the daily observer
We stand for people's rights

Date: 21-03-2023 (Page: 05)

Focus on weather smart rice production

NIAZ MD FARHAT RAHMAN

Bangladesh is predominantly an agricultural country, agriculture playing a significant role in its economic growth. Among all crops rice is Bangladesh's most important crop and the primary source of food for over 166.5 million people. Food security in Bangladesh, like in any other rice-producing country, is innately a reflection of rice security and is directly related to people's subsistence. Along with the loss of arable land with rising populations, short-term weather, and long-term climate change have become major concerns in the development of agriculture. Furthermore, as the climate changes, there is an increasing amount of weather insecurity, making rice production more difficult than ever. Due to this, farmers who have cultivated rice using their experience are frequently affected by unfavourable weather conditions.

We have performed some analysis on maximum, minimum temperature, and rainfall data obtained from the Bangladesh Meteorological Department. It is found that the maximum temperature is increasing with time, and the trend of this increase is from the south-west to the north, central, and south-east of the country. Similarly, the minimum temperature increases from south to north. Average total rainfall shows an increasing trend from southeast to northwest and northeast to southwest. In short, we can say that the weather and climate patterns and magnitudes in Bangladesh are varying spatially.

We can consider the weather in the city of Dhaka as an example. A study conducted by the World Bank last year revealed that there is less of a difference between daytime and night time temperatures, particularly during the winter. Dhaka's average temperature is 3.5 degrees Celsius higher than any other rural area in the country. Another study by the Bangladesh Meteorological Department, Dhaka has witnessed a cold wave only once in the previous six years, and Dhaka's central region experiences temperatures that are three to four degrees Celsius warmer than the surroundings. Dhaka's average temperature has risen by three degrees Celsius in the last 16 years. Additionally, according to meteorologists, the first week of January 2023 observed the coldest average temperature in the previous 30 years.

We are aware that for the enhancement of rice production three variables such as changed climatic conditions, agronomic technology, and genetic potentiality have each contributed in an individual way. As Bangladesh's weather and climate patterns changes over time, and at the same time if genetic improvement slows yield progress for rice, achieving sustainable food security will become more challenging. Therefore, rice production should be continued by innovating, expanding, and applying new agronomic technologies to adapt to this variation in the changing weather.

In this aspect, weather-smart technology can be very beneficial in sustaining rice production in the country. It will be possible to strengthen our food security by addressing this challenge using weather-smart technology in rice production management. Every season, we need to be well prepared for weather variations and adverse behaviour so that crop losses can be avoided to a large extent, in some cases entirely, by addressing such challenges with prompt and timely action. The application of weather-smart technology in rice production management is the ultimate advance preparation. Weather smart technology will provide region-based seasonal forecasts at the beginning of each season, which can be used to make strategic decisions in advance (sowing time determination, variety selection, etc.) in rice production management. At the same time, sub-seasonal forecasts will be provided to verify seasonal forecasts, through which prestrategic decisions can be made. However, medium-term weather forecasts, which are provided for 5-7 days, are most effective for rice production management. Through this, sub-seasonal forecasting will be verified and tactical decisions on a weekly basis, such as the correct timing of land preparation and planting, the timing of fertilizer or pesticide application, irrigation management, disease, and insect warnings, etc., can be efficiently taken. These activities should be continued in all seasons.

Coordinated initiatives will be required to implement weather-smart technologies. The integrated initiative will be called "weather forecast-based rice advisory service," which will be implemented through the Integrated Rice Advisory System (IRAS). IRAS will prepare and disseminate forecast data processing, evaluation, weather forecast-based rice production management, and advisory services to farmers. This platform should be made effective in coordination with the relevant departments of the Ministry of Agriculture, Bangladesh Rice Research Institute, Bangladesh Meteorological Department, Bangladesh Water Development Board, and Department of Agricultural Extension. There will be a call centre number, and any farmer can use that number to get assistance if they need it with farming-related concerns or for agricultural guidance. Moreover, farmers also need to cooperate fully in this regard, and it is required to create awareness about the use of weather information and agricultural advice among them. They must be weather-aware and capable of adaptation. The cooperation of the Ministry of Agriculture is expected in all matters.

Farmers' yield losses will be mitigated using IRAS technology in rice production management. According to research by the Agromet Lab of BRRI, significant yield differences were examined between the IRAS technology and farmers' conventional farming practices. Rice production with IRAS technology has the potential to produce an average of half a ton more per hectare than farmers' traditional farming methods. Based on an analysis of the data and information from the research, the use of IRAS technology will result in a 13% reduction in manufacturing costs and a 30% rise in overall revenue. This method lowers production costs by ensuring adequate and effective use of irrigation water, labour, fuel, fertilizers, irrigation, herbicides, pesticides, and fungicides using weather forecast information. In addition, it will ensure the proper utilization of agricultural implements, and appropriate chemical use will aid in minimizing environmental contamination. Additionally, because of the higher yield and cheaper cost of production compared to conventional farming, the farmers' overall revenue will be significantly higher. Applying IRAS technology accelerates rice production by at least 7%, adding an additional 0.17 million tons of rice to the country's food production. By 2030, the country will generate an additional 0.21 million tons of rice if 5% of the farmers can adopt the technology.

Given Bangladesh's geographic position, population growth, and agriculture-based economy, achieving sustainable food security is challenging. The severity of weather fluctuations because of the adverse climate is getting worse every day. Only weather-smart technology can sustain rice production and food security while also providing a solution to this problem. Additional harm may happen in the upcoming days if the IRAS method is not put into practice. Although disasters cannot always be avoided, they can be lessened in rice production by careful planning and adaptation. All in all, IRAS can unveil a new horizon in rice production in Bangladesh. Recently, the weather smart technology IRAS, developed by BRRI, received the Digital Bangladesh Award 2022.

The writer is Principal Scientific Officer, Agricultural Statistics Division & Coordinator, Agromet Lab, Bangladesh Rice Research Institute (BRRI)