Asian Journal of Agriculture and Rural Development
Volume 10, Issue 4 (2020): 773-781

http://www.aessweb.com/journals/5005

ANALYSIS OF THE PROBLEMS AND MINIMIZATION INITIATIVES ADDRESSED BY BANGLADESHI FARMERS DURING THE COVID-19 PANDEMIC

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Article History
Received: 22 July 2020
Revised: 5 November 2020
Accepted: 1 December 2020
Published: 29 December 2020

Keywords
Agriculture
Agribusiness
Sustainable agriculture
Agricultural policy
Farmers
Agricultural personnel
Covid-19

ABSTRACT
The Covid-19 pandemic is heavily impacting not only the health sector but also every economical sector all over the world. Bangladesh is among the major agriculture production-based economies and is suffering greatly during this pandemic. This paper presents the current agricultural situation in Bangladesh based on a survey involving various pools of experts. It also visualizes the strategies used to assess the competency of initiatives aimed at minimizing the problems faced by farmers in Bangladesh arising from the COVID-19 pandemic. Data were collected from 117 expert agricultural personnel in Bangladesh (75.27% male and 24.73% female). Twenty-eight problems were identified that are faced by the farmers of Bangladesh arising from the COVID-19 pandemic. Among these, twenty two were severe while six were less so. It was found that problems relating to product wastage, low product-level pricing, the absence of traders, and transportation issues were identified as top ranking. Twenty-six initiatives were introduced and adopted by different organizations in Bangladesh to minimize agricultural problems arising from the COVID-19 pandemic. Among these, five were highly effective and the remainder moderately so. It was found that initiatives related to government directives and financial support were identified as the top ranked. Based on analysis of data, this paper concludes with several suggestions aimed at minimizing the problems faced by farmers in Bangladesh arising from the COVID-19 pandemic.

Contribution/Originality: This study contributes to exitsing literature by presenting the current agricultural situation in Bangladesh based on a survey involving various pools of experts. Moreover, it also proposes potential ways forward to minimize agricultural problems arising from the COVID-19 pandemic in Bangladesh.

DOI: 10.18488/journal.ajard.2020.104.773.781
ISSN(P): 2304-1455/ ISSN(E): 2224-4433

How to cite: Md. Sekender Ali --- Md. Saeed Siddik --- Sk. Md. Nur-E-Alam --- Tayeba Khanam --- Most Moriom Khatun (2020). Analysis of the Problems and Minimization Initiatives Addressed by Bangladeshi Farmers during the Covid-19 Pandemic. *Asian Journal of Agriculture and Rural Development*, 10(4), 773-781. 10.18488/journal.ajard.2020.104.773.781

1. INTRODUCTION

The COVID-19 pandemic is a serious problem globally and Bangladesh is no exception, with an ongoing nationwide lockdown. The number of confirmed cases has already exceeded 100,000 and the proportion of the population testing positive is >20%, which ranks Bangladesh very high on the global scale. Figure 1 Illustrates the numbers of cases and deaths recorded between February and July 2020. Covid-19 has already severely impacted various economic sectors including agriculture, transportation, and industry. Since agriculture is the backbone of the Bangladeshi economy, we must take appropriate steps to mitigate the effects of Covid-19.

As in all other sectors, every sector of agriculture (crops, livestock, and fisheries) in Bangladesh is facing serious problems during this pandemic. The Extension and Advisory Service (EAS) providers in Bangladesh must cooperate in response to the immediate threats to Bangladeshi agriculture arising from COVID-19. In consideration, this research was conducted by the Bangladesh Agricultural Extension Network (BAEN) to assess the competency of initiatives aimed at minimizing the problems faced by farmers in Bangladesh arising from the COVID-19 pandemic.

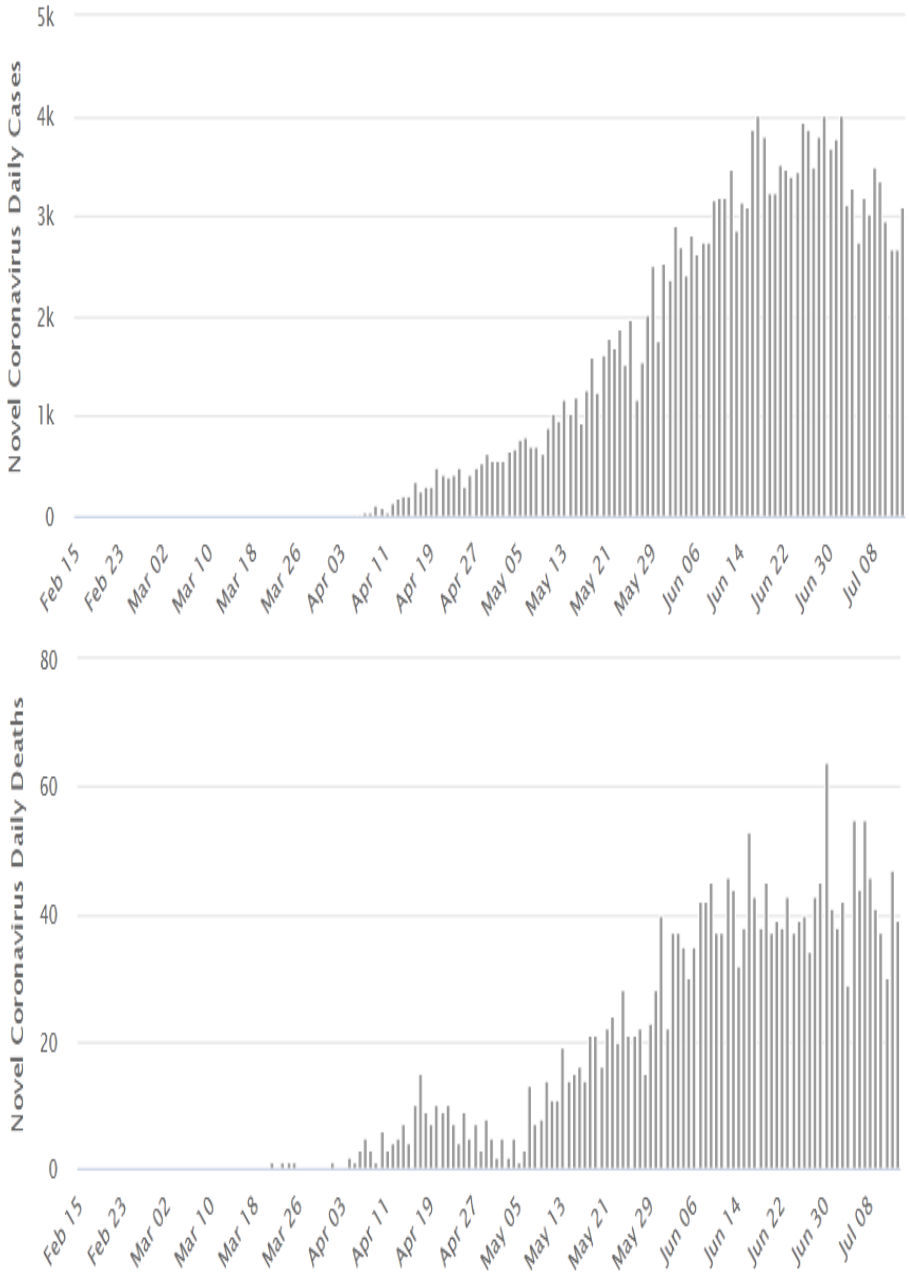

Figure 1. Covid-19 Novel Coronavirus Case and Death Rates in Bangladesh[1].

Researchers have already addressed global generic and local agricultural problems and proposed several mitigating remedies. The early impact of the Covid-19 pandemic on the agricultural sector is presented by Siche (2020), where data from secondary data sources (e.g., FAO, and WHO) and other technical reports were used in analysis. Gray assessed the impact of the Canadian transportation sector's disruption in regard to agricultural

[1] https://www.worldometers.info/coronavirus/country/bangladesh/.

product supply (Gray, 2020). He examined the various Canadian transportation modes used for agricultural products from the field to consumers. The impact of COVID-19 on the cross-correlations between crude oil and agriculture was explored by Wang (2020), who analyzed the economic impact of crude oil and agricultural futures. The impact of COVID-19 on various agricultural sectors has been explored along with their remedial strategies (e.g., the grain and oilseed sector (Brewin, 2020), fruit and vegetables (Richards, 2020), and cattle and beef (Rude, 2020). Goddard documented the impact of COVID-19 on food retail and service in Canada (Goddard, 2020). The impact on agriculture and public health during the Covid-19 pandemic on the Indian subcontinent was demonstrated by McDonald (2020). A food supply review of Bangladesh during the Covid-19 pandemic is presented by Zabir (2020). Vegetable cultivation by domestic female workers was shown to have a positive impact on mitigating the effects of the pandemic on agriculture (Akter, 2019). Community-based agricultural development (Ahmadu, 2012) can also be a strategy employed against the effects of the pandemic on agriculture. Bangladeshi consumer perception of food purchasing has been dramatically changed during this pandemic which has been presented by Khatun et al. (2020). Food security in Bangladesh was presented by Dev (2020), where several steps are described to overcoming this crisis, but no other agricultural issues were addressed.

However, all the foregoing are country-specific analyses that do not cover the situation in Bangladesh. This paper presents a detailed analysis of the effect of Covid-19 on the agricultural sector in Bangladesh, with recommendations aimed at mitigating this crisis. A preliminary study of our work has been published as a personal blog in AESA (Ali, 2020).

1.1. Study Objectives

The general objective of this research was to explore the usefulness of mobile telephones in obtaining agricultural information in the study area. However, the specific objectives were:

- To identify the demographic characteristics of the respondents.
- To assess the problems faced by farmers in Bangladesh.
- To assess the competency of initiatives taken by different organizations to minimize the problems faced by farmers in Bangladesh.
- To compile a roadmap forward to minimize the problems faced by farmers in Bangladesh.

2. METHODOLOGY

2.1. Study Approach

This study adopted a quantitative method to reach its research objectives. As stated by Creswell (1994), quantitative research is a type of research that explains a phenomenon by collecting numerical data that are analyzed using mathematically based methods (in particular, statistics). The study was carried out on the agricultural expertise available in Bangladesh to analyze the problems and its mitigation initiatives.

2.2. Population and Sampling

Initially a draft questionnaire was prepared containing open-ended questions which were sent to various experts in Bangladesh and India for their comments. As per their comments, a draft questionnaire was prepared with the combination of closed- and open-form questions whenever necessary. These were again sent to the relevant experts for their corrections. Accordingly, after obtaining several corrections and modifications, the draft questionnaire was further modified, and the modified questionnaire was validated by the Executive Committee Members of BAEN. After consultation, necessary corrections, modifications, additions, and deletions were made to the questionnaire. The final version of the survey questionnaire was then prepared. Google Form was used to conduct this online survey.

EAS providers, agricultural university teachers and students, and other professionals in Bangladesh were requested to respond to the questionnaire, between 8 May and 8 June 2020. Accordingly, 130 respondents participated in the online survey; due to improper answers, 13 responses were excluded and finally 117 respondents' data were selected for analysis. Based on their responses, the results of this survey were prepared.

3. RESULTS AND DISCUSSION

3.1. Demographic Characteristics of Respondents

The demographic characteristics of the respondents, including organizational participation, age, education, and job experience, were identified. These are discussed in the following subsections.

Organizational participation One hundred and seventeen respondents from 21 organizations in Bangladesh participated in the survey, of which 114 were agriculturists from the crop, livestock, and fisheries sectors of different government and nongovernment organizations (NGOs) while athe remainder were from other sectors. Participants' organizations are shown in Table 1.

Age The observed age range of respondents was 24–63 years, with an average of 35.73 years and standard deviation 8.27, which indicates a wide demographic variation. The respondents were classified into three categories based on their age: up to 30 years, 30–45 years, and >45 years. The statistical distribution of age and gender is shown in Table 2.

Educational level The educational qualifications of respondents ranged from Bachelor to PhD; the distribution of respondents according to their educational qualification is shown in Table 2. Among the respondents, 114 had graduated from agricultural universities and the remainder from other disciplines.

Job experience The observed range of job experience was 1–35 years, with the average being 9.06 years. The respondents were classified into three categories based on their job experience, as shown in Table 2.

Table 1. Organizational breakdown of respondents.

Nature of organization	Name of organization
Government Extension Organizations	Department of Agriculture Extension (DAE)
	Department of Livestock Services (DLS)
	Department of Fisheries (DOF)
	Agricultural Information Service (AIS)
Government Research Organizations	Bangladesh Agricultural Research Council
Universities/colleges	Sher-e-Bangla Agricultural University
	Bangladesh Agricultural University (BAU), Mymensingh
	University of Dhaka
	Sylhet Agricultural University
	Bangabandhu Sheikh Mujibur Rahman Agricultural University (BSMRAU), Gazipur
	College of Development Alternatives
ICT Organizations	Bangladesh Computer Council, Dhaka
	Bangladesh Institute of ICT in Development (BIID)
Autonomous body	Palli Daridro Bimochon Foundation (PDBF)
NGOs	Winrock International
	Oxfam in Bangladesh
	iDE Bangladesh
Bank	Bangladesh Bank
Private companies	Fasal Agro Industry limited, Dhaka
	Bayer Crop Science, Ltd
	Greenfield Agro Nursery

Table 2. Distribution of respondents according to job experience, educational qualification, and age, by gender.

Variable	Categories	Female	Male	Total	Percentage
Level of job experience	Low (up to 5 years)	15	29	44	37.61
	Medium (>5 to 15 years)	6	45	51	43.59
	High (>15 years)	2	20	22	18.80
	Total	23	94	117	100.00
Level of educational qualification	Low (Bachelor)	1	4	5	4.27
	Medium (Masters)	23	51	74	63.25
	High (PhD)	4	34	38	32.48
	Total	28	89	117	100.00
Age distribution	Young (up to 30 years)	20	28	48	41.03
	Medium (>30 to 45 years)	7	46	53	45.30
	Senior (>45 years)	1	15	16	13.68
	Total	28	89	117	100.00

[RQ1] *Problems addressed by farmers in Bangladesh arising from the COVID-19 pandemic*

Due to the COVID-19 pandemic, farmers in Bangladesh are facing a range of problems to varying degrees. Initially, problem items were collected from the different print and electronic news media and from in-depth consultations with relevant experts and EAS providers. These were sent to experts in Bangladesh and India for their comments. As per their comments, the items were then modified. These were again sent to the relevant experts and EAS providers for their amendments. Accordingly, after several corrections and modifications, the items were further modified and were then validated by the Executive Committee Members of BAEN. After consultation, essential corrections, modifications, additions, and deletions were made to the items. Finally, 28 items were selected for the study.

Respondents were asked to give their opinion on the severity of selected problem items faced by farmers arising from the COVID-19 pandemic, by highlighting the correct response among the four alternatives as either 'severe problem', 'moderate problem', 'low problem', or 'no problem'. Weights were assigned to these alternative responses as 3, 2, 1, and 0 respectively. The problem faced index (PFI) of each item was determined according to Equation 1:

$$PFI = 3xf_s + 2xf_m + 1xf_l + 0xf_n \quad (1)$$

where

f_s= number of respondents facing a severe problem.

f_m = number of respondents facing a moderate problem.

f_l = number of respondents facing a low problem.

f_n = number of respondents facing no problem.

As 117 participants responded on each problem item, the PFI of items ranged from 0 to 351 where '0' indicated no problem and '351' indicated the highest level of problem. Rank order was also compiled on the basis of descending order of PFI. Items were rearranged on the basis of rank order as shown in Table 3. Based on PFI, it was planned to categorize the problems into the following three categories: severe, moderate, and low. The PFI value ranges of these three categories are 235–351, 118–234, and 0-117, respectively, indicating the importance of finding solutions to the problems.

Table 3. Rank order of problems faced by farmers arising from the COVID-19 pandemic (PFI).

Item no.	Problem items	Facing severe problem	Facing moderate problem	Facing low problem	Facing no problem	Total	PFI	Rank order	Categories of problems
12	Wastage and low price of vegetables and fruit at farm gate or local market due to disconnect with the customer, absence of traders (middlemen as collectors, transporters, wholesalers, etc.) and vehicles for transport	86	29	2	0	117	318	1	Severe problems
13	Low price of eggs, milk, meat, etc. at farm and local markets due to reduced customer footfall, traders, and vehicles	80	35	2	0	117	312	2	
16	Losses of export-quality vegetables due to closure of borders and airports	85	25	5	2	117	310	3	
15	Wastage of flowers in farmers' fields due to absence of customers, traders, collectors, transporters, or vehicles	85	24	6	2	117	309	4	
18	Loss of shrimp cultivators and exporters due to closure of borders and airports	83	26	7	1	117	308	5	
17	Loss of crab and mud eel producers, and of dry and frozen fish exporters, due to closure of borders and airports	81	29	6	1	117	307	6	
19	Reduced income due to marketing problems with farmers' products	82	26	8	1	117	306	7	
20	Food shortage in agricultural laborer households due to lack of work and having to stay at home	67	39	11	0	117	290	8	
28	Mango and lychee farmers and traders may be loser due to marketing problems	70	34	11	2	117	289	9	
14	Low price of fish products at farm and local markets due to reduced customer footfall, traders, and vehicles	51	59	3	4	117	274	10	
25	Farmers are unable to pay loan installments and not able to get new loans for cultivation	54	46	15	2	117	269	11	
9	Shortage of skilled manpower and labor for vegetable and fruit transport and marketing	54	44	17	2	117	267	12	
7	Shortage of labor for harvesting and postharvest practices with Boro rice	57	40	15	5	117	266	13	
27	Complex banking procedure in acquiring loans for agricultural activities	46	50	20	1	117	258	14	
2	Inadequate supply of livestock production inputs such as day-old chicks, poultry feed, veterinary medicines and vaccines, etc. due to restricted transport and quarantine measures	47	48	19	3	117	256	15	
8	Shortage of labor for postharvesting of vegetables and fruit (sorting, grading, packaging, handling, etc.)	43	55	16	3	117	255	16	Severe Problems
23	Farmers have to pay more to buy inputs and labor, which increases family expenses	42	51	21	3	117	249	17	
10	Shortage of labor for livestock production (poultry, cattle, goats, dairy, meat, eggs, etc.)	40	54	20	3	117	248	18	
3	Inadequate supply of fishery production inputs such as fish seed, feedstuffs, medicines, vaccines, equipment, etc. due to restricted transport and quarantine measures	41	51	21	4	117	246	19	

Item no.	Problem items	Facing severe problem	Facing moderate problem	Facing low problem	Facing no problem	Total	PFI	Rank order	Categories of problems
21	Shortage of food grain, vegetables, fruit, eggs, milk, fish, etc. in major cities due to shortage of agricultural products from fields and local markets	35	57	22	3	117	241	20	
6	Shortage of harvesters for Boro rice harvesting	46	38	24	9	117	238	21	
1	Inadequate supply of crop production inputs such as seed, fertilizers, pesticides, etc. due to restricted transport and quarantine measures	34	57	20	6	117	236	22	
24	Covid-19 and other diseases affecting farmers' health and lowering labor availability in the field	40	41	31	5	117	233	23	Moderate problems
11	Shortage of labor for fisheries production	28	60	25	4	117	229	24	
4	Inadequate agricultural pest control due to shortage of pesticides and labor for agriculture and preventive measures	34	46	33	4	117	227	25	
22	Reduced agricultural extension services because extension personnel are visiting growers' fields and offices less frequently due to the fear of contracting coronavirus	25	52	33	7	117	212	26	
5	Inadequate irrigation facilities due to lack of spare parts for equipment and technical support	22	49	39	7	117	203	27	
26	Lack of Aus rice seed as per farmers' demand for the following season	22	46	36	13	117	194	28	

Source: Analysis of authors' survey 2020.

The findings revealed that, among the 28 problems, 22 were severe and six were moderate (Table 3). From the findings it was also found that problems related to 'Wastage and low price of farmers' products (vegetables, fruit, eggs, milk, meat, flowers, shrimps, crabs, etc.) at the farm gate or local market due to disconnect with the customer, absence of traders (middlemen as collectors, transporters, wholesalers, etc.) and vehicles for transport' were identified as top ranked. The relative severity of problems may be seen from Table 3. Ali (2020) mentions 11 effects of COVID-19 on Bangladesh agriculture in his study in the very early stage of COVID-19. Roy (2020) also found similar findings in that study. Both print and electronic media regularly feature similar problems.

[RQ2] *The competency of initiatives taken to minimize the problems faced by farmers in Bangladesh arising from the COVID-19 pandemic.*

Various organizations in Bangladesh have adopted several initiatives of varying competence to minimize the problems faced by farmers arising from the COVID-19 pandemic. The minimizing initiatives were collected by consulting with local agricultural experts and analyzing different news sources. Initially, items were collated from different print and electronic news media and from in-depth consultation with relevant experts and EAS providers. Similarly, this list of initiatives was sent to different experts in Bangladesh and India for their comments feedbacks, and modified based on their feedbacks. As per their comments, the items were modified. These were again sent to the relevant experts and EAS providers for their corrections and finalized for broadcasting to the survey respondents. Accordingly, after several corrections and modifications, the items were further modified and finalized.

Respondents were asked to give their opinion on the degree of competency of the initiatives taken by different organizations in Bangladesh to minimize the problems faced by farmers arising from the COVID-19 pandemic, by highlighting the correct response among the four alternative initiatives offered as either 'highly competent', 'moderately competent', 'poorly competent', or 'not competent'. Weights were assigned to these alternative responses as 3, 2, 1, and 0, respectively. The initiative competence index (ICI) of each item was determined using Equation 2:

$$ICI = 3xf_s + 2xf_m + 1xf_l + 0xf_n \quad (2)$$

where

f_s= number of respondents stating highly competent.

f_m = number of respondents stating moderately competent.

f_l = number of respondents stating poorly competent.

f_n = number of respondents stating not competent.

Because 117 participants responded to each initiative item, the ICI of the items ranged from 0 to 351 where 0 indicated not competent and 351 indicated maximally competent. Rank order was also calculated on the basis of descending order of ICI. Items were rearranged on the basis of rank order as shown in Table 4. Based on ICI, it was planned to categorize the initiatives into three major categories: highly competent, moderately competent, and poorly competent. The ICI index value range of these categories is, respectively, 235–351, 118–234, and 0–117.

Table 4. Rank order of initiatives taken to minimize the problems faced by farmers arising from the COVID-19 pandemic (ICI).

Item no.	Initiative items	Highly competent	Moderately competent	Poorly competent	Not competent	Total	ICI	Rank order	Categories of initiatives
21	Prime Minister's directive to cultivate every inch of land for greater crop production	81	7	27	2	117	284	1	Highly competent initiatives
17	Prime Minister's directive to implement continuous agricultural activities to ensure food security	78	6	32	1	117	278	2	
6	Ensuring 24/7 presence of all DAE staff in respective work areas	61	9	44	3	117	245	3	
19	PM's instruction to arrange weekly haats (makeshift markets) in open fields in every area, to help farmers sell their produce while maintaining social distancing	58	8	50	1	117	240	4	
2	Allocation of BDT 9,000 crore as fertilizer subsidy	53	15	47	2	117	236	5	
8	Ensuring hassle-free movement of farm workers traveling from one district to another, especially for Boro rice harvesting	41	24	47	5	117	218	6	Moderately competent initiatives
22	Government decision to purchase 8 lakh ton of Boro paddy @Tk26 and 10 lakh ton of boiled Boro rice @Tk36 directly from farmers	41	14	60	2	117	211	7	
10	Keeping vehicles loaded with fertilizers, pesticides, diesel, and other agricultural produce out of lockdown	37	21	57	2	117	210	8	
16	Distributing seed of the BINA-19 rice variety by Bangladesh Institute of Nuclear Agriculture (BINA) for kharif season and providing suggestions for its cultivation	34	29	49	5	117	209	9	
11	Setting up control room by the Department of Livestock Services (DLS) as suggested by farmers	35	21	58	3	117	205	10	
24	Digital app. support for agricultural advisory services by the government/private organizations/mobile phone companies/various projects	32	27	54	4	117	204	11	
18	Allowing movement of those engaged in crop harvesting, and facilitating the food and agricultural input supply chain	37	16	60	4	117	203	12	
7	Upazilla-wise distribution and allocation of combined harvester, reaper, and rice transplanter with subsidies	32	23	59	3	117	201	13	
9	Executing necessary measures to enhance Kharif-1 production	32	20	64	1	117	200	14	
1	Stimulus package of BDT. 5,000 crore for farmers to boost agricultural production against the backdrop of COVID-19 fallout	30	24	61	2	117	199	15	
12	Distribution of VGF rice to farm families in 20 districts by the Department of Fisheries (DOF) as a Humanity Assistance Program	29	28	55	5	117	198	16	
26	Government incentive for the death by thunder and lightning	31	23	58	5	117	197	17	
15	Initiation of monitoring cells by BADC for an emergency situation to preserve Boro seed and distribution of Aus seed across the country	29	26	57	5	117	196	18	

Item no.	Initiative items	Highly competent	Moderately competent	Poorly competent	Not competent	Total	ICI	Rank order	Categories of initiatives
5	Allocation of BDT. 200 crore as an incentive to purchase agricultural machinery (especially rice harvesters)	30	23	59	5	117	195	19	
25	Irrigation incentive for farmers provided by BADC	27	28	57	5	117	194	20	
4	Allocation of BDT. 150 crore as incentive subsidy for purchasing seed	32	15	67	3	117	193	21	Moderately competent initiatives
3	Continuation of existing disbursement of loans at 4% interest for production of spices such as onion, garlic, ginger, and chili	28	23	60	6	117	190	22	
20	Provision of food aid and relief to daily wage earners	27	24	60	6	117	189	23	
23	Credit support by NGOs for farming activities	22	35	51	9	117	187	24	
14	Initiating control room by DOF as suggested by farmers	25	24	62	6	117	185	25	
13	Broadcasting of nutrition-related audio clips by DOF to create awareness	23	22	66	6	117	179	26	

Source: Analysis of authors' survey 2020.

The findings revealed that, among the 26 initiatives, five were highly competent and 21 were moderately competent (Table 4). From the findings, it was also found that initiatives related to 'Prime Minister's directive to cultivate every inch of land for more crop production, implement continuous agricultural activities for ensuring food security, and arrange weekly haats (makeshift markets) in open fields in every area to help farmers sell their produce while maintaining social distancing; with the ongoing presence of DAE staff in respective working areas and allocation of BDT. 9,000 crore as a fertilizer subsidy' were identified as the top ranked. Competency rankings of all initiative items are shown in Table 4.

3.2. Pathways Forward to Minimizing Agricultural Problems Arising from the Covid-19 Pandemic

Based on the above findings, the following pathways forward are suggested to minimize the problems faced by farmers in Bangladesh arising from the COVID-19 pandemic:

- Strictly follow the Prime Minister's directive to cultivate every available inch of land for increased crop production, implement continuous agricultural activities to ensure food security, and arrange weekly haats in open fields in every area to help farmers sell their produce while maintaining social distancing.
- Continuous presence of EAS providers at the local level, providing technical support to farmers in the crop, livestock, and fisheries sectors, to minimize their problems.
- Effective collaboration and coordination among public and private EAS providers to respond to the immediate threats to Bangladeshi agriculture.
- Strengthen digital advisory services and provide information on output prices, availability of inputs, etc.
- Arrange a proper marketing system to sell farmers' products (vegetables, fruit, eggs, milk, meat, flowers, shrimps, crabs, etc.) so that they can benefit by getting a fair price for their products with minimum wastage.
- Arrange an e-marketing system for farmers to buy inputs and sell agro-products.
- Organize a proper transport system for marketing of farmers' products.
- Organize a proper transportation and distribution system to transport agricultural input from manufacturing and marketing companies to local dealers and farmers.
- Proper monitoring and distribution of government subsidies, grants, incentives, credit, etc. for the benefit of farmers.
- Enhance cooperative farming and marketing systems.
- Ensure migration of agricultural labor, with proper healthcare, from areas of surplus labor to areas with a deficit.
- Increase agricultural mechanization facilities for farmers.

- Provide low interest credit to farmers' groups (common interest groups formed by DAE, farmer groups of NGOs) to buy large agricultural equipment such as rice harvesters, with a matching government subsidy so that small and marginal farmers are able to harvest their rice efficiently, as well as earning extra money by cutting other farmers' rice crops.
- Educate farmers about biosecurity measures such as hand washing, wearing masks, staying home if sick, and maintaining social distancing.
- Ensure the availability of vehicles, insurance, incentives, PPE, sanitization products, etc. for EAS personnel.
- Ensure that grants are available from development partners (FAO, IFAD, other donors, development banks, etc.) to:
  - increase the capacity of EAS providers.
  - provide a vehicle subsidy for transport of farmers' products from farms to large cities.
  - increase the capacity of small and marginal farmers to buy agricultural implements.
  - establish low-cost cold storage facilities for farmers.

4. CONCLUSION

This paper presents a study on the agricultural sector of Bangladesh covering part of the period of the Covid-19 pandemic. It identified and prioritized the problems addressed by farmers in Bangladesh arising from the Covid-19 pandemic, using a weighted indexed value. It found 22 severe problems in the agricultural sector in Bangladesh during this pandemic that must be addressed immediately. This paper also analyzed and prioritized the initiatives taken to minimize the problems faced by farmers arising from the COVID-19 pandemic, and ordered six highly competent initiatives. Finally, it proposed pathways forward to minimize the agricultural problems arising from the pandemic. In future, this research can be expanded by sector-wise specific impact analysis of the Covid-19 pandemic and mitigation strategies for local agriculture in Bangladesh.

Funding: This study received no specific financial support.
Competing Interests: The authors declare that they have no competing interests.
Contributors/Acknowledgement: All authors participated equally in the design and performance of the current research.

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