4	5	.499	Strongly agree
5	Government support for certification and standards	4.48	3	5	.529	Agree
6	Establishment of an internal quality management system	4.46	4	5	.502	Agree
7	Organic retail stores in various major cities	4.37	4	5	.486	Agree
8	Direct marketing	4.18	3	5	.484	Agree
9	Promotion of input-based enterprises	3.92	2	5	.609	Agree
10	Agripreneur to provide market	3.45	2	5	.621	Moderately agree
11	Contract farming	2.89	2	5	.689	Moderately agree

Source: Compiled by author.

6.3 Constraints and Opportunities in Organic Pumpkin Value Chain

This section briefly discusses about various constraints faced by farmers, wholesalers, commission agents, retailers in the organic pumpkin value chain in Nalbari district. Similar to the organic pineapple, various constraints are ranked in accordance with level of severity. In addition to this, various opportunities to upgrade the existing value chain is identified and analysed.

6.3.1 Constraints Faced by Farmers in Organic Pumpkin Value Chain

Farmers sell organic pumpkins in fresh form through conventional channels (through commission agents, wholesalers, and retailers). The FPC named “Pagladiya Agro Organic Producer Company Ltd” was established in 2017 to produce value-added products from organic pumpkin and develop a better market linkage to sell organic products. However, the FPC has yet to acquire operational capability, which makes farmers sell organic pumpkins for the same price as conventionally farmed pumpkins. Farmers face several constraints in upgrading the organic value chain, which prevents them from exploring the end-to-end organic chain. In the list, farmers rank “Involvement with farmers association/organization” as a major constraint, followed by “Policy support”, with Garrett’s mean score of 71.12. and 65.24. Organic products need strict quality standards and have to comply with the guidelines set by the certifying agency. However, farmers experience a lack of support from FPC related to quality standards, market linkage, and policy support like credit services from the government, the assured premium price for organic products, etc. “Inadequate quality standard” and “lack of market for organic produces” ranked as the third and fourth major constraints with Garrett’s mean scores of 61.62 and 58.89 respectively. Farmers rank “Low yield during conversion” and “Disease & pest control management” as the least constraints in upgrading the value chain with scores of 26.88 and 28.13, respectively. The details of constraints (high to low) faced by farmers in the organic pumpkin value chain are shown in the below table.

Table 83: ***Showing Constraints Faced by Farmers in Organic Pumpkin Value Chain.***

Factors	**Constraints**	**Garrett’s Mean Score**	**Rank**
F1	Involvement with farmers association/organization	71.12	I
F2	Policy support	65.24	II
F3	Inadequate quality standard	61.62	III
F4	Lack of market for organic produces	58.89	IV
F5	Consumer unwillingness to pay premium price	54.21	V
F6	High cost of input materials	50.41	VI
F7	No training facility	49.56	VII
F8	Lack of working capital	47.61	VIII
F9	Lack of marketing /export channel	36.3	IX
F10	Disease and pest control management (Herbicide)	28.13	X
F11	Low yield during conversion	26.88	XI

Source: Compiled by the author.

6.3.2 Constraints Faced by Commission Agents in the Organic Pumpkin Value Chain

Organic pumpkins are sold to commission agents, and no separate chain is maintained by commission agents for organic produce. There is no value addition at the commission agent's hand; the margin is decided solely by price differences. In the list of constraints, commission agents rank “Lack of marketing network to trade organic products” as a major constraint, followed by “Inadequate and timely supply of organic products” with Garrett’s mean score of 73.50 and 65.30 respectively. Commission agents require an established market linkage to sell organic outputs, which is not in the current organic pumpkin value chain. Continuous and consistent supply is required for commission agents to sustain product flow; however, the supply of organic pumpkins does not meet the demand, forcing them to mix it with other non-organic products. Commission agents ranked “Lack of government policy support” and “Lack of infrastructure facilities to handle organic products as the third and fourth major constraints. The list of constraints (highest to lowest) from the commission agents' perspective are shown in the table below.

Table 84: ***Showing Constraints Faced by Commission Agents in Organic Pumpkin Value Chain.***

Factor	Constraints	Garrett’s Mean Score	Rank
F1	Lack of marketing network to trade organic products	73.5	I
F2	Inadequate and untimely supply of organic products	65.3	II
F3	Lack of government policy support	63.5	III
F4	Lack of infrastructure facilities to handle organic products	61.9	IV
F5	Inadequate labelling of organic products	59.4	V
F6	Lack of value-added organic products	58.3	VI
F7	Lack of storage facility	51.2	VII
F8	Lack of Market for organic producers	47.7	VIII
F9	Compliance with organic standards	46.5	IX
F10	Lack of working capital	43.1	X
F11	Certification issues	41.6	XI
F12	Consumer unwillingness to pay a premium price	36	XII
F13	Lack of awareness about organic products	34.9	XIII
F14	Buyer's trust issue in buying organic products	33.1	XIV
F15	Costly packaging material for organic products	33	XV

Source: Compiled by author.

6.3.3 Constraints Faced by Wholesalers in the Organic Pumpkin Value Chain

The wholesalers rank “Inadequate and untimely supply of organic products” as major constraints followed by “Lack of marketing network to trade organic products” with Garrett’s mean score of 76.20 and 74.60 respectively. Wholesalers deal with large volumes, and the availability of organic pumpkin is limited, therefore wholesalers cannot maintain a distinct chain, especially for organic products. The wholesalers rank "Lack of infrastructure facilities to handle organic products" and "Lack of value-added organic products" as the third and fourth major constraints in the value chain for organic pumpkins. Organic pumpkins are sold in fresh form, and no value-added activities are performed by wholesalers. Proper infrastructure and value-added products from an organic pumpkin, like pumpkin seeds, juice, bread, etc, are required to upgrade the existing value chain. The details of constraints (highest to lowest) faced by wholesalers in the organic pumpkin value chain are shown in the table below:

Table 85: ***Showing Constraints Faced by Wholesalers in the Organic Pumpkin Value Chain***

Factor	**Constraints**	**Garrett's Mean Score**	**Rank**
F1	Inadequate and untimely supply of organic products	76.2	I
F2	Lack of marketing network to trade organic products	74.6	II
F3	Lack of infrastructure facilities to handle organic products	73.9	III
F4	Lack of value-added organic products	62.7	IV
F5	Inadequate labelling of organic products	57.7	V
F6	Buyer's trust issue in buying organic products	50.9	VI
F7	Lack of Market for organic producers	45.9	VII
F8	Lack of awareness about organic products	43.9	VIII
F9	Compliance with organic standards	43.5	IX
F10	Consumer unwillingness to pay a premium price	43.2	X
F11	Costly packaging material for organic products	40.2	XI
F12	Lack of government policy support	37.3	XII
F13	Certification issues	33.27	XIII
F14	Lack of storage facility	31.1	XIV
F15	Lack of working capital	19.6	XV

Source: Compiled by author.

6.3.4 Constraints Faced by Retailers in the Organic Pumpkin Value Chain

The Retailers rank "Lack of market for organic producers" as a major constraint, followed by "Consumer unwillingness to pay a premium price", with Garrett's mean score of 74.80 and 72.40, respectively. Organic products require a well-established market linkage, and retailers find it challenging to discover the premium consumer segment to offer the products. Most of the time, buyers are unaware of organic products (constraint III) and have trust issues (constraint IV) in buying the same. The retailers rank "Lack of working capital" and "Lack of storage facility" as the least constraint in the value chain with scores of 21.50 and 29.10, respectively. The details of the constraints (highest to lowest) faced by retailers in the organic pumpkin value chain are shown in the following table.

Table 86: ***Showing Constraints Faced by Retailers in the Organic Pumpkin Value Chain.***

Factor	Constraints	Garrett's Mean Score	Rank
F1	Lack of Market for organic producers	74.8	I
F2	Consumer unwillingness to pay a premium price	72.4	II
F3	Lack of awareness about organic products	65.65	III
F4	Buyer's trust issue in buying organic products	58.9	IV
F5	Inadequate labelling of organic products	57.85	V
F6	Lack of marketing network to trade organic products	55.5	VI
F7	Inadequate and untimely supply of organic products	53.95	VII
F8	Compliance with organic standards	50.45	VIII
F9	Certification issues	48.25	IX
F10	Lack of infrastructure facilities to handle organic products	45.3	X
F11	Lack of value-added organic products	44.4	XI
F12	Lack of government policy support	36.85	XII
F13	Costly packaging material for organic products	33.15	XIII
F14	Lack of storage facility	29.1	XIV
F15	Lack of working capital	21.5	XV

Source: Compiled by the author.

6.3.5 Opportunities for Upgrading the Organic Pumpkin Value Chain (Farmer Perspective)

Farmers sell fresh organic pumpkins mostly to wholesalers and commission agents through the traditional conventional channel. Only special orders (from distant states) are processed through the FPC “Pagladiya Agro Organic Producer Company Ltd". Currently, the FPC is not involved in any value-added activities and the existing value chain is not strong. Farmers strongly agree with the improvement/development of direct marketing, establishment of retail stores in various major cities, strengthening of producer organization, government support for certification and standards, improvement in market information, support for new technology development, development of extension services for production and processing, contract farming and establishment of internal quality management system as major opportunities for upgrading the value chain with a mean score ranges from “4.51 to 5.00”. Among all the factors, the mean score of promotion of input-based enterprises and agripreneurs to provide market is comparatively low as opportunities in upgrading the organic pumpkin value chain. The details of the various opportunities for upgrading the organic pumpkin value chain are shown in the following table.

Table 87: ***Showing Opportunities for Upgrading the Organic Pumpkin Value Chain***

Sl. No	Opportunities	Mean	Min.	Max.	Stand. Dev.	Verbal Interpretation
1	Direct marketing	4.86	4	5	.342	Strongly agree
2	Organic retail stores in various major cities	4.81	4	5	.392	Strongly agree
3	Strengthen Producer Organisation	4.77	4	5	.421	Strongly agree
4	Government support for certification and standards	4.70	4	5	.458	Strongly agree
6	Improving market information	4.69	4	5	.464	Strongly agree
5	Support for new technology development	4.69	4	5	.464	Strongly agree
7	Develop extension services for production and processing	4.61	4	5	.490	Strongly agree
8	Contract farming	4.57	3	5	.524	Strongly agree
9	Establishment of an internal quality management system	4.57	4	5	.497	Strongly agree
10	Promotion of input-based enterprises	4.50	4	5	.503	Agree
11	Agripreneur to provide market	3.81	1	5	.765	Agree

Source: Compiled by the author.

6.4 Constraints and Opportunities in Organic Non- Basmati Rice Value Chain

This section briefly discusses various constraints faced by farmers, wholesalers, commission agents, and retailers in the organic non-basmati rice value chain in the Sonitpur district of Assam. Similar to the previous crops, various constraints are ranked in accordance with the level of severity. In addition to this, various opportunities to upgrade the existing value chain is identified and analysed.

6.4.1 Constraints Faced by Farmers in Organic Non-Basmati Rice Value Chain

Farmers rank “Lack of market for organic produce” as a major constraint with Garrett’s Mean Score of 73.84, followed by “Consumer unwillingness to pay the premium price” with a means score of 67.56. Farmers produce organic non-basmati paddy and sell the same through the conventional chain. As no value addition is done at the FPC level, the farmers could not find any market for the organic produce. The Involvement of farmers with the FPC is not well established, and the same ranked third in upgrading the organic non-basmati rice value chain. The details of the various constraints faced by the organic non-basmati rice are shown in the following table.

Table 88: ***Showing Constraints Faced by Farmers in Organic Non-Basmati Rice Value Chain.***

Factors	**Constraints**	**Garrett's Mean Score**	**Rank**
F1	Lack of market for organic produces	73.84	I
F2	Consumer unwillingness to pay premium price	67.56	II
F3	Involvement with farmers associations/organisations	64.04	III
F4	Policy support	58.97	IV
F5	Inadequate quality standard	53.36	V
F6	High cost of input material	50.34	VI
F7	Lack of working capital	48.69	VII
F8	Lack of marketing/ export channel	37.14	VIII
F9	Disease and Pest Control Mgt. (Herbicide)	35.12	IX
F10	No training facility	30.58	X
F11	Low yield during conversion	30.33	XI

Source: Compiled by the author.

6.4.2 Constraints Faced by Commission Agents in the Organic Non-Basmati Rice Value Chain.

Commission agents rank "Lack of infrastructure to handle organic products" as a major constraint followed by "Lack of marketing network to trade organic products" for upgrading the value chain, with Garrett's Mean score of 81.4 and 73.7, respectively. Commission agents mixed the organic non-basmati paddy with the conventional paddy, and no separate chain is maintained for the organic products. As the FPC lacks infrastructure facilities for the production of value-added organic products from non-basmati paddy, farmers are compelled to choose the conventional chain. Commission agents rank "Lack of working capital" as the least constraint followed by "Lack of storage facility" for upgrading the value chain, with Garrett's Mean score of "18.4" and "25.5" respectively. The details of various constraints faced by the commission agents in the organic non-basmati rice value chain are shown in the following table.

Table 89: ***Showing Constraints Faced by Commission Agents in Organic Non-Basmati Rice Value Chain***

Factor	**Constraints**	**Garrett's Mean Score**	**Rank**
F1	Lack of infrastructure facilities to handle organic products	81.4	I
F2	Lack of marketing network to trade organic products	73.7	II
F3	Lack of value-added organic products	62.1	III
F4	Lack of Market for organic producers	54.3	IV
F5	Compliance with organic standards	52.8	V
F6	Consumer unwillingness to pay a premium price	50.6	VI
F7	Inadequate labelling of organic products	50.5	VII
F8	Lack of government policy support	50.4	VIII
F9	Inadequate and untimely supply of organic products	45.7	IX
F10	Costly packaging material for organic products	45.3	X
F11	Lack of awareness about organic products	43.7	XI
F12	Buyer's trust issue in buying organic products	42.5	XII
F13	Certification issues	27.17	XIII
F14	Lack of storage facility	25.5	XIV
F15	Lack of working capital	18.4	XV

Source: Compiled by the author.

6.4.3 Constraints Faced by Wholesalers in the Organic Non-Basmati Rice Value Chain.

Wholesalers rank "Lack of marketing network to trade organic products" as a major constraint, followed by "Inadequate labeling of organic products", with Garrett's Mean score of 73.6 and 72.3, respectively. Wholesalers sell the packaged rice to various retailers through the established conventional chain. Among all the constraints, wholesalers rank "Lack of working capital" as the least factor, followed by "Lack of storage facility" with Garrett's Mean score of 28.8 and 32.6, respectively. The details of various constraints faced by wholesalers with Garrett's Mean score are shown in the following table.

Table 90: ***Showing Various Constraints Faced by Wholesalers in the Organic Non-Basmati Rice Value Chain.***

Factor	**Constraints**	**Garrett's Mean Score**	**Rank**
F1	Lack of marketing network to trade organic products	73.6	I
F2	Inadequate labelling of organic products	72.3	II
F3	Lack of infrastructure facilities to handle organic products	69.5	III
F4	Lack of value-added organic products	68.3	IV
F5	Buyer's trust issue in buying organic products	53	V
F6	Lack of government policy support	49.4	VI
F7	Certification issues	45.6	VII
F8	Lack of awareness about organic products	44.1	VIII
F9	Lack of market for organic produces	43.3	IX
F10	Inadequate and untimely supply of organic products	43.1	X
F11	Compliance with organic standards	42.2	XI
F12	Consumer unwillingness to pay a premium price	41.7	XII
F13	Costly packaging material for organic products	41.5	XIII
F14	Lack of storage facility	32.6	XIV
F15	Lack of working capital	28.8	XV

Source: Compiled by the author.

6.4.4 Constraints Faced by Retailers in the Organic Non-Basmati Rice Value Chain.

Retailers did not maintain any separate chain for organic non-basmati rice. Retailers only sell the packed rice bought from wholesalers. Among all the factors, retailers ranked "Lack of market for organic produces" as a major constraint followed by "Consumer unwillingness to pay a premium price", with Garrett's Mean score of 74.80 and 72.40, respectively. Retailers ranked "lack of working capital" as the least constraint as they maintain their cash flow system. The details of constraints faced by retailers in the organic- non-basmati rice value chain are shown in the following table.

Table 91: ***Showing Various Constraints Faced by Retailers in the Organic Non-Basmati Rice Value Chain.***

Factor	**Constraints**	**Garrett's Mean Score**	**Rank**
F1	Lack of market for organic produces	74.8	I
F2	Consumer unwillingness to pay a premium price	72.4	II
F3	Lack of awareness about organic products	65.65	III
F4	Buyer's trust issue in buying organic products	58.9	IV
F5	Inadequate labelling of organic products	57.85	V
F6	Lack of marketing network to trade organic products	55.5	VI
F7	Inadequate and untimely supply of organic products	53.95	VII
F8	Compliance with organic standards	50.45	VIII
F9	Certification issues	48.25	IX
F10	Lack of infrastructure facilities to handle organic products	45.3	X
F11	Lack of value-added organic products	44.4	XI
F12	Lack of government policy support	36.85	XII
F13	Costly packaging material for organic products	33.15	XIII
F14	Lack of storage facility	29.1	XIV
F15	Lack of working capital	21.5	XV

Source: Compiled by the author.

6.4.5 Opportunities for Upgrading the Organic Non-Basmati Rice Value Chain (Farmer Perspective).

Farmers in the organic non-basmati rice value chain sell organic paddy in a conventional way and not through the FPC (Puthimari Agro Organic Producer Company Limited). Although the FPC is involved in providing training and extension services, however, it is not involved in marketing organic products (fresh form and value-added form). The farmers strongly agree to better management and strengthen the producer organization to upgrade the existing organic non-basmati rice value chain. Farmers are also agreeing on other aspects like government support for certification, development of production and processing, internal quality management system, etc, as opportunities to upgrade the value chain. The details of mean scores of various opportunities from farmer's perspectives in upgrading the value chain are shown in the following table.

Table 92: ***Showing Mean Score Various Opportunities for Upgrading the Organic Non-Basmati Rice Value Chain.***

Sl. No	Opportunities	Mean	Min.	Max.	Stan. Dev.	Verbal Interpretation
1	Strengthen Producer Organisation	4.53	4	5	.502	Strongly agree
2	Government support for certification and standards	4.42	3	5	.524	Agree
3	Develop extension services for production and processing.	4.42	4	5	.497	Agree
4	Establishment of internal quality management system	4.38	4	5	.490	Agree
5	Support for new technology development	4.37	3	5	.513	Agree
6	Improving market information	4.37	4	5	.486	Agree
7	Organic retail stores in various major cities	4.28	3	5	.480	Agree
8	Promotion of input-based enterprises	4.25	4	5	.437	Agree
9	Direct marketing	4.22	3	5	.452	Agree
10	Agripreneur to provide market	3.97	2	5	.734	Agree
11	Contract farming	3.65	2	5	.762	Agree

Source: Compiled by the author.

6.5 Constraints and Opportunities in the Organic Red Rice Value Chain

This section briefly discusses various constraints faced by farmers and opportunities to upgrade the existing organic red rice value chain of the Dhemaji district of Assam. No market intermediaries like wholesalers, commission agents, and retailers are found in the chain as farmers sell their entire organic produce to FPC.

6.5.1 Constraints Faced by Farmers in Upgrading Organic Red Rice Value Chain

Farmers ranked “Low yield during conversion period” as a major constraint in upgrading the organic red rice value chain, followed by “Lack of market for organic produce”, with Garrett’s mean score of 67.08 and 67.04, respectively. The yield of organic red paddy is low compared to non-basmati paddy and for this farmers are not benefiting from the same. Apart from these two factors, farmers also rank lack of marketing channels, disease and pest control management, and consumer unwillingness to pay premium price as major constraints, with Garrett’s mean score above 60.00. The details of constraints faced by farmers in the organic red rice value chain are shown in the following table.

Table 93: ***Showing Constraints Faced by Farmers in the Organic Red Rice Value Chain.***

Factors	**Constraints**	**Garrett's Mean Score**	**Rank**
F1	Low yield during conversion	67.08	I
F2	Lack of market for organic produces	67.04	II
F3	Lack of marketing/ export channel.	65.5	III
F4	Disease and Pest Control Mgt. (Herbicide)	61.18	IV
F5	Consumer unwillingness to pay premium price	60.6	V
F6	Inadequate quality standard	46.21	VI
F7	Policy Support	43.46	VII
F8	Involvement with farmers association/organization	41.1	VIII
F9	No training facility	40.17	IX
F10	High cost of input materials	32.94	X
F11	Lack of working capital	25.41	XI

Source: Compiled by the author.

6.5.2 Opportunities for Upgrading the Organic Red Rice Value Chain (Farmer Perspective).

For the organic red rice value chain, farmers strongly agree that "Improvement in Government support for certification and standards" is a major opportunity for upgrading the value chain. The value chain of organic red rice requires investment in all the aspects like promotion of input-based enterprises, strengthening the producer's organization, proper internal quality management system, investment in new technology development, improvement in market information, improvement in extension services for production & processing, direct marketing, and contract farming. However, farmers ranked agripreneur to provide market as the least factor among all the opportunities for upgrading the value chain of organic red rice. The details of various opportunities for upgrading the organic red rice value chain are shown in the following table.

Table 94: ***Showing Opportunities for Upgrading the Organic Red Rice Value Chain***

Sl. No	**Opportunities**	**Mean**	**Min.**	**Max.**	**Stand. Dev.**	**Verbal interpretation**
1	Government support for certification and standards	4.70	3	5	.486	Strongly agree
2	Organic retail stores in various major cities	4.42	3	5	.524	Agree
3	Promotion of input-based enterprises	4.41	4	5	.495	Agree
4	Strengthen Producer Organisation	4.30	3	5	.734	Agree
5	Establishment of an internal quality management system	4.25	4	5	.437	Agree
6	Support for new technology development	4.21	3	5	.443	Agree
7	Improving market information	4.16	4	5	.369	Agree
8	Develop extension services for production and processing.	4.08	3	5	.712	Agree
9	Direct marketing	4.05	4	5	.226	Agree
10	Contract farming	3.80	2	5	.900	Agree
11	Agripreneur to provide market	3.38	2	5	.612	Moderately agree

Source: Compiled by the author.

6.6 Constraints and Opportunities in Organic Turmeric Value Chain

Similar to organic turmeric, this section briefly discusses various constraints faced by farmers and opportunities to upgrade the existing organic turmeric value chain of the Golaghat district of Assam. No market intermediaries like wholesalers, commission agents, and retailers are found in the chain as farmers sell their entire organic produce to FPC.

6.6.1 Constraints Faced by Farmers in Organic Turmeric Value Chain

Farmers ranked the lack of a market for organic produce as a major constraint in upgrading the organic turmeric value chain. Although the Padumpathar Agro Organic Producer Company Limited engages in organic turmeric production, however, demand from distant traders is not regular. The disease and pest control management for organic turmeric is ranked as the second constraint because farmers are not well trained in the use of pest control, and thus, it affects the plants. The details of various constraints (high to low) faced by farmers in the organic red rice value chain are shown in the following table.

Table 95: ***Showing Constraints Faced by Farmers in Organic Turmeric Value Chain.***

Factors	**Constraints**	**Garrett's Mean Score**	**Rank**
F1	Lack of market for organic produces	68.18	I
F2	Disease and Pest Control Mgt. (Herbicide)	66.13	II
F3	Consumer unwillingness to pay premium price	59.04	III
F4	Low yield during conversion	54.3	IV
F5	Lack of marketing/export channel	53.57	V
F6	Inadequate quality standard	51.9	VI
F7	Policy Support	46.33	VII
F8	Involvement with farmers association/organization	44.45	VIII
F9	No training facility	43.24	IX
F10	High cost of input materials	32.97	X
F11	Lack of working capital	29.34	XI

Source: Compiled by the author.

6.6.2 Opportunities for Upgrading the Organic Turmeric Value Chain (Farmer Perspective)

Farmers rate and strongly agree to support new technology development and direct marketing as prime opportunities for upgrading the existing organic turmeric value chain. Apart from these two, farmers also rate contract farming as an important opportunity to upgrade the value chain as the same will ensure a strong B2B channel. The mean value of all other factors ranges from "3.51 to 4.50", indicating farmers agree on this aspect to upgrade the value chain. However, the farmers rate the involvement of agripreneurs in providing the market as the lowest among all, with a mean score of 2.72. The details of the various opportunities for upgrading the organic turmeric value chain are shown in the following table.

Table 96: ***Showing Opportunities for Upgrading the Organic Turmeric Value Chain***

Sl. No	Opportunities	Mean	Min.	Max.	Stand. dev.	Verbal interpretation
1	Support for new technology development	4.88	4	5	.327	Strongly agree
2	Direct marketing	4.61	4	5	.490	Strongly agree
3	Contract farming	4.49	4	5	.402	Agree
4	Develop extension services for production and processing.	4.45	3	5	.599	Agree
5	Improving market information	4.34	3	5	.667	Agree
6	Organic retail stores in various major cities	4.28	3	5	.534	Agree
7	Strengthen Producer Organisation	4.20	3	5	.716	Agree
8	Government support for certification and standards	4.20	3	5	.464	Agree
9	Promotion of input-based enterprises	4.20	4	5	.402	Agree
10	Establishment of an internal quality management system	4.09	3	5	.681	Agree
11	Agripreneur to provide market	2.72	2	5	.508	Moderately agree

Source: Compiled by the author.

6.7 Comparative Analysis of Constraints Faced by Chain Actors in Five Selected Organic Crops.

The various constraints faced by actors are ranked by using the Garrett ranking method. For organic pineapple, farmers ranked “Policy support” as a major constraint in upgrading the value chain. Organic pineapples are mostly sold with conventional chains and through commission agents, wholesalers, and retailers. To maintain an end-to-end value chain, policy support is required from the government and the FPC “Hmar Agro Organic Producer Co.Ltd.”. Commission agents ranked “Lack of marketing network to trade organic products” and wholesalers ranked “Inadequate and untimely supply of organic products” as major constraints. Wholesalers require huge and timely supplies for the smooth flow of business, however, organic pineapple supply is not very regular. Retailers have direct contact with the consumer and they revealed that the “ buyer’s trust issue in buying organic products” is a major constraint in upgrading the organic pineapple value chain. For the organic pumpkin, farmers ranked “involvement with farmers associations/organizations” as a major constraint and strong coordination is expected between farmers and the FPC to strengthen the value chain. Similar to organic pineapple, the commission agents and wholesalers in the organic pumpkin value chain ranked “lack of marketing network” and “inadequate and untimely supply” as major constraints. However, the organic pumpkin value chain retailers ranked “lack of market for organic produce” as a major constraint and a specific market point for organic produce is required to sell the organic items. For the organic non-basmati rice value chain, farmers ranked “lack of market for organic produce” as a major constraint because there are no end-to-end marketing channels for organic products and farmers only sell the organic non-basmati paddy through conventional chain. The FPC is not involved in any production, processing, and market linkage activities from organic non-basmati paddy. Commission agents and wholesalers ranked “lack of infrastructure to handle organic products” and “lack of marketing network to trade organic products” as major constraints in upgrading the organic pumpkin value chain. The constraints of retailers in the organic non-basmati value chain are similar to organic pumpkin which is “lack of market for organic produces”. Farmers and chain actors face major constraints due to a lack of market for organic products for their low consumption (Dan & Jitea, 2023). As organic products need a premium market, the retailers and farmers of organic pumpkin, organic non-basmati rice, and organic turmeric are yet to explore the same.

Among all the organic crops, the net income of the organic red rice farmers is very low due to its low production and farmers ranked low yield during the conversion period as a major constraints in upgrading the the value chain. For organic turmeric, farmers ranked “lack of market for organic produce” as a major constraint as the FPC has yet to establish a regular end-to-end market for organic turmeric powder. The details of major constraints faced by various actors in upgrading the organic value chain of five selected crops are shown in the following table.

Table 97: ***List of Major Constraints Faced by Chain Actors in Five Selected Organic Crops.***

Crops/ Actors	**Farmers**	**Commission Agents**	**Wholesalers**	**Retailers**
Organic Pineapple	Policy support	Lack of marketing network to trade organic products	Inadequate and untimely supply of organic products	Buyer's trust issue in buying organic products
Organic Pumpkin	Involvement with farmers association/ Organization	Lack of marketing network to trade organic products	Inadequate and untimely supply of organic products	Lack of market for organic produces
Organic Non-Basmati Rice	Lack of market for organic produce	Lack of infrastructure to handle organic products	Lack of marketing network to trade organics products	Lack of market for organic produces
Organic Red Rice	Low yield during the conversion period	-	-	-
Organic Turmeric	Lack of a market for organic produce	-	-	-

Source: Compiled by the author.

6.8 Chapter Summary

The present chapter discussed and ranked various constraints by chain actors (farmers, commission agents, wholesalers, and retailers) in the value chain of five selected organic crops. Constraints are ranked (highest to lowest) by using Garrett's mean score. In addition, opportunities for upgrading the value chain from the farmer's perspective are also discussed. The next chapter (Chapter Seven) discusses the governance structure of the value chain of five selected organic crops.