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UTILIZATION OF INDIGENOUS KNOWLEDGE IN CHANGING AGRICULTURAL PRACTICES OF THE TEESTA RIVER BASIN

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ABSTRACT
Agriculture is the mainstay of Bangladesh's economy. Apart from agriculture being the main livelihood, Bangladesh is also one of the hazard-prone countries in the world. Due to various hazards, agricultural production is disrupted every year, leading to changes in traditional farming practices. This changing pattern and application of indigenous knowledge are more noticeable in the Teesta River basin study area. To collect necessary data, the researchers have applied qualitative approaches with responses gathered from local participants for this paper. A semi-structured questionnaire survey has conducted to capture qualitative data. The study aims to find out the utilization of indigenous knowledge in changing agricultural practices within the study area and assess its impacts on the farmers' community. Farmers often apply indigenous knowledge in its traditional form; however, they integrate modern knowledge and technology alongside traditional practices at various stages of farming. This hybrid approach helps mitigate the effects of hazards and adapt to the changing agricultural practices.

1.0 INTRODUCTION

Agriculture constitutes the main source of income for most of the population in Bangladesh. About three-fourths of the population in Bangladesh is directly or indirectly involved in agriculture (Mahedi et al., 2025; Salam et al., 2023). Over the past few decades, various natural hazards have occurred due to climate change. Simultaneously, man-made hazards are also directly impacting traditional agriculture. In the past, the farmers' community in Bangladesh incorporated various elements of indigenous knowledge into all aspects of agriculture and contributed to the sustainability and environmental friendliness of agricultural practices (Rahman & Alam, 2016). The farmers have changed their farming methods to meet the increasing food demands of a growing population and contend with agricultural land reduction caused by natural and man-made hazards (Hemathilake & Gunathilake, 2022; Md Shahriar Kabir et al., 2025). However, in recent times, the prevalence of natural hazards and

human-induced changes has threatened the very essence of this indigenous knowledge (Kanak Pervez et al., 2015). While many regions have seen a decline in their application, the farmers' community in the Teesta River basin stands as a resilient exception. They continue to embrace and adapt indigenous knowledge to meet the challenges posed by changing agricultural practices and shifting environmental patterns. The farmers' community is committed to preserving and applying their indigenous knowledge in the face of changing agricultural practices.

Objective of the Study:

a) To find out the changing patterns of the agricultural system in the study area.
b) To identify what types of indigenous knowledge are applied in these changes.
c) To assess the impacts of the indigenous knowledge on the farmers' community.

Limitations of the Study

This study is conducted only Northern part (Kurigram and Gaibandha districts) of the Teesta River basin area. Through this study, researchers only find out, the utilization of indigenous knowledge and its impact on farmers' community for changing patterns of the agricultural practices. Other things like the climate change model, displacement, and farmers' socio-economic condition could not possible to included in this study due to time and limited budget. Some of the respondents were busy, and they did not want to give proper time to collect the research elements. Despite all limitations, the researchers try to best to look for the research elements, and the paper has been submitted beyond all limitations.

2.0 RESEARCH METHODOLOGY AND SAMPLING

This study is based on primary and secondary data. The researchers have applied a qualitative method for this study. Considering the highest number of poverty, the number of people who depend on agriculture for their livelihoods, and due to the location in the Teesta River basin, the two villages of Kalpani Bozra and Satalaskar in Bozra union of Ulipur upazila of Kurigram district, and the two villages of Jigabari and Taluk Belka in Belka union of Sundarganj upazila of Gaibandha district have been selected purposively as the research area.

Table 1. Total Agricultural People of the Study Area

Name of the study area	Total agricultural people
Kalpani Bozra	219
Satalaskar	172
Jigabari	135
Taluk Belka	112
Total	638

Source of data: Field survey, 2025 & Union Parishad annual Report (Parishad, 2025).

Whereas the total number of people in the Teesta River basin who are totally related to agriculture is statistically known, the respondents have been interviewed by using systematic random sampling (Trochim, 2002). So, the samples have been determined by using the G. Cocharn formula. The researchers collected this formula from the book of C. R. Kotheri (Kotheri, 2014).

$$n_0 = \frac{z^2 pq}{e^2}$$

$$n_0 = \frac{(1.96)^2 0.5 \times 0.5}{(0.05)^2}$$

$$n_0 = \frac{0.960}{0.0025}$$

$$n_0 = 384.1$$

$$n_0 \approx 385$$

Here,

n_0= Sample size

z = Confidence level (at 95% probability =1.96)

e = Acceptable error (error limit 5%, i.e., 0.05)

p = Estimated population portion

(0.5 this maximizes the sample size) (Kotheri, 2014)

q = 1-p = (1-0.5) = 0.5

Again,

$$N = \frac{n_0}{1+\frac{(n_0-1)}{N}}$$

Here, n_0= Sample size

N = Population Size

$$= \frac{385}{1+\frac{(385-1)}{638}} = \frac{385}{1+\frac{384}{638}} = \frac{385}{\frac{638+384}{638}} = \frac{385}{\frac{1022}{638}} = \frac{385 \times 638}{1022} = 240.34 \approx 240$$

The study was conducted using sixty (60) experienced farmers purposively from each area as respondents.

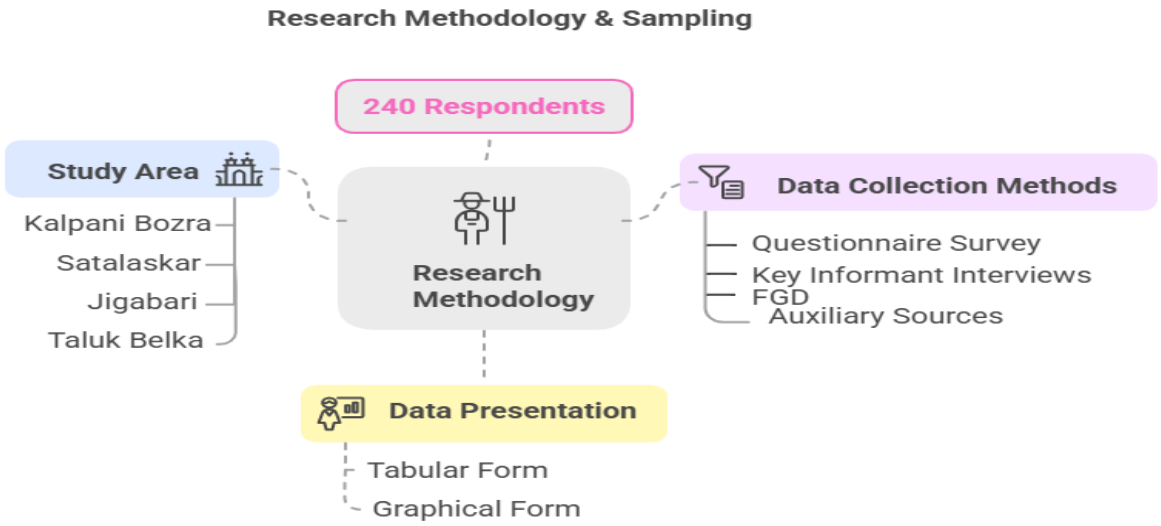

Figure 1. Research Methodology and Sampling

Source: Developed by the Researchers

3.0 RESULT AND DISCUSSION

Agriculture is the practice of farming, including cultivation of the soil for the growing of crops. Approximately 11.38% of the Gross Domestic Product (GDP) of Bangladesh is gained by the agricultural sector (Miah et al., 2020). This sector also accommodates around 45.4% of the labor force.

Geographically, Bangladesh is located in the Ganges-Brahmaputra Delta region (Steckler et al., 2022). As a result, since Bangladesh is located in a low-lying region, water from the Teesta River, originating in the upstream country, flows through Bangladesh and eventually empties into the Bay of Bengal (Shahid et al., 2024). Because of this, Bangladesh is deprived of its rightful access to the flow and availability of the Teesta River water. Consequently, flash floods, river erosion, and chronic drought have altered the agricultural practices in the study area (Ferdous & Mallick, 2019). To meet the increased demand for food while protecting the agricultural practices from various natural and man-made hazards, farmers in this region are compelled to employ both traditional and modern agricultural methods and knowledge. Therefore, long-cherished traditions are declining, and agricultural practices are undergoing significant changes. This changing pattern in the agricultural practices is affecting the lives and livelihoods of farmers in the Teesta basin study area and is also financially harming them. Discussed in detail below:

3.1 Changing the Agricultural System

Traditional agricultural practices were highly esteemed in ancient times, where farmers cultivated crops using age-old techniques and methods. This method was mainly carried out manually and involved the use of strong animals. Modern agriculture places a greater emphasis on specialization, science, technology, and stewardship (Shaili et al., 2025). Ancient methods involved the use of plows or hand tools, while modern agriculture utilizes tractors, agricultural machinery, and scientific systems to enhance crop yields (Lal et al., 2007). Nevertheless, traditional farmers' communities provide alternative means to preserve their time-honored quantitative methods and sustain ancient farming practices (Mahedi et al., 2025). Endeavoring to integrate these two approaches can be productive, as it can advance our agricultural science and aid us in effectively addressing climate change.

The Teesta river basin region, situated in South Asia, spans across India and Bangladesh. Changes in agricultural practices in this region are influenced by several factors, including climate, geography, socio-economic condition, natural hazards, man-made hazards, and government policy (Azadi et al., 2022). The changing patterns of agricultural practices in the Teesta River basin region are a response to a complex interplay of factors, including environmental, socio-economic, and political dynamics. These changes aim to improve food security, enhance livelihoods, and ensure the sustainability of agriculture in the face of evolving challenges (Mahedi et al., 2024).

3.2 Utilization of Indigenous Knowledge in Changing Agriculture

Since ancient times, Bengalis have been cultivating agriculture based on their long-cherished tradition. For this reason, Bangladesh has earned a renowned status not only in the field of agriculture but also in its rich traditions. And this sphere of fame and prosperity has spread across the world. However, due to various hazards and the increasing prevalence of modern technology, the utilization of indigenous knowledge has been declining in recent years (Islam, 2025). Indigenous knowledge is the emotional serenity experienced by Bengali people. It is not always possible to entirely forsake this knowledge and embrace something new. Hence, the utilization of indigenous knowledge is still evident in the evolving patterns of agricultural practices. A comprehensive discussion of how the farmers' community in the study area applies the elements of indigenous knowledge at various stages of agricultural cultivation within an agricultural system that has been changing by various natural and man-made hazards is given below:

Step 1: Indigenous Knowledge in the Preparation of Seeds and Seedlings

Within the changing agricultural practices, farmers' communities in the Teesta River basin are still, in many, if not all instances; produce seedbeds and generate seedlings from seeds themselves. During the paddy seed preparation process, many farmers in this region leave the selected and stored paddy on the ground or the floor of their house for a few days at the beginning of the season and lightly sprinkle water. Many times, they put the paddy in sacks and make ponds or artificial holes and submerge the sacks by pouring water into them. After one or two days, the bag is taken out of the water, and the paddy is left exposed outside of the bag in an open place. By following this method, a white sprout forms on the paddy after seven to ten days. After 25-30 days of sowing the paddy seeds in soft soil, large seedlings are obtained, and these are then transplanted into the fields to grow paddy plants and crops. In wheat cultivation, they prepare seeds and seedlings by spreading wheat on the ground. In the case of potato seed, when a white sprout emerges from a potato, farmers plant it in the ground by cutting a portion of the potato with the sprout. Moreover, seeds and crops are also produced by directly planting nut and garlic cloves into the soil. Because of the unplanned water flow of the Teesta River, the farmers in this region sometimes must rely on market packaged seeds on account of the unavailability of a timely water supply for seedbeds. Although this system is expensive and not up to standard, because most of the time, it is of hybrid varieties (Chowdhury et al., 2020). A significant amount of fraud involving Ufshi, Hybrid seeds, is occurring in Bangladesh. Numerous farmers in the northern region were defrauded due to purchasing Syngenta company's 2010 hybrid 'Sabal' tomato seeds, leading to a filed lawsuit. However, the Syngenta Company could not be held accountable and judged (Chowdhury et al., 2020).

Step 2: In the Case of Land Cultivation

Once upon a time, farmers could be observed going out early in the morning, carrying cows and plows on their shoulders to cultivate the agricultural fields (Jackson et al., 2022). Over time, this traditional practice in rural Bengal is fading away due to the influence of modernity. In recent years, the farmers' community utilizes elements of indigenous knowledge such as cows, ploughs, yokes, ladders, cussi (folk equipment for breaking large lumps of soil into small pieces) and sticks to cultivate the land. In corners of the land where the plow blade cannot reach, the farmer digs the soil with a spade and cultivates the land. Along with indigenous knowledge, they are currently using diesel-powered power tillers/ tractors and crab carts as modern farming technology.

Step 3: For Sowing Seeds and Planting Seedlings

The farmers' community plant seedlings in the land using various methods tailored to each crop. For instance- in paddy production seedlings are manually planted in rows, while for wheat and jute seeds are scattered on the ground. Maize, almonds, garlic, and peppers are also planted in rows at specific intervals. Farmers in this region cultivate crops for vegetables and pulse by directly sowing the seeds on the land (Kumar et al., 2023). They used to folk beliefs and perform a superstition called 'Gosalpana' when planting seedlings. A farmer used to take a bath and put on clean clothes and begin the work by planting seedlings in the field. Even though this practice is no longer common, some women from farming families still adhere to this folk belief and superstition of planting gourds or beans in their yards or the corners of their houses. Regarding this, a farmer named Kulsum stated, 'in the past, this folk belief and superstition were followed by many people in this region, but now, no

one observes it. There is no damage to the crop. However, there are many good and bad people coming and going in the house, so some women farmers still practice it to protect the gourd or bean plant inside the house from evil spirits (locally called badanjar), and hoping for more yield. Since there are numerous crops in the field, the influence of evil spirits is not significant. However, men no longer adhere to it; only women do' (Begum, 2025).

Step 4: In the Case of Weeding and Weed Control

The farmers' community in the Teesta River basin clears the weeding and weeds in two or three steps to cultivate the land and grow the crops. By doing this, the plants can absorb the necessary nutrients from the soil, resulting in healthier plants and increased yields. For weeding and weed control, the farmers' community in this region utilizes indigenous knowledge and traditional tools (Rathore et al., 2021), including items like a hoe (locally called pasun), scissors/sickles, and a bucket made of bamboo, spud, and grubber. These indigenous knowledge, traditional agricultural tools, and cultivation methods have been used for weeding and weed control in this region for generations. Instead of manual weeding, some farmers have started using herbicides such as Refit 500, Squadron 10 WP, Logran 75 WG, Islet 15 WDG, and Eroxon 200 SL to control grass and weeds on their land as reported by Enamul, a fertilizer and pesticide dealer (Hoque, 2025).

Step 5: For Irrigation

Irrigation is the practice of supplying water to the soil artificially to cultivate crops. Apart from using Teesta River water for crop cultivation, the farmers' community of the Teesta basin used to produce Treadle Pump (locally called Dhenkikal) by using bamboo and wood themselves. The invention of Dhenkikal is not only used by farmers in Bangladesh, but across the borders of Nepal, Vietnam, India, and Thailand through the hands of private organizations (Farooq, 2014). Recently, they have utilized previously established concepts in changing agricultural practices to safeguard against both natural and man-made hazards by digging small ponds adjacent to crop fields and filling them with water during floods. This water is applied to the crop land by using 'Senuti' or 'Dolna Sechni' using tin, bamboo, and wood, attaching ropes to its two ends. Currently, some farmers in the Teesta basin still irrigate distant lands from the Teesta River or small reservoirs by utilizing diesel-powered pumps and plastic pipes within a changing agricultural practice.

Step 6: In the Case of Fertilizer Application

A riddle can be mentioned, 'what has no hand, no feet, not even a mouth, yet thrives on nourishment?' It's a simple answer, and it's an eco-friendly tree. Despite lacking arms, legs, or a mouth, plant acquires nutrients to grow from small to large. So, plants require nutrients to survive and yield crops. At least 17 nutrients are essential for plants to complete their life cycle successfully (Raza et al., 2025). But plants absorb a minimum of 12 nutrients from the soil for their normal growth and development. Plants absorb 2 types of nutrient elements. such as (1) Macronutrient elements- Nitrogen, Phosphorus, Potassium, Calcium, Magnesium, Sulfur (2) Micronutrient elements- Iron, Manganese, Copper, Zinc, Boron, Molybdenum.

The farmers' community in the Teesta basin has been cultivating crops for an extended period using both organic and compost fertilizers. In this case, they collect cow dung in a designated area and apply that manure to the land during cultivation. The farmers are also throwing household waste,

garbage, and vegetable peels into a designated pit (locally called 'Bhagar'), and when those materials decompose, they utilize them to the land as fertilizer. While the use of organic and compost fertilizers has decreased in recent years, the use of chemical fertilizers (urea, phosphorus, potassium, etc.) has been on the rise among the farmers' community in the Teesta basin.

Step 7: For Pesticide

The farmers' community in the Teesta River basin has been using ashes as a pesticide for crop production for a long time. Consequently, the crops would be free from toxins, allowing them to naturally grow more. Due to various hazards, changing agricultural practices are not solely effective of using ash as a pesticide. Hence, farmers in the Teesta basin are currently using various pesticides purchased from the market in conjunction with ash to control insects on their lands. In the 20th century, the use of pesticides as a significant factor in regulating agricultural productivity growth is thought to have expanded (Tudi et al., 2021). Consuming foods and vegetables contaminated with pesticides can pose harm to humans.

Step 8: In the Case of Crop Protection

Previously, the farmers' community of the Teesta river basin had used to depended on indigenous knowledge to safeguard arable crops. Some of those elements of indigenous knowledge are persisting at present in the changing agricultural practices. To protect the crops, the farmers in the Teesta basin create human portraits or effigies using straw, bamboo sticks, torn clothes, and hanri. Seeing this, animals and birds perceive these figures as real people and refrain from attacking the crops. In the vernacular, it is referred to as 'Pailya rakha' (Ahmad, 2004). It is recognized as 'Kakatarua' in the educated society of Bangladesh (Ahmad, 2004). Additionally, they conduct a ceremony known as 'Alo Dala' to safeguard crops. For this ceremony, a farmer circumnavigates the field by tying bundles of jute sticks or straw, igniting a fire around the crop field. Many farmers also refer to it as the 'Khet Bandhan' ceremony. Many farmers in the Teesta basin purchase nets made of yarn from the market and employ them as fences in their crop fields.

They also attach a tin box or plate to a bamboo or wooden pole and set it in the cropland. A jute rope is pulled from that box or plate to a specific location outside the crop field. Periodically, someone gently pulls on the rope and makes a jingling sound. It's called the 'Tana Ghanta/Bell' method to protect crops. By doing this, the birds in the crop field will fly away in fear upon hearing the jingling sound. The farmers' community in the Teesta basin has been cutting and burying tree branches, especially bamboo heads, along with bamboo and kanchi in the crop fields for a long time to protect the crops. In the modern era, the farmers' community not only utilizes traditional indigenous elements in the crop fields but also purchases pesticides from the market and applies them to safeguard crops against pests and domestic animals.

Step 9: For Harvesting

Farmers in this region use tools like da, sickles, beki, iron blade, spade, plough, spud, hoe, etc., for harvesting and picking crops from the soil. Crops such as paddy, wheat, and jute are harvested with the assistance of sickles and beki. Other grain type crops are harvested or lifted from the ground using da, bamboo, or wooden clamps, spuds, and hand pulls. The maize is plucked by hand from the plant, and then the plant is cut with a knife.

Step 10: For Crop Transportation

Many farmers construct their boats using bamboo, wood, plane sheets, iron nails, and pieces of bamboo or wood as oars. Additionally, a few banana plants are joined side by side and inserting a bamboo kanchi through the middle. A bamboo, several feet long, is used to propel the raft. Thus, farmers transport the crops with the help of boats and rafts. Due to various natural and man-made hazards, the water flow of the Teesta River is currently normal for about 3-4 months of the year and in the remaining 8-9 months, pastures are formed at various places due to the lack of normal water flow in the Teesta River. Hence, the farmers' community of the Teesta basin currently uses horse carts, diesel-powered tractors, and van carts to transport crops in changing agricultural practices. Moreover, they transport the crops with two buckets made of bamboo to two sides of a bamboo or wooden bunka, tying with ropes, using bicycles to transport crops, attach a few feet of bamboo to the back of the bicycle to reach their home. Some farmers transport crops by tying ropes on their shoulders, backs, and heads.

Step 11: In the Case of Threshing Crops

It is important to thresh the crop quickly after harvesting. If not threshed quickly, various insects may consume parts of the crop, and some may fall from the trees to the ground and destroy. Many farmers thresh the crop in the field after harvesting, while many others bring it home to conduct the threshing process. The threshing season brings great joy to farmers as they are rewarded for their hard work (BOU, Appropriate technology for post-harvest processing and storage, 2022). Most farmers use large flat wood and tree trunks for threshing crops such as wheat, paddy, and pulses. Furthermore, they use a vessel made of clay, used for drinking water by cows, which is known as 'chara', for threshing rice and wheat, reinforcing them by making them hard and thick with a coating of cement. Various crops, including grains, are threshed by hitting with flat wood as well as bamboo kanchi. Farmers set up bamboo into the grain, tie a cow with it, and rotate the cow to thresh the grain. By doing this, in addition to preserving tradition, farmers reduce their expenses, contributing to their economic prosperity. Some farmers are threshing paddy and maize using power/diesel-driven threshers in the changing agricultural practices.

Step 12: Utilization of Indigenous Knowledge in Crop Preservation

After crop threshing, it should be thoroughly dried in the sun before preservation. The stored crops are utilized for food and later as seeds for cultivation. Hence, farmers' crop preservation can generally be classified into two categories Such as (1) preserved as food (2) preserved as seed for cultivation. Moreover, for storage convenience, the produced and threshed crops can be divided into two parts, namely- Perishable crops and more durable crops (BOU, Appropriate technology for post-harvest processing and storage, 2022). The farmers' community in the Teesta basin preserves paddy in a large-sized bucket made of bamboo. Farmers in this region use 'Neem' leaves and 'Nisinda' leaves to deter insects or rodents from attacking the paddy stored in a bamboo bucket. Subsequently, they store high-quality paddy in distinct bamboo buckets or buckets made from large gourds to preserve it as seed. The top part of the gourd is cut off, the soft insides removed, and the gourd is sun-dried to create a bucket for storing crop seeds. They store various crops (dal, pulse, sesame, mustard, etc.) in earthen pots, bronze vessels, clay/bronze pitchers (now found in very few homes), gourds, or a pumpkin

bucket. Nuts with shells are preserved in jute sacks, but selected nuts, which are intended for use as seeds, are kept in separate sacks. Approximately 80-100 garlic pieces collected from the land are bundled together and suspended in fistfuls, tied in bamboo under the tin or straw roof. This method ensures that garlic receives ample light, air, and can prevent pest infestation. The farmers' community in the study area stores onions for extended consumption, subsequent sale, and planting of the harvested onions. Farmers in this region gather sand from the river, spread it on the earthen floor inside their houses, and preserve potatoes there for an extended period. Moreover, vegetable crops like gourd, pumpkin, bean, etc., are gathered and stored in earthen pots without washing, dried in the sun for planting as seeds in the upcoming season. Currently, many farmers use cold storage and food warehouses (Godowns) to preserve their produce for extended periods due to changes in agricultural practices.

3.3 Impacts of Indigenous Knowledge on Farmers' Community

In the surveyed areas of the Teesta basin, long-standing changes in agricultural practices owing to various natural, man-made, and geopolitical factors have profoundly impacted the farmers' communities. For generations, the farmers in this region have relied on traditional indigenous knowledge in their farming practices (Kom et al., 2023). By applying indigenous knowledge in agriculture, they have contributed to economic prosperity, the preservation of traditional professions, eco-friendly farming, ecological conservation, and the timely planting and harvesting of crops, while also promoting local traditions globally. They willingly and enthusiastically applied indigenous knowledge to agriculture. However, various hazards and climate change have disrupted this stable state of agriculture. Uncontrolled population pressure is also a major factor in the changing agricultural practices.

To recover from these hazards and meet the food demands of the growing population, farmers are gradually shifting away from traditional farming practices and adopting modern seeds, machinery, and methods. This has a significant impact on farmers, especially small and medium-sized ones, who bear the heaviest burden. They are unable to adapt fully to the changing agricultural practices, machinery, and methods, and cannot sustain farming or fully utilize indigenous knowledge to meet food demands and manage their livelihoods. As a result, many of these farmers are leaving agriculture to pursue other professions.

Many farmers are shifting away from agriculture by placing equal importance on other professions alongside it. Because they lack of will, capacity, and skills to manage modern farming within the changing agricultural practices. On the other hand, most large farmers can adapt easily to the changing agricultural system. But this number is negligible in the study area. However, most farmers' communities in the study area are using mixed farming systems to sustain their lives and livelihoods amid changing agricultural practices. At various stages of agricultural cultivation, they continue to produce crops by utilizing a combination of indigenous and modern knowledge. Thus, traditional indigenous knowledge continues to lay an undeniable and influential role in preserving the profession, economic prosperity, and livelihoods of farmers' communities in the study area amid changing agricultural practices. As these farmers are the custodians and bearers of indigenous knowledge in agriculture. So amid changing agricultural practices, indigenous knowledge continues to significantly impact both the farmers' communities and the agricultural cultivation process even today.

4.0 RECOMMENDATION

Implementing the following recommendations may not fully restore the traditional agricultural practices of the Teesta basin, but it will help preserve it to some extent. Moreover, the farmers' community of the region will be able to base on their life and livelihood in tradition.

- The people in the Teesta river basin need to be made aware about the indigenous knowledge and the detrimental impacts of environmental pollution.
- Those exploiting the Teesta River for personal gain should be held accountable under the law.
- Knowledge about the acceptable levels of chemical fertilizer and pesticide use in agriculture, along with their adverse effects, should be disseminated among the farmers' community.
- Given the high cost of technology-dependent agriculture, efforts should be made to engage farmers in adopting traditional methods apart from modern technology. This can be achieved through community/yard meetings, in collaboration with both government and private institutions, to decrease dependence on modern technology.
- Collaboration by the public and private sectors should persist to safeguard farmers from losses during diverse hazards.
- Loans with favorable terms should be provided to farmers.
- Besides modern technologies that contribute significantly to sustainable agricultural development without harming the environment, it is crucial to incorporate environmentally friendly traditional indigenous knowledge and technology in the agricultural sector of this region.

These initiatives are anticipated to preserve tradition alongside advancements in the field of agriculture.

5.0 CONCLUSION

Agriculture is an ancient profession in Bangladesh. It has a rich tradition as a source of livelihood. The farmers' community has been sustaining the agricultural profession for a long time by utilizing various types of traditional knowledge. Due to science, various natural and man-made hazards, agriculture has experienced a significant transformation. Embracing modernity, the farmers' community is cultivating by utilizing new technology in the field of agriculture. By doing this, the long-cherished tradition is gradually fading away. Consequently, people's lives, livelihoods, and food habits are changing. That's why, people are suffering from various diseases, the climate is changing, and the environment is losing its favorable conditions, creating a challenging situation for people. As a result, people's lives and livelihoods are becoming difficult to more difficult day by day.

Farmers' community in these regions has become aware of the use of modern technology in agriculture through various mass and print media. However, farmers in the survey area are not showing interest because, they are not yet familiar with all types of modern equipment and lack the skills to use of these equipment's. Even in the modern era with changing agricultural practices, traditional indigenous knowledge still remarkably influences the farmers' community of the region. People should come forward to preserve the traditional farming sector and pass down the agricultural heritage to future generations. In the field of agriculture, there should be an increase in the utilization of indigenous knowledge by the farmers' community in the Teesta basin. Because, as the utilization of

indigenous knowledge increases, there will be reduced health risks, decreased environmental pollution, and greater prosperity for sustainable agricultural practices.

Incorporating indigenous knowledge at every stage of farming, the farmers' community in this region relies minimally on modern technology; primarily employing diesel-powered tractors, water pumps, paddy and maize threshing machines, as well as chemical fertilizers and pesticides. To support and save the farmers' community in this region, there is a need to reduce expenses on chemical fertilizers, pesticides, and water pumps. By doing, this will lead to an increasing utilization of traditional knowledge, promoting healthier and more sustainable agricultural practices and food habits. On the other hand, the farming practices in the Teesta basin will be regarded as a unique example in Bangladesh's agricultural sector, liberated from the impacts of environmental pollution. The farmers' community commendable approach of preserving tradition while incorporating both modern technology and indigenous knowledge into this changing agricultural practice is noteworthy.

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