

An Impact Assessment Study on Special Agricultural Credit Program at 4% Concessional Interest Rate





BANGLADESH BANK

Special Research Work: SRW 2001



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December, 2020

The findings of this study do not necessarily reflect the views of the Bangladesh Bank. Any comments and suggestions are welcome at rezwanul.hoque@bb.org.bd

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Executive summary

As the history goes, the fertile land of Bengal was well known for its agriculture, as it is inherently labeled as an agrarian country. Despite the declining share of agriculture in Gross Domestic Product (GDP), its contribution in terms of absolute volume has increased many folds since independence of the country. The agriculture sector is playing a key role in providing employment for large number of people, most importantly, in rural areas. Therefore, agriculture sector is still considered as a lifeline for generating income and reducing poverty in rural parts of the country. Given the fact that Bangladesh is a highly populated country in the world with a limited size of cultivable land, it is forced it to import various agricultural products to fill the supply-demand gap every year. Moreover, the domestic demand is also growing rapidly and the cultivable land is shrinking to meet the housing demand and to establish manufacturing plants in fast growing cities as well as in villages. Therefore, it is important to make policies for achieving self-sufficiency in food and reducing import dependencies of agricultural commodities.

The Government of Bangladesh has been taking various initiatives to achieve the goal of self-sufficiency in foods. Due to the continuous efforts of the Government agricultural institutions along with the Bangladesh Bank's special credit facilities, Bangladesh has already become self-sufficient in rice production. However, the country still needs to import some crops such as pulses, oil seeds, onion, garlic, other varieties of spices and maize from abroad to meet its domestic demand. For this reason, it has become essential to increase the internal production of those import substitution crops to mitigate the uprising demand. But the cultivation of those pulses and spices are facing competition from the other parallel ('mainly Rabi') crops that grow in the same season.

One of the major drawbacks of import dependency in agricultural product is that if somehow supply chain gets disrupted it will cause the domestic prices to surge in a very short period of time. For example, the recent abnormal price hike in onion in last two years is mainly due to sudden export ban of onion by India, the major supplier of onion in Bangladesh. In such a situation, it is very difficult to find a new supplier, and import from them in a short period of time to neutralize the market pressure. Therefore, sustainable and self-sufficient production of agricultural products is a must.

In this backdrop, Bangladesh Bank has been continuing an initiative to promote the production of import substitution pulses and spices domestically by providing agro-credit through all scheduled banks at a 4 percent concessional interest rate. It is noteworthy that the concessional interest rate was 2 percent when it was first introduced in FY06 (Circular no. 03, issued by Agricultural Credit Department on 10 October 2006¹) and only state owned and specialized banks disbursed this loan. Later, the interest rate was revised to 4 percent from 1st July of FY12, and all scheduled banks are directed to disburse this loan. The commodities that are given special agro-credit at a 4 percent concessional interest rate are- i) pulse varieties: mung (green gram), masur (lentil), khesari (grass pea), chickpea (bengal gram), motor (yellow peas), mashkalai (black gram), and arhar (pigeon pea); ii) oil seeds varieties: mustard, sesame, linseed, peanut, sunflower and soybean; iii) spices varieties: ginger, garlic, onion, chili pepper, turmeric, and cumin; and iv) maize. The banks shall follow the agricultural credit policy guidelines published by Bangladesh Bank every year for disbursement amount, and season of disbursing this loan in different crops. Later, banks will apply for reimbursement of the interest rate differential (currently 9 percent) to Bangladesh Bank to get the interest rate subsidy from the Government. The current scheme of 4 percent concessional rate was revised in FY12 with the disbursed amount of BDT 71 crore. The program

¹ Effective from 1st July 2005.

was introduced in FY06 with disbursed amount stood at BDT 20 crore². Latest available data show that Banks had disbursed BDT 107 crore in FY20 to farmers to accelerate the production of these commodities.

In view of examining the effectiveness of this special credit scheme, an in-depth study based on field level survey and secondary data has been undertaken. Accordingly, data through field level survey were collected directly from borrowers across the country during January-February 2020 through predesigned questionnaire. In addition, various secondary data sources related to this special credit scheme are also used for this study. Key findings of the study are as follows:

- Although the amount of loan disbursement for promoting the production of pulses, oil seeds, spices, and maize experienced an increasing trend between FY11 and FY20, the share of this special loan to total disbursement of agricultural loan declined from 0.58 percent in FY11 to 0.47 percent in FY20. The actual disbursed amount of loan under this scheme always fell short of the target set for each fiscal year.
- The production of pulses, spices, oil seeds and maize is persistently rising with the evidences of increased productivity since the inception of this special credit policy.
- The loan has a very low default rate as only 7 percent of respondents fail to repay the loan. A borrower primarily fails to pay the loan due to crop loss originating from natural disasters.
- Only 9 percent of respondents divert this fund to non-agricultural purposes such as constructing/repairing housing, spending money for child education, and in other activities.
- Almost all the respondents stated that they make substantial profit after taking this loan. Most of the respondents were also able to pay back the loan solely by the profit generated from the crops they have taken loans for. Subsequently they prefer to avail this loan in repeated fashion.
- About 75 percent respondents opined that the amount of loan sanctioned to the farmer is not sufficient for the intended cultivation.
- Majority of the beneficiaries, approximately 79 percent, owned some assets during the last two years (either in 2018 or in 2019 or in both years). Purchasing land is the most popular among farmers followed by constructing house.
- Almost all the respondents have experienced some positive changes in their personal or family life in terms of better food intake, wearing quality cloth, and schooling for their children. They also feel better than before in terms of their financial condition after obtaining this special credit facility.

² During July-February of FY06

Recommendations

- The Government and Bangladesh Bank should continue this special agricultural credit program for further increasing the production of these crops to help achieve self sufficiency in production of these import substitution agricultural goods.
- Bangladesh Bank may need to find ways to increase the amount of credit disbursement so that the target could be fulfilled in every year under this scheme.
- Because of the growing demand of this loan, the Government and BB may consider to increase the disbursement target. In FY20, the share of this loan to total agricultural loan disbursement was only 0.47 percent. The Government and BB may consider allocating 1-2 percent of total agricultural loan for this special loan scheme.
- BB may revise its policy guidelines to increase the amount of loan per farmer for cultivating these crops considering the increasing cost of production such as wage inflation and price hike in other factors of agricultural production over time.
- BB may issue detail directives to all banks about loan repayment tenure and also follow up so that farmers are not forced to sell crops in harvesting season at low price.
- The Government gives foremost importance on agriculture sector and intends to intensify the crop diversification as well as commercialization in the agricultural sector. The Government has also reiterated the importance of agriculture sector in the economy after the outbreak of COVID-19. In this backdrop, this special credit facility may expand to some other crops, especially in fruits/import substitution fruits production such as banana, lychee, malta, papaya, pineapple, guava, plum, dragon fruit, orange, etc.
- BB has already issued a policy guideline to disburse agricultural credit at 4 percent concessional interest rate to enhance the production of all major crops (including import substitution crops) to check any production shortfall in agriculture sectors due to outbreak of COVID-19. But the issue of producing import substitution crops should receive more prominence in Government or BB directives. Otherwise, farmers may be discouraged to keep up their momentum regarding cultivation of self sufficiency in import substitution crops may be disrupted. In this backdrop, the Government and BB may consider to set the concessional interest rate at 2 or 3 percent instead of 4 percent so that farmers' impetus to produce import substitution crops does not reduce. If the rate is set at 2 or 3 percent then the Government may spend extra about BDT 2.83 crore or BDT 1.42 crore as subsidy to cover interest expense for the banks in FY21.
- The concerned department of BB should increase its monitoring to prevent this loan disbursement to non-farm activities.
- The concerned department of BB may issue a directive to use agent banking outlet and sub-branch of each bank to disburse this loan.
- Finally, a policy of price protection should be in place so that any unusual price volatility could not hamper the interest of farmers and consumers.

1. Introduction

As the history goes, the fertile land of Bengal was well known for its agriculture, as it is inherently labeled as an agrarian country. Agriculture sector contributes significantly in Gross Domestic Product (GDP) since independence of the country, though the share of this sector in GDP is shrinking due to rapid progress in industrial sector in recent years. Nonetheless, the production of agriculture sector has registered a steady growth over a long period. On average the agriculture sector achieved a growth rate of 3.04 percent during the last decade (Bangladesh Economic Review-2019). The agriculture sector is playing a key role in providing employment for a large number of people. According to labor force survey in 2016-17, around 40.4 percent of labor force is employed in agriculture sector. Most striking feature of these employed workers is that they live in rural areas. Therefore, agriculture sector is considered as lifeline for generating income and reducing poverty in rural parts of the country. This sector has also been playing tremendous role in supplying various industrial raw materials. As a result, different manufacturing goods production related to agricultural farming activities has flourished consistently and earning foreign currency as well for the economy through export.

The recent development in agriculture sector shows transformation from subsistence to semi-commercial agriculture in Bangladesh (7th Five Year Plan Report). The Government has given highest importance to continue conspicuous self-sufficiency in food grains as well as in other sub-sectors of agriculture sector (Bangladesh Economic Review-2019). To attain this goal, the Government has already taken various initiatives such as investing in research and development, and providing subsidies to ensure modern farming via adaptation of new agro-technologies, modern irrigation systems, high yielding varieties (HYVs), fertilizers, and pesticides.

However, the farmers require huge capital just like any other business to cultivate using modern farming methods efficiently and properly, which is not currently possible by most of the farmers as the majority of them are still poor. As a result, they often face inadequacy in fund, which forestalls the optimum production of agricultural goods.

Bangladesh Bank, central bank of the country, along with the Government has been continuously formulating and implementing manifold agricultural credit related policies to meet the financial needs of farmers as well as for the development of agriculture sector. As a result, Bangladesh has already become self-sufficient in rice production. However, Bangladesh is a highly populated country in the world with a limited size of cultivable land. The country fails to supply sufficient level of all agricultural goods to feed over 160 million people. For this reason, the country is forced to import some crops such as pulses, oil seeds, onion, garlic, other varieties of spices and maize from abroad to meet the domestic demand. Accordingly, it has become essential to increase the domestic production of these import substitution crops to mitigate the uprising demand. Nevertheless, the cultivation of these crops is facing competition from other parallel ('mainly Rabi') crops that grow in the same season.

In addition, one of the major drawbacks of import dependency in agricultural product is that if somehow the supply chain gets disrupted it causes the domestic prices to surge in a very short period of time. For instance, the recent abnormal hike in onion price is mainly due to sudden export ban of onion by India, the major supplier to Bangladesh. In such a situation, it is very difficult to find a new supplier, and import from them in a short period of time to neutralize the pressure in price in the market. Therefore, sustainable and self-sufficient production of agricultural products has become a top priority. With this vision, Bangladesh Bank (BB) introduced a special credit policy at a 2 percent concessional interest rate in FY06 for promoting the production of some import substitution crops. Later, the interest rate for this credit facility was set at 4 percent in FY12. It is presumed that the scheme will boost up production of these crops and also lower import demand. The commodities that are given special agro-credit at a 4 percent concessional interest rate are- i) pulse varieties: mung (green gram), masur (lentil), khesari (grass pea), chickpea (bengal gram), motor (yellow peas), mashkalai (black gram), and arhar (pigeon pea); ii) oil seeds varieties: mustard, sesame, linseed, peanut, sunflower and soybean; iii) spices varieties: ginger, garlic, onion, chili pepper, turmeric, and cumin; and iv) maize. In this backdrop, this study attempts to analyze the effectiveness of this scheme in different dimensions considering both secondary data (i.e. various agro-production related aggregate data) and primary data (i.e. data/information from a field level survey on borrowers and banks).

The rest of the article is organized as follows: section 2 highlights the objective, methodology, and limitation of the study; section 3 discusses the role of credit in enhancing agriculture production; section 4 provides loan related information; section 5 presents the detail overview of these four types of crops--describing recent trend of production, productivity development, and effectiveness of BB policy; section 6 analyzes impact of special credit on individual borrowers at different dimensions; section 7 discusses problems of agricultural loan and probable solutions; Finally, section 8 summarizes the findings of the study along with some policy implications.

2. Objective, Methodology and Limitation of the Study

2.1 Objectives of the study

The main objectives of the study are as follows:

- 1. To highlight the importance of credit in promoting agricultural production and its productivity;
- 2. To analyze the recent trend in loan disbursement across the country;
- 3. To measure the effectiveness of BB special credit policy at the national level (in terms of production, productivity development of these import substitution crops);
- 4. To identify the socio-economic characteristics of borrowers of this loan scheme;
- 5. To check whether this credit is being disbursed properly towards import substitution crops such as pulses, oil seeds, spices, and maize by bank or not;
- 6. To analyze how farmers are using this money to increase the production of those crops;
- 7. To detect whether farmers are diverting this fund for other purposes or not;
- 8. To analyze how this initiative improves the socio-economic development of farmers;
- 9. To provide some policy insights to expedite the production of these crops further.

2.2 Data and methodology

2.2.1 Primary data

The policy support wing, Governor Secretariat, Bangladesh Bank, has conducted a field level survey during January-February 2020 to collect the primary data and information from the borrowers under this loan scheme. Nine officials of BB comprising 3 teams were assigned to conduct the survey. At first stage, we selected top ten banks according to the highest share of disbursement of this loan in the country during 2018-2019. These ten banks accounted for around 80 percent of this loan disbursement in 2019. In second stage, we have asked these banks to supply the names of top ten branches in according to their share of loan disbursement during 2018-2019. These branches were then categorized according to the districts they belong. Ultimately, 23 districts have been selected from where majority of the 4 percent concessional loan is being disbursed. Finally, we have selected top 56 branches of those ten banks across the selected districts. A structured questionnaire has been prepared to collect information from the loan beneficiary and bank. In all branches, we have surveyed 10 beneficiaries on average. A total of 535 beneficiaries have been interviewed on a random basis.

2.2.2 Secondary data

In order to measure the production and productivity development of these 4 varieties of crops, the study team has collected major data and information from Yearbook of Agricultural Statistics of Bangladesh (various issues), published by Bangladesh Bureau of Statistics(BBS). Other relevant secondary data and information have been collected from various publications of Ministry of Finance, Ministry of Planning, Bangladesh Bank, etc.

2.3 Limitation and scope of the study

This survey has collected data once from farmers who received the loan from different branches of 10 different scheduled banks. It is hard to measure changes in the sample unless two or more surveys are done at different points in time. Repetition of the survey will make the survey more robust or informative. Moreover, in this survey we do not include those farmers who are not taking concessional loan (control group). Therefore, we can't conclude any decision about them.

3. Importance of Credit in Promoting Agricultural Production/Productivity

In the modern economic system, credit plays a pivotal role in fostering economic activities. Many studies have explored the relationship between financial access and economic productivity in different sectors. In the agriculture sector, credit access to farmers allows financing production costs (i.e., labor, materials and purchased inputs costs) which are typically made over a period of several months, prior to the actual realization of production (Feder et al., 1990; Carter & Wiebe, 1990). This financing can substantially reduce the liquidity and investment constraints to produce crops at an optimum level for economies like Bangladesh. On the contrary, farmers would have to preserve adequate money to meet up the production costs and consumption expenditures in the next cycle in case of no provision for credit markets (Feder et al., 1990). The provision of agro-loan provides both higher consumption and higher purchased input use and subsequently brings higher welfare for the farmers. A simple framework for how agro-credit promotes production is summarized by flowchart-1³.



Flowchart 1: Simple framework for role of credit in increasing agricultural production

It is worth mentioning that the effectiveness of agricultural loan to enhance production/ productivity is closely associated with the proper support from public investments in irrigation, research and development related to improved high yielding varieties (HYVs) of seeds and other inputs (Misra et al., 2016; Sriram, 2007).

³ This simple flowchart depicts that the agricultural credit encourages farmers' to employ more land, hire more labor and use more agricultural inputs such as modern technology/infrastructure (for instance sophisticated tractor or irrigation system etc.), high yielding varieties (HYVs), and balanced use of fertilizer and pesticide. Better use of land for cultivation can foster the production of agricultural crops. Similarly, hiring optimal amount of labor can also raise the production. On the other hand, the use of modern technology, HYVs, and fertilizer/pesticide may affect the agricultural output directly as well as indirectly via heightening the productivity.

4. Loan Related Information

4.1 Trend of special agricultural loan disbursement

A recent scenario of special agricultural loan disbursement at 4 percent concessional interest rate is shown in Table 1. The amount of loan disbursement experienced an increasing trend between FY11 and FY20. Banks disbursed an amount of BDT 71 crore to farmers, who intended to produce these 4 varieties of crops in FY11. The amount of loan disbursement reached the peak in FY19. However, the loan disbursement was BDT 107 crore in FY20, a slight lower than the previous fiscal year. Despite the fact of increasing amount of loan disbursement for promoting the production of pulses, oil seeds, spices, and maize over the years, the targeted disbursement was almost never fully achieved by the bank in each fiscal year with an exception in FY12. On the contrary, banks disbursed higher loan in agriculture sector as compared to the targeted amount in most of the fiscal years.

Tabl	Table 1: Trend of special agricultural loan disbursement at 4 percent concessional interest rate				
					(Taka in crore)
Fiscal	Target	Loan	% of loan	Total agricultural	% of total agricultural loan
Year		disbursement	disbursement target	loan disbursement	disbursement target
2010-11	96.05	70.60	73.50	12184.32	97.00
2011-12	77.63	81.63	105.15	13132.15	95.16
2012-13	89.45	74.90	83.73	14667.49	103.80
2013-14	91.19	80.66	88.45	16036.81	109.88
2014-15	95.47	78.52	82.24	15978.46	102.76
2015-16	90.07	81.87	90.90	17646.39	107.60
2016-17	90.76	81.66	89.97	20998.70	119.65
2017-18	100.94	91.32	90.46	21393.55	104.87
2018-19	109.48	108.81	99.38	23616.25	108.33
2019-20	123.33	106.57	86.41	22749.03	94.30
Source: Bangladesh Bank publications and Bangladesh Economic Review (Various Issues)					

On the other hand, table 2 discloses the share of loan received by each variety of crops over the period of FY11 to FY20. It is observed that farmers received the lion's share of loan to flourish the production of spices such as ginger, garlic, onion, chilies and turmeric. On average about 79 percent of loan was provided to produce spices followed by 11 percent in maize, 7 percent in oil seeds, and 3 percent in pulses during the last ten fiscal years.

	Table 2: Amour	t of loan received	by each variety of o	crops (in percent)	
Fiscal Year	Spices	Maize	Oil seeds	Pulses	Total
2010-11	76.70	10.73	9.62	2.95	100.00
2011-12	80.60	11.04	6.87	1.49	100.00
2012-13	80.10	11.61	6.97	1.32	100.00
2013-14	80.08	11.09	7.22	1.61	100.00
2014-15	79.13	11.36	6.80	2.71	100.00
2015-16	81.76	10.56	5.92	1.76	100.00
2016-17	80.65	11.02	5.94	2.39	100.00
2017-18	75.84	11.87	9.15	3.14	100.00
2018-19	80.04	10.50	6.65	2.82	100.00
2019-20	74.66	12.99	7.97	4.38	100.00
Source: Author's calculation from Bangladesh Bank data					

Figure 1 shows the share of this special loan to total disbursement of agricultural loan between the periods of FY11 to FY20. Overall, the share of this loan declined from 0.58 percent in FY11 to 0.47 percent in FY20. The share of this loan to total loan decreased consistently between the periods of FY12 and FY17. However, the trend reverted somewhat during FY18 - FY20.



4.2 Scenario of Government subsidy for this loan scheme

It is important to state that the actual interest rate for this special loan scheme is 9 percent. Thus the Government provides 5 percent interest to banks as subsidy for this loan. Like the amount of loan disbursement, the amount of subsidy paid to banks by the Government increased over the period between FY11 and FY20. Banks obtained BDT 0.03 crore as subsidy from the Government in FY11 which was increased to BDT 1.97 crore in FY20. On the other hand, all scheduled banks operating in the country have been directed by BB to provide this loan to farmers since FY12. However, table 3 shows that a large number of banks did not claim subsidy from the government for disbursing this loan. The underlying reason is that banks are allowed to adjust the subsidy amount with their CSR fund for this loan scheme.

Table 3: Trend of government subsidy for the special agricultural loan at 4 percent interest rate (Taka in crore)			
Fiscal year	Amount of subsidy paid to banks	Subsidy claimed by number of banks	
FY11	0.03	4	
FY12	0.32	6	
FY13	1.58	22	
FY14	1.43	27	
FY15	1.53	25	
FY16	1.75	33	
FY17	2.07	36	
FY18	2.21	38	
FY19	2.22	37	
FY20	1.97	36	
	Source: Bangladesh Ba	ink	

5. Measuring the Effectiveness of Special Agricultural Loan of BB at 4 percent Interest Rate

5.1.1 Trend of pulses production

Traditionally Bangladesh has been producing various pulses. Figure 2 shows the area and production of pulses over the period of FY88 to FY18. Both the use of land and amount of production witnessed a downward trend throughout the period between FY88 and FY09 whereas the decline became more pronounced during FY99-FY09. On the contrary, both use of land and the production of pulses revived somewhat and has grown steadily from FY10 and onwards. Overall, both the use of land and the amount of production for pulses have declined (-2.0 percent and -0.6 percent respectively) which intensified during FY89-FY05 (-3.9 percent for the area and -2.9 percent for production respectively). However, the average growth rate was positive for both the acres of land used and amount of pulses produced between FY06 and FY18 (0.2 percent and 2.4 percent respectively).



The production of a number of varieties of pulses along with acres of land is depicted in figure 3 over the period of FY97 to FY18. It can be stated from the figure that the cultivation of lentil (masur), grass pea (kheshari), black gram (mashkalai), and green gram (mung) is predominant in Bangladesh. Each variety of pulses production and use of land declined initially, much like the trend of total pulses production, and then started to rise since FY06. The share of lentil was, on average, 37.5 percent of total pulses production, following green gram 8.4 percent and black gram 8.2 percent, respectively. Together, their share encompassed more than half of the production of pulses in Bangladesh. The average growth rate of lentil production, the major type of pulse in Bangladesh, was 1.9 percent during FY98-FY18. A significant growth (5.4 percent) was observed in the production of lentil during FY06-FY18 in contrast to the sharp decline (-3.9 percent) during FY97-FY05. A very congruent average growth in the production of green gram and black gram has been observed both before and after the inception of special agro-credit at 4 percent concessional interest rate.

It is noteworthy to detect the frequent fluctuation in the production of pulses over the years (see Figure 2 and 3). One of the important reasons was the variation in the amount of land used to produce pulses. Each variety of pulses production was higher when farmers used larger amount of land for cultivating them. The profitability and price of a crop determine how much land will be used to grow that particular crop⁴. The weather condition, for instance rainfall, is also an important precondition for the productivity of a crop. At the same time, adoption of modern

technology and infrastructures, availability of inputs including chemical fertilizers, insecticides, higher yielding seeds play crucial role in boosting up the output of agricultural goods. Moreover, external production and import prices also influence the production of agriculture sector due to the integrated nature of the global agro-commodities market.

5.1.2 Productivity improvement in pulses production⁵

Although the amount of cultivated land and gross production of pulses experienced a mixed trend – downward in the initial periods followed by a surge in the later periods – the production of pulses in terms of per `000' acres of land increased over the period of FY88 to FY18 (Figure 4). Consequently, the productivity of pulses production in terms of per `000' acres of land increased in Bangladesh during this period of time. Nonetheless, the movement of ratio between pulses production (`000' metric ton) and per '000' acres of land has witnessed a fluctuation during the aforesaid period. Typically, it may be stated that the weather condition was the main reason for this deviation. However, an appropriate mix of factors of production (which is described in section 3) plays a massive role in ensuring consistent expansion in agricultural production process. In line with the total pulses, each variety of pulses production in terms of per `000' acres of land expanded over the period between FY97 and FY18 (Figure 5).



5.1.3 Measuring the effectiveness of Bangladesh Bank credit policy

It is evident from the above discussions that the productivity of pulses increased during the mentioned fiscal years. What could be the underlying reasons for this escalation of the productivity of pulses in Bangladesh? The continuous increase in productivity to a large extent can be attributed to the adoption of modern technologies, agricultural inputs, high yielding varieties of seed, and proper use of fertilizer and pesticides. In addition, Government supports in research and development and the role of NGOs and microfinance institutions in building awareness of farmers on how to use modern technologies/equipments have played significant role. It is noteworthy that farmers need a sufficient amount of cash to avail all these modern means of production throughout the cultivation to harvesting period. Hence, it can be presumed that the loan provision from formal financial institutions helped farmers to meet their financial requirements and subsequently they employed all modern means of production properly to produce larger output. Moreover, farmers do not require huge collateral to obtain this loan,

⁴Cobweb phenomenon

⁵ Here, productivity of pulses production is considered in terms of production of `000' metric ton for per '000' acres of land (<u>*Prod.000 M.Ton*</u>).

^{&#}x27;000' Acres

unlike the conventional agro-credit. Another important feature of this loan scheme is that the interest rate is significantly lower than that of other loans from commercial banks, NGOs, MFIs and informal sources such as local money lender. Hence, it may be presumed that special agro-credit at concessional 4 percent interest rate has positively influenced the productivity of pulses. But this presumption must be supported by statistical analysis.

Ways to measure the effectiveness of BB credit policy

Different regression analysis is extensively used to construe the effectiveness of manifold polices in social science. This analytical framework can also be considered to measure the influence of agriculture credit at a concessional interest rate in increasing the production of pulses in Bangladesh. But the robustness of this analysis is highly sensitive to a large number of data and information, which is beyond the scope of this study.

In this backdrop, a t-test statistic, which is widely known as mean-comparison test, is employed to identify the effectiveness of BB credit policy. To perform this test statistic, first of all, the production amount and productivity of pulses has been divided into two periods – before (B) and after (A) the inception of BB special credit policy. Therefore, we compare the mean production, amount of land used, and productivity of these two periods to come up with a conclusion of BB policy. The formula to calculate the t-statistic is as follows:

$$t = \frac{m_A - m_B}{\sqrt{\frac{S^2}{n_A} + \frac{S^2}{n_B}}}$$

Here, m_A and m_B are the average production of agriculture crops, or amount of land used or ratio between the production of agricultural crops and per '000' acres of land for the two different periods; n_A and n_B are the sample sizes; and S² is an estimator of the common variance $\sum (\mathbf{x} - \mathbf{m})^2 + \sum (\mathbf{x} (m_B)^2$ of two samples, such as: S

$$r^{2} = \frac{2}{n_{A} + n_{B} - 2}$$

Here the degree of freedom is $n_A + n_B - 2$ Under this t-test framework⁶,

Null hypothesis (H₀): There is no difference Alternative hypothesis (H_A): There is a in production both before and after of credit difference in production both before and after of credit policy policy

One limitation of this statistic is that while giving the decision on statistical significance in the mean difference of production for before and after the policy, this test statistic does not consider the impact of many factors in gross production of pulses. But the productivity in terms of the ratio between production in '000' metric ton and '000' acres of land may capture the influences of many factors. Hence, if the t-test gives a similar result for both gross production and productivity of pulses, one can argue the estimated result is, to some extent, robust.

Table 4 depicts the estimated t-test results. It is observed that average production and land engagement in the production of pulses were much higher before the inception of agriculture credit policy, and the difference is statistically significant at the 1% level. The result is understandable as the production and acres of land employed in pulses production plummeted during FY99-FY09. While the land use and production of pulses were high in the 90s, and

⁶Generally, farmers' access to credit at 4 percent concessional interest rate is effective when null hypothesis is rejected at 10%, 5% & 1% level of statistical significance.

consequently, average of them outshined that of the aftermaths of credit policy (Table 4). However, the average ratio between production ('000' metric ton) of pulses and '000' acres of land were 0.31 and 0.38 respectively, for these two periods. The positive difference between these two ratios is statistically significant, which implies, at least, the average productivity of pulses increased due to the availability of credit at concessional 4 percent interest rate.

Table 4: Estimated t-test results				
Serial	Items	Before	After	Decision
No.		(Credit policy)	(Credit policy)	
	Amount of land u	used and amount p	roduced	
1	Production of pulses (`000' metric ton)	458.2	290.8	Reject Ho
2	Area for pulses production (`000' acres)	1511.4	748.9	Reject Ho
3	Production of <i>masur</i> (`000' metric ton)	136.3	116.8	Reject Ho
4	Area for <i>masur</i> production (`000' acres)	431.7	281.9	Reject Ho
5	Production of <i>mung</i> (`000' metric ton)	31.2	25.9	Do not reject Ho
6	Area for <i>mung</i> production (`000' acres)	118.2	78.9	Reject Ho
7	Production of mashkalai (`000' metric ton)	25.9	28.1	Do not reject Ho
8	Area for <i>mashkalai</i> production (`000' acres)	86.0	80.1	Do not reject Ho
Productivity in terms of amount produced and amount of land used				sed
9	Productivity of pulses	0.31	0.38	Reject Ho
10	Productivity of masur	0.31	0.41	Reject Ho
11	Productivity of mung	0.27	0.33	Reject Ho
12	Productivity of mashkalai	0.30	0.35	Reject Ho
Source: Author's calculation based on secondary data				
Note: The null hypothesis is rejected based on 5% & 1% level of significance.				

While a similar result is envisaged for lentil (masur), the null hypothesis cannot be rejected for the production of green gram (mung) and black gram (mashakalai). It illustrates that access to credit boosted up the average production of green gram and black gram significantly from their declining trend. In the case of productivity differences, t-test statistics support that surge in average productivity for these three varieties of pulses was significantly higher during FY06-FY18 period – as compared to that in during FY97-FY05.

5.2.1 Trend of maize production

The trend of area use and production of maize is shown in Figure 6. The cultivation of this crop became popular from the mid-2000s in Bangladesh. In recent times, maize is being used enormously to prepare poultry feed, which may be a major reason behind its increased production. At the same time, maize is also used as a substitute for wheat in some cases to make various food items from flour. During the period between FY97 and FY18, on average, 1009.0 thousand metric ton maize was produced in Bangladesh by cultivating 370 thousand acres of land in every fiscal year. This average production of maize was statistically significantly higher (as per t-test) since the availability of special credit in FY06 as compared to pre-FY06 period. It can be argued that access to credit at a lower interest rate motivated the farmers to cultivate more maize during post policy periods. Numerous NGOs and microcredit institutions also came forward along with their multifaceted supports, i.e. high yielding varieties (HYVs) of seeds and loans, to stimulate the growers to expand the production of maize in island (char) areas, especially in the northern part of Bangladesh.



5.2.2 Productivity advancement in maize production

Earlier, it was observed that both area and production of maize increased over time. However, the net efficiency of credit policy can be measured by unfolding the productivity gains of maize as it can capture many other factors and information in the farming process of this crop. Figure 7 reveals that the ratio between production (in thousand metric ton) of maize and thousand acres of land showed an upward trend during FY97-FY18. Thus the productivity of maize increased in Bangladesh. The average productivity ratio was 1.1 for the period between FY97 and FY05, while it was 2.7 during FY06-FY18. The t-test statistic confirms that this positive difference in productivity ratio between after and before of credit policy is statistically significant at 1 % level of significance. This finding ensures the effectiveness of the Government and BB policy initiatives for making credit available at a concessional interest rate to proliferate the production of maize.

5.3.1 Trend of oil seeds production

Acres of land employment and production of oil seeds scenario are depicted in figure 8. From the graph it is evident that the production of oil seeds experienced a gradual surge with a slight fluctuation during FY88-FY98, while acres of land use witnessed a subtle declining trend. But both area and production of oil seeds plummeted throughout the period between FY99 and FY04. After the FY04, the overall scenario reversed in Bangladesh. A very similar trend is observed for land use and production of mustard, peanut, and sesame between FY97 and FY18 – downward for some initial periods, and shifting to an upward trend afterwards (Figure 9). The production of linseed, on the contrary, has declined significantly since the beginning of the 2000s, remaining very low in spite being on a slightly upward trajectory since FY06. It is worth mentioning that among the variety of oil seeds production, mustard is the main oil seed produced in the country.



5.3.2 Productivity development in oil seeds production

Figure 10 unveils that there was a sharp jump in the productivity of oil seeds since FY04. What were the plausible reasons behind this change? The underlying reasons may be the same, as discussed in section 5.1.1 to 5.1.3. In the same line, the productivity of each variety of oil seeds also surged over time along with few exceptions (Figure 11).



5.3.3 Estimated results of t-test for oil seeds

Table 5 shows that on average production of oil seeds became almost double for the period between FY06 and FY18 as compared to the previous period between FY88 and FY05 despite a significant reduction in acres of land employment. The average production of mustard seed was higher after the credit policy; however, the mean production difference between before and after the policy is not statistically significant as the farmers significantly reduced the employment of land to cultivate this crop during the post credit policy periods. A similar scenario is also observed in the case of sesame. On the contrary, average peanut cultivation increased significantly during the post-policy period. Table 5 also delineates that the average ratio between production (in thousand metric ton) of oil seeds and thousand acres of land became more than double between the period before and after the policy. This ratio was also much higher for each variety of oil seeds such as mustard, peanut, and sesame. These productivity differences are statistically significant, which ensures, to some extent, the efficaciousness of special credit programs by the Government and BB.

Table 5: Estimated t-test results				
Serial	Items	Before	After	Decision
No.		(Credit policy)	(Credit policy)	
1	Production of oil seeds ('000' metric ton)	440.4	809.5	Reject Ho
2	Area for oil seeds production ('000' acres)	1241.8	990.2	Reject Ho
3	Production of mustard ('000' metric ton)	232.8	266.1	Do not reject Ho
4	Area for mustard production('000' acres)	766.4	673.3	Reject Ho
5	Production of peanut ('000' metric ton)	36.7	53.2	Reject Ho
6	Area for peanut production ('000' acres)	75.4	80.1	Do not reject H _o
7	Production of sesame ('000' metric ton)	30.2	32.3	Do not reject Ho
8	Area for sesame production ('000' acres)	116.1	87.8	Reject Ho
Productivity in terms of amount produced and amount of land used				sed
9	Productivity of <i>oil seeds</i>	0.36	0.82	Reject Ho
10	Productivity of mustard	0.30	0.39	Reject Ho
11	Productivity of <i>peanut</i>	0.49	0.66	Reject Ho
12	Productivity of sesame	0.26	0.37	Reject Ho
Source: Author's calculation based on secondary data				
Note: 7	Note: The null hypothesis is rejected based on $5\% \& 1\%$ level of significance.			

5.4.1 Trend of spices production

A very small amount of spices was produced in Bangladesh during 90s. The scenario started to change after 2000 and production of spices experienced a surge from the fiscal year 2004 (Figure 12). A similar rising trend also occurred in terms of land used and production of numerous spices such as chilies, garlic, ginger, onion, and turmeric during FY97-FY18 (Figure 13). It is noteworthy that the escalation in spices farming can mainly be attributed to the augmented production of onion during the aforesaid period.



5.4.2 Productivity development in spices production

Like the case of oil seeds, there was a sharp jump in the production of spices in terms of per thousand acres of land since FY04 (see figure 14). The productivity movement had been sluggish until FY98 and even downward in FY99. In the case of different types of spices, the ratio between production and acres of land increased over time, depicted in figure 15. However, the growing trend in the ratio was somewhat pronounced in the case of garlic and onion.



5.4.3 Estimated results of t-test for spices

Table 6 shows that on average production of spices increased by more than four times during FY06-FY18 as compared to the previous period of FY88-FY05. In a similar fashion, land used to grow spices has also increased significantly. A large volume of garlic and onion was produced during FY06-FY18, which was significantly higher as compared to that of the previous period. Although the average production of chili was higher during the post credit policy period, this higher amount is not statistically significant because farmers employed significantly lower acres of land to produce this crop between FY06 and FY18. Table 6 also illustrates that the average ratio between productions (in thousand metric tons) of spices in terms of thousand acres of land became more than double as compared to before the inception of BB policy. The reasons may be similar to those mentioned in section 5.1.1 to 5.1.3. This difference in productivity is also statistically significant, implying the effectiveness of credit policy. Subsequently, the average productivity of each variety of spices is significantly higher after the availability of special agro-credit.

Table 6: Estimated t-test results				
Serial	Items	Before	After	Decision
No.		(Credit policy)	(Credit policy)	
	Amount of la	nd used and amount	produced	
1	Production of spices ('000' metric ton)	385.7	1732.6	Reject Ho
2	Area for spices production ('000' Acres)	446.1	667.5	Reject Ho
3	Production of <i>chilies</i> ('000' metric ton)	125.4	130.0	Do not reject Ho
4	Area for chilies production ('000' Acres)	361.8	254.6	Reject Ho
5	Production of garlic ('000' metric ton)	49.2	256.7	Reject Ho
6	Area for garlic production ('000' Acres)	38.7	115.5	Reject Ho
7	Production of onion ('000' metric ton)	204.0	1228.4	Reject Ho
8	Area for onion production ('000' Acres)	105.0	352.5	Reject Ho
Productivity in terms of amount produced and amount of land used				
9	Productivity of spices	0.90	2.60	Reject Ho
10	Productivity of <i>chilies</i>	0.34	0.51	Reject Ho
11	Productivity of garlic	1.25	2.13	Reject Ho
12	Productivity of onion	1.80	3.40	Reject Ho
Source: Author's calculation based on secondary data				
Note: 7	Note: The null hypothesis is rejected based on $5\% \& 1\%$ level of significance.			

6. Impact Evaluation of this Loan Scheme on Individual Borrowers

6.1 Some basic statistics of beneficiary farmers

Table 7 delineates some basic characteristics of the farmers who have so far received agriculture loan at 4 percent concessional interest rate. The loan beneficiaries are on average 48 years old. About 50 percent of them are solely engaged in agriculture related activities. The survey data unfold that most of the borrowers of this credit scheme have completed primary and secondary level of education. Only 16.45 percent of respondents have obtained graduate and post graduate level degree. Although majority of the borrowers have access to mobile phone, only 40.28 percent of them have opened mobile banking account. The survey data also reveal that in most of the cases, borrower themselves take decisions related to his/her family affairs.

Table 7: Descriptive statistics of beneficiary farmers		
Particulars	Sample size (N=535)	
Average age (years)	48.18	
Engaged only in agro-activities	49.53%	
Educational qualification		
Illiterate	15.89%	
Primary education	28.41%	
Secondary education	30.65%	
Higher secondary education	8.41%	
Graduate	11.40%	
Post graduate	5.05%	
Others	0.19%	
Having mobile phone	94.95%	
Having mobile banking account	40.28%	
Family decision by the respondents	59.31%	
Source: Survey on impact assessment of agro-credit at 4 percent concessional interest rate		

Table 8 highlights the household characteristics and infrastructural facilities of surveyed farmers who received agriculture credit at 4 percent concessional interest rate for the period of 2018 and 2019 respectively. It is clear from the table that there is no significant difference in household characteristics in terms of household size, number of male and female members, number of earning members, and employment in agriculture and non-agriculture sectors of surveyed farmers between these two years. However, the data show improvement in having paka/semi paka house, access to sanitary latrine and electricity between 2018 and 2019.

intrastructural facilities			
Particulars	Sample siz	ze (N=535)	
	2018	2019	
Household characteristics (mean)			
Household size	5.71	5.76	
Male member	2.90	2.92	
Female member	2.83 (N=533)	2.85 (N=532)	
Earning member	2.29	2.29	
Employed in agriculture sector	1.53	1.53	
Employed non- agriculture sector	1.49 (N=274)	1.48 (N=277)	
Infrastructural facilities			
Having paka/semi-paka house	73.27%	74.21%	
Having bank account	98.12%	98.12%	
Access to sanitary latrine	70.84%	72.34%	
Access to electricity	96.82%	97.76%	
Source: Survey on impact assessment of agro-credit at 4 percent concessional interest rate			

Table 8: Mean values of the beneficiary farmers' household characteristics andinfrastructural facilities

6.2 Structure of land holdings

The figure 16 shows different types of land holding by the beneficiary farmers in the years of 2018 and 2019. The surveyed farmers' on an average possessed 433.05 decimal of crop growing land in 2018. However, their cultivable land holding increased on an average to 455.52 decimal in 2019 meaning that they were able to buy land. The holdings of share-cropping land of the borrowers also increased to 102.78 decimals in 2019 from an average of 83.81 decimals in 2018. On the other hand, the holding of non-agricultural land was almost the same in the mentioned periods. This trend of land holding clearly depicts the intention of the respondents for extensive farming.



6.3 Loan related information of farmers

The survey data reveal that a large number of farmers took this loan one to five times to produce those crops for which the loan program was designed (Figure 17). Around 76 percent of the respondents reported that they had received this loan one to five times so far. On the other hand, only 24 percent respondents availed this loan more than five times. The maximum numbers of respondents started to obtain this facility from 2014 and onwards (Figure 18).



It is also observed from the survey data that about three-fourth of respondents received loan amount between BDT 10,000 - BDT 100,000 in 2018 and 2019 respectively (Figure 19 & 20). It is worth mentioning that the amounts of loan sanctioned by the bank are mainly linked with the size of land and variety of crops in line with the policy guidelines of BB.



6.4 How do farmers know about this special loan?

The majority of respondents reported that they received information of this special credit from the employee of the respective banks (Figure 21). Borrowers (about 17.39 percent) were also encouraged by the neighboring farmers to avail this credit. The figure also unveils that about 11.44 percent respondents received information about this program from their relatives. The study also finds that some borrowers (21 respondents) got information from more than one source. Respondents reported that they did not take help from middleman for their case although it is common practice in Bangladesh sanctioning different loans.



6.5 Whether borrower receives loan at the beginning of cultivation season

For better harvest, farmers require to use modern technology in preparing farming land, collecting HYVs seeds and chemical fertilizers, setting up irrigation system, and managing other inputs. Hence, large amount of fund is one of the key preconditions for modern farming. Under this circumstance, we asked farmers whether they have received this credit at the beginning of cultivation season of pulses, oil seeds, spices and maize. The study finds that about 97 percent respondents received the credit from bank at the right time.

6.6 Loan processing period and rate of interest

The study finds that banks sanction this loan to farmers within 5.63 days, on average, after submission of their loan application. All the respondents reported that banks charge as per scheduled interest rate of 4 percent. Hence, it can be stated that there are no anomalies at least in the case of interest rate.

6.7 Provision of collateral/forced savings and extra charge

About 37 percent of respondents reported that they have submitted collateral documents or provided savings to bank. Among them, about 95 percent farmers have provided land related documents to obtain the loan. Few numbers of respondents supply other documents, for instance agriculture card. Although some farmers mentioned about forced savings, however, the savings amount was not very high. The survey data reveal that on average BDT 204 is provided to bank as a savings before receiving the loan. In addition, farmers are asked whether they have paid any extra charge as bribe to bank staffs. In response to this question, only 7 out of 535 respondents stated that they spent extra money to receive this loan. The respondents, who mentioned that they spent extra money, on average paid BDT 521 as an extra charge to bank.

6.8 Loan from another bank

Most of the farmers reported that they did not take any other loans during last two years; only 6.18 percent respondents obtained other types of loan from bank. These farmers mainly received conventional agriculture loan along with consumer credit, SME loan, business loan and special loan under 'ekti bari ekti khamer' scheme. Table 9 shows summary of farmers' average amount of other loan from bank and its interest rate between the period of 2018 and 2019. Farmers received on average BDT 724800 in 2018 which increased to BDT 1006905 in 2019. The simple average interest rate is 9.05 percent in 2019 which was slightly higher than 2018.

Table 9: Average amount of other loan from bank and its interest rate (in BDT)			
	2018	2019	
Amount of loan	724800.0	1006905.0	
Interest rate	8.92%	9.05%	

6.9 Loan from NGOs, MFIs and informal sectors

The study finds that about 8.63 percent respondents obtained loan from various NGOs, MFIs, rural money lenders and other institutions. Majority of them collected loan from BRAC, Grameen Bank, ASA and from some other local institutions/NGOs. Only 12.50 percent and 7.50 percent respondents in year 2018 and 2019 respectively reported that they took loan from village money lender. Table 10 shows that the amount of loan decreased on average from BDT 140260.90 in 2018 to BDT 106731.70 in 2019. The simple average interest rate was 17.28 percent in 2018 which is much higher than that of in banks. The interest rate was 14.25 percent in 2019.

Table 10: Average amount of loan from NGOs, MFIs, and informal sectors and its interest rate (in BDT)			
	2018	2019	
Amount of loan	140260.9	106731.7	
Interest rate	17.28%	14.25%	

6.10 Whether borrowers fail to repay the loan

The study finds that most of the respondents repay the loan timely and a very few of them fail to repay. The figure 22 indicates that around 7 percent of respondents fail to pay back the loan. The result is consistent in the sense that the default rate in agricultural credit was 10.25 percent in FY18 and 13.90 percent in FY19. On the other hand, a borrower primarily fails to pay the loan due to natural disasters and resultant loss in production. About 57.89 percent reported that they are not able to pay the loan because of production loss while 26.32 percent of them claim that natural disasters are the reason. However, no defaulters pointed out higher interest rate as a reason for defaulting.



6.11 Whether borrowers use the loan in non-agricultural purposes

The survey data show that about 91 percent of farmers use the credit to produce pulses, oil seeds, spices and maize. Only 9 percent of respondents divert this fund to non-agricultural purposes such as constructing/repairing housing, spending money for child education, and in other activities. About 5.41 percent of farmers who divert this loan have spent this money for constructing/repairing housing while 21.62 percent of them have used this money for childeducation related expenditure. It is important to mention that no farmers have diverted this loan for spending in child marriage/providing dowry and for interest earning activities. Thus most



of the borrowers (about 73 percent) have used this fund for their other purposes.

6.12 Production of Pulses, Oil seeds, Spices, and Maize

The production of pulses, oil seeds, spices and maize in 2018 and 2019, based on data collected from the farmers during the field level survey, is depicted in table 11. It is observed from the table that the production of almost all products increased in 2019, except few crops such as green gram, sesame, and peanut. The data also reveal that the surveyed farmers did not cultivate some crops such as sunflower, soybean, and cumin in both years.

Table 11: Production of pulses, oil seeds, spices, and maize (in maund)				
Items	2018	2019		
Pulses				
Black gram (Mashkalai)	331.5	334.0		
Green gram (Mung)	187.0	169.0		
Lentil	671.5	741.0		
Grass pea (Khesari)	214.5	265.0		
Chickpea	22.0	23.0		
Motor (Yellow Pea)	88.5	98.5		
Arhar	2.0	2.0		
Oil seeds				
Mustard	2,229.3	3,453.0		
Sesame	291.5	216.0		
Tishi (Linseed)	65.0	67.0		
Peanut	892.0	838.3		
Sunflower	-	-		
Soyabean	-	-		
Spices				
Ginger	10,067.5	13,557.5		
Garlic	5,205.9	5,246.1		
Onion	10,251.7	13,298.3		
Chilies	4,442.4	4,992.7		
Turmeric	15,460.0	17,719.0		
Cumin	-	_		
Maize	28,852.0	30,049.5		

Division-wise production of pulses is shown in figure 24. The figure reveals that mashkalai was mostly produced in Khulna division followed by Dhaka, Rajshahi and Rangpur. The production of this crop decreased in Khulna, while it increased in rest of the three divisions in 2019. Mung, lentil, khesari, motor were mostly produced in Rajshahi followed by Khulna and Dhaka. The production of these items increased in 2019 compared to 2018. Among all the varieties, lentil has the largest production and the production observed a big increase in 2019.



The figure 25 depicts the division-wise production of oil seeds. The surveyed data indicate that mustard was mostly produced in Dhaka followed by Rajshahi, Rangpur, and Khulna. On the other hand, a lion's share of peanut was produced in Rangpur. An insignificant amount of linseed was grown in Chattogram and Dhaka whereas a small amount of sesame was cultivated in Dhaka, Rajshahi and Khulna areas during the mentioned periods.



Division-wise production of spices and maize is shown in figure 26. It is observed from the figure that ginger was mainly produced in Chattogram followed by Rangpur. The spices such as onion and garlic were largely cultivated in Rajshahi division while turmeric was produced both in Chattogram and Rangpur areas. On the other hand, maize was mainly cultivated in Rangpur. The production of each variety of spices and maize increased in all divisions in 2019 as compared to that of 2018.



6.12.1 Cultivating other crops

We have asked whether the respondents have cultivated other crops instead of pulses, spices, oil seeds and maize during the season. The surveyed data show that approximately 71 percent of respondents grow various other items such as paddy, potato, vegetables; like beans, eggplant, gourd, ladies finger, pumpkin, lemon, radish, tomato, collard green etc.; and fruits like mango, banana, watermelon, etc. Broadly, about 43 percent of respondents cultivate paddy, 29 percent fruits, 28 percent vegetables, 24 percent potatoes, 6 percent wheat, 2 percent tobacco, and 10 percent other crops.

The data also discloses that the farmers from Chattogram region mostly produce fruits and vegetables instead of those crops. About half of them grow fruits, and 31 percent of them grow vegetables. On the other hand, respondents from Rajshahi division mainly grow paddy (24 percent), potatoes (39 percent), and vegetables (29 percent). Similarly, farmers from Rangpur cultivate paddy (33 percent) and potatoes (42 percent) in the season of those crops. In short, paddy and the vegetables are the most attractive alternative crops that are being produced instead of import substitution crops in all divisions.

We have also asked the reason behind cultivating other crops. Ease in cultivation is the most answered reason (51 percent) for the alternative crops production. The study reveals that 33 percent of the farmers are doing so because of high return, 23 percent for high yield, 3 percent for easiness in storage and 21 percent for other reasons such as some land is not suitable to grow pulses, spices, oil seeds and maize.

6.13 Impact of this Special Loan on Farmers (Financial, Social and Family Life)

One of the important mandates of this study is to evaluate the impact of special agricultural credit at 4 percent interest rate at the individual farmer's level. To achieve this goal, we have asked the farmers regarding the change in their financial, social, and family life after availing the special credit from bank.

We have tried to understand whether the beneficiary farmers have become financially more solvent or not after availing this special credit. Almost all of the respondents (about 98 percent) stated that they make substantial profit after taking this loan. Similarly, about 96 percent of respondents reported that they have paid back the loan solely by the profit generated from selling the designated crops. Among the remaining 4 percent of respondents, 71 percent use their own fund, 5 percent take loan from other banks, and 5 percent collect loan from informal sources to repay the loan in addition to their profit.





Most of the beneficiary farmers (about 98%) are willing to avail this special credit in repeated fashion. Moreover, they urge BB to continue and expand this loan scheme. Respondents share multiple reasons behind preferring this loan; for example, 252 of them said that they want to take the loan because of their need, 232 of them because of low interest rate, 200 of them prefer because of profitability and 100 of them favor this because of easiness in getting this loan. On the other hand, only 2 percent of respondents stated



that they will not take this loan from the bank because they do not need this anymore.

The survey finds that the amount of loan sanctioned to the farmer is not always sufficient for meeting up cultivation costs. Only 25 percent of respondents are happy with the amount disbursed to them as per the guideline of BB. Not surprisingly, 75 percent of the farmers ask for higher amounts. On average, they asked for BDT 181118 more along with their existing sanctioned loan.



The survey data also reveal some other aspects such as intention of farmers increasing farming, crop intensity, pricing of crops and sufficiency in agricultural inputs. A large number of farmers (about 82 percent) stated that they have intention to increase their crop growing land in the future. Most of the farmers (about 81 percent) mention that land productivity and cropping intensity⁷ have increased over time. In answering the question regarding getting fair price of agricultural goods, about 71 percent farmers opine that they are not getting proper price for their cultivated crops, especially at the harvesting period. As per the observation of the surveyed farmers (about 90 percent of them), there are no scarcity in agricultural inputs, for example, irrigation, fertilizer, fuel, seed, cold storage, etc.

Moreover, the study finds that majority of the beneficiaries (approximately 79 percent) owned some assets during the last two years. Expanding land holding is one of the popular types of asset-holding for the farmers. About half of the respondents stated that they have bought land while 28 percent engaged their money on constructing house, 26 percent kept money in the form of cash, and rest of them bought furniture, electronic appliance and other items. On the other hand, about 82 percent of the respondents were able to save money from the profit made from agricultural activities.



We have also asked whether any positive changes occurred in their personal and family life after receiving the loan. Almost all of the respondents (95.5%) have experienced some positive changes in their personal or family life in terms of better food intake (70 percent), wearing quality cloth (47 percent), and giving child education (64 percent). The study also tries to get an idea about farmer's financial condition after obtaining this special credit facility. Most of the farmers (about 74 percent) are feeling better after taking the loan, 18 percent can save money, 5 percent think their financial condition are same as before, and only 2 percent state that they need more loan.

⁷Cropping intensity refers to raising of a number of crops from the same field during one agricultural year





7. Problems of Agricultural Loan and Probable Solutions

This study also attempts to find out whether there are any major problems regarding the disbursement and utilization of this special agricultural loan. In the survey, farmers were asked to mention the main problems of receiving this agricultural credit from the banks. Moreover, they were also asked to provide their opinion about how to overcome the existing barriers of this loan. The essence of these two questions is to find out a way to make this loan effective and more farmer-friendly. More than half of the respondents affirmed that they did not face any major obstacles in receiving this loan from the banks and consequently, about 49 percent did not provide any suggestions on the issue.

7.1 Major obstacles/problems mentioned by the respondents

The farmers who have mentioned about problems in agricultural loan mainly highlight

the following issues:

Insufficient amount of loan: Many farmers stated that the loan amount is not sufficient to meet the costs of producing the targeted crops. Since the targeted amount (set by BB) of this credit is very low compared to the demand, many farmers are not getting their desired amount of loan from the bank.

Loan availability for a limited number of crops: Farmers who cultivate some specific crops i.e., pulses, oil seeds, spices, and maize are currently eligible to receive this loan. However, respondents mention about many other prospective crops which can be included under this loan scheme. For example, some farmers complain that they can not avail this loan for cattle-raising, cultivating fruits or others crops and vegetables.

Short tenure/period of loan repayment: Many farmers raised the issue that the tenure of this loan is too short for them. They often incur loss as they are forced to sell their crops at lower price during the harvesting season to repay the loan.

Lack of awareness: Many respondents mentioned that farmers are not fully aware of this loan scheme. According to the BB guideline, no collateral/documentation or loan processing fee is required to receive this loan. Moreover, a share-cropper is also eligible to receive this loan. Despite this fact many needy farmers/share-croppers do not even know about this loan.

Lack of supervision: As per the observation of respondents, bank officials sometimes fail to identify the actual farmers who cultivate the import substitution crops such as pulses, oil seeds, spices and maize. They also mentioned that some farmers misuse the loan amount in non-productive sectors.

7.2 Policy suggestion from the respondents

In order to make this loan scheme more farmers friendly and effective, the respondents have suggested policy measures, some of which are highlighted below:

Enhancing loan ceiling: Increasing the targeted amount may benefit more farmers. A farmer from Bandarban received BDT 135000 from Sonali Bank Limited; however, his demand was BDT 230000. Thus he comments to the survey team,

"Loan amount should be increased"

Increasing repayment tenure: Extended repayment tenure of this loan may bring more benefits for the farmers. How does this improve the wellbeing of farmers? A statement from a group of farmers of Gangachara upazilla, Rangpur district can be considered here:

"Bank pressures us to pay back the loan in May immediately after harvesting maize. So we have to sell our crops (maize) at lower price. But if we are allowed for two more months for repayment we will get almost BDT 200 more from per maund" **Building awareness:** As many genuine needy farmers are not fully informed about this special credit scheme, some respondents suggest that more publicity is needed. The study team noticed that many share-croppers are unaware that they are eligible to receive the loan.

Increase the coverage: Many farmers urge to consider this loan facility in case of some other crops such as banana, lychee, malta, sugarcane, papaya, pineapple, guava, plum, dragon fruit, orange etc. Respondents from almost all divisions demand to disburse this loan for cultivating sugarcane and banana. This loan facility may be considered for producing malta, orange, and pineapple, suggested by the farmers of Chattogram region. Again, the farmers from both Chattogram and Rajshahi regions demand to launch this credit to enhance the production of lychee. This facility may also be introduced to increase the production of papaya, guava, plum and dragon fruit, suggested by the respondents of Chattogram, Rajshahi, Khulna, Rangpur and Dhaka divisions.

Selection of farmers: Many farmers stated that bankers should be more vigilant while choosing the farmers for this loan facility. Moreover, they urge BB to increase its inspection to ensure selection of farmers who are actually cultivating the crops for which the loan facility is launched. Moreover, they also opined that the government should increase the cold storage facilities as well as take necessary measures to cut-down prices of pesticides. Some farmers also suggest disbursing this loan through the provision of group lending or community based lending.

8. Conclusion and Policy Recommendations

This study opts to analyze the effectiveness of a special agricultural credit program at concessional interest rate. In order to do so, field level survey data were collected from borrowers across the country during January-February, 2020. In addition, various secondary data at national level related to this special credit are also considered for this study. Some major findings/insights are highlighted as follows:

- 1. Although the amount of loan disbursement for promoting the production of pulses, oil seeds, spices, and maize experienced an increasing trend between FY11 and FY20, the share of this special loan to total disbursement of agricultural loan declined from 0.58 percent in FY11 to 0.47 percent in FY20. The actual disbursed amount of loans under this scheme always fell short of the target set for each fiscal year.
- 2. The production of pulses, spices, oil seeds and maize is persistently rising with the evidences of increased productivity since the inception of this special credit policy.
- 3. The loan has a very low default rate as only 7 percent of respondents fail to repay the loan. A borrower primarily fails to pay the loan due to crop loss originating from natural disasters.
- 4. Only 9 percent of respondents divert this fund to non-agricultural purposes such as constructing/repairing housing, spending money for child education, and in other activities.
- 5. The study finds from the survey data that the production of almost all products was increased in 2019 as compared with 2018.
- 6. Almost all the respondents stated that they make substantial profit after taking this loan. Most of the respondents were also able to pay back the loan solely by the profit generated from the crops they have taken loans for. Subsequently they prefer to avail this loan in repeated fashion.
- 7. About 75 percent respondents opined that the amount of loan sanctioned per farmer is not sufficient for the cultivation.
- 8. Majority of the beneficiaries, approximately 79 percent, owned some assets during last two years (either in 2018 or in 2019 or in both years). Purchasing land is the most popular among farmers followed by constructing house.
- 9. Almost all the respondents have experienced some positive changes in their personal or family life in terms of better food intake, wearing quality cloth, and schooling for their children. They also feel better than before in terms of their financial condition after obtaining this special credit facility.

Recommendations

- 1. The Government and Bangladesh Bank should continue this special agricultural credit program for further increasing the production of these crops to help achieve self sufficiency in production of these import substitution agricultural goods.
- 2. Bangladesh Bank may need to find ways to increase the amount of credit disbursement so that the target could be fulfilled in every year under this scheme.
- 3. Because of the growing demand of this loan, the Government and BB may consider to increase the disbursement target. In FY20, the share of this loan to total agricultural loan disbursement was only 0.47 percent. The Government and BB may consider allocating 1-2 percent of total agricultural loan for this special loan scheme.

- 4. BB may revise its policy guideline to increase the amount of loan per farmer for cultivating these crops considering the increasing cost of production such as wage inflation and price hike in other factors of agricultural production over time.
- 5. BB may issue detail directives to all banks about loan repayment tenure and also follow up so that farmers are not forced to sell crops in harvesting season at a lower price.
- 6. The Government gives foremost importance on agriculture sector and intends to intensify the crop diversification as well as commercialization in the agricultural sector. The government has also reiterated the importance of agriculture sector in the economy after the outbreak of COVID-19. In this backdrop, this special credit facility may expand to augment the production of some other crops, especially in fruits/import substitution fruits production such as banana, lychee, malta, papaya, pineapple, guava, plum, dragon fruit, orange etc.



- 7. BB has already issued a policy guideline to disburse agricultural credit at 4 percent concessional interest rate⁸ to enhance the production of all major crops (including import substitution crops) to check any production shortfall in agriculture sectors due to outbreak of COVID-19. But the issue of producing import substitution crops should receive more prominence in government or BB directives. Otherwise, farmers may be discouraged to keep up their momentum regarding cultivation of import substitution crops such as pulses, spices, oil seeds and maize. Accordingly, the vision of self dependency in import substitution crops may be disrupted. In this backdrop, the Government and BB may consider to set the concessional interest rate at 2 or 3 percent instead of 4 percent so that farmers' impetus to produce import substitution crops does not reduce. If the rate is set at 2 or 3 percent then the government may spend extra about BDT 2.83 crore or BDT 1.42 crore as subsidy to cover interest expense for the banks in FY21⁹.
- 8. The concerned department of BB should increase its monitoring to prevent this loan disbursement to non-farm activities.
- 9. The concerned department of BB may issue a directive to use agent banking outlet and sub-branch of each bank to disburse this loan.
- 10. Finally, a policy of price protection should be in place so that any unusual price volatility could not hamper the interest of farmers and consumers.

⁸This 4 percent concessional interest rate will be only applicable for the period of 01 April, 2020 to 30 June, 2021.

⁹The target of this loan disbursement is BDT141.51 crore for FY21.

9. References

- 1. Carter, M. R., & Wiebe, K. D. (1990). Access to capital and its impact on agrarian structure and productivity in Kenya. American journal of agricultural economics, 72(5), 1146-1150.
- 2. Feder, G., Lau, L. J., Lin, J. Y., & Luo, X. (1990). The relationship between credit and productivity in Chinese agriculture: A microeconomic model of disequilibrium. American Journal of Agricultural Economics, 72(5), 1151-1157.
- 3. Misra, R., Chavan, P., & Verma, R. (2016). Agricultural credit in India in the 2000s: Growth, distribution and linkages with productivity. Margin: The Journal of Applied Economic Research, 10(2), 169-197.
- 4. Sriram, M. S. (2007). Productivity of rural credit: A review of issues and some recent literature. International Journal of Rural Management, 3(2), 245-268.
- 5. -----Agricultural & Rural Credit Policy and Program for the FY2020-2021, Published by Agricultural Credit Department, Bangladesh Bank.
- 6. ----- Bangladesh Economic Review (Various issues), Published by Ministry of Finance, People's Republic of Bangladesh.
- 7. -----Labour force Survey Report-2016-17 by Bangladesh Bureau of Statistics (BBS).
- 8. ------ Statistical Yearbook (Various issues), Published by Bangladesh Bureau of Statistics (BBS).
- 9. ----- Seventh Five Year Plan 2015, Ministry of Planning, Peoples' Republic of Bangladesh.
- 10. -----Yearbook of Agricultural Statistics (Various issues), Published by Bangladesh Bureau of Statistics (BBS).

Appendix	
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Table 1: Field Survey Teams							
Survey Team	Name of Official	Designation	Responsibility in the Study Team				
-	Ms. Rokeya Khatun	General Manager	Team Leader				
Team - A	Md. Rezwanul Hoque	Joint Director	Member				
	Ms. Asma Akter	Joint Director	Member				
	Mr. Md. Nazim Uddin	Deputy General	Team Leader				
Team - B		Manager					
	Mr. Md. Robel Hossain	Joint Director	Member				
	Mr. Ataur Rahaman	Joint Director	Member				
	Mr. Samir Ashraf	Joint Director	Team Leader				
Team - C	Mr. Md. Hassan Chisty	Deputy Director	Member				
	Mr. Md. Nazmul Huda	Deputy Director	Member				

Figure1: Distribution of age of the respondents



Table 2: Number of respondents' by banks						
Bank Name	Number of respondents'	Percentage				
Agrani Bank Limited	72	13.5				
Bangladesh Kishi Bank	40	7.5				
Islami Bank Bangladesh Limited	63	11.8				
Janata Bank Limited	75	14.0				
National Bank Limited	33	6.2				
NCC Bank Limited	30	5.6				
Rajshahi Krishi Unnayan Bank	90	16.8				
Sonali Bank Limited	37	6.9				
Uttara Bank Limited	48	9.0				
Rupali Bank Limited	47	8.8				
Total	535	100				

Table 3: Division-wise Name of Surveyed district							
Dhaka	Chattogram	Rajshahi	Khulna	Rangpur	Mymensingh		
Faridpur	Bandarban	Bogura	Jashore	Dinajpur	Mymensingh		
Kishoreganj	Khagrachari	Natore	Jhenaidah	Gaibandha	Netrokona		
Manikgonj	Rangamati	Pabna		Nilphamari			
Munshiganj		Rajshahi		Panchagarh			
Narayanganj				Rangpur			
Rajbari				Thakurgaon			

Published by G.M. Abul Kalam Azad, General Manager, Department of Communications and Publications, Bangladesh Bank, Head Office, Motijheel, Dhaka-1000, Bangladesh, Website: www.bb.org.bd

Printed by : Srout Advertising, 205/5 Fakirapool, Dhaka-1000.

DCP: 01-2021-100