

RELAY CROPPING

new hope for wheat in coastal lands

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Vast fields stretch along the banks of the Mongla-Ghashiakhali channel, where Aman rice was harvested nearly two months ago. While most of the fields now lie barren, ripe wheat can be seen swaying in the wind in a few plots.

These wheat fields belong to Partha Pratim Biswas, a farmer from Hurko village. Farmers here typically yield only one crop, but this year proved to be an exception. He sowed wheat seeds in late November while the Aman rice was still in the field, allowing the wheat to grow in the same plot after the rice harvest.



If the government takes an initiative to grow wheat cultivation, it is possible to produce over two million tonnes of additional wheat in the country following the relay cropping method.

Dr MG Neogi
Agricultural Scientist

This technique, known as relay cropping, involves planting one crop before harvesting the other.

Last year, agricultural scientist Dr MG Neogi approached a few farmers in Bagerhat's Hurko village. As part of his collaborative research with Griffith University in Australia, he encouraged a total of 12 farmers, including Partha Biswas, to adopt the relay cropping method for wheat this year.

Partha said he learnt a new thing from the scientist. He never believed that he could harvest wheat in this way.

Asked about his harvest, he said he would make around 10 maund of wheat from one bigha of land.

"Spending around Tk 5,000, I would harvest wheat worth Tk 15,000. If I did not cultivate wheat here, the land would be barren," said Partha while harvesting his wheat on February 28.

Partha said he cultivates Aman rice on his land, as Aman can be grown using only rainwater. But most farmers are unable to cultivate Boro rice on

these lands due to a scarcity of fresh water.

Asked about the river water flowing along the crop field, Partha said the river water also gets saline during the lean period and is not suitable for irrigation.

"So most of the farmers do not cultivate anything, except a few who try to grow sunflowers or mustard if their land is located near freshwater ponds."

Dr Neogi said he had previously taught the technique of cultivating wheat in Patuakhali and Barguna for two years.

"Following success there, I see immense potential for wheat cultivation in the saline soil coastal areas."

He explained that since wheat cultivation does not require significant irrigation, it is easily possible to grow the crop in the saline fallow lands of the coast by adhering to certain conditions.

Salinity In Coastal Area

Around 25-30 percent of the country's arable land is located in 21 coastal districts, of which 53 percent has become saline-affected, finds a recent government study by Khulna University.

According to the study, around 75 percent of land in Satkhira, 66 percent



in Bagerhat, 32 percent land in Khulna, and 72 percent in Barguna are affected by salinity.

In a study by the government in 2009, salinity-affected areas increased to 1.05 million hectares from 0.83 million hectares found in the previous government study in 1973.

When farmers harvest Aman rice, there is no other crop in the field, and the land dries up



due to sunlight. The salinity level of the land rises during this process.

When the soil is moist, the salt concentration is diluted. But when water evaporates after the December harvest, the salt remains, often forming a white crust on the surface. This prevents farmers from planting further crops till the next monsoon.

From his research in the last five years, Dr Neogi found it is possible to harvest 10 maund from a bigha of land (33 decimals).

So it is possible to grow 75 maund (2.799 tonnes) of wheat in a hectare of salinity-affected land using the relay cropping method. So it will be over two million tonnes of wheat only from salinity-affected fallow coastal land, he said.

The researcher reported yields of 3 to 3.5 tonnes per hectare. While this is slightly lower than the 4 tonnes achieved in Dinajpur, the production cost is significantly lower because no tillage is required.

In local measurements, the cost is approximately Tk 5,600 per bigha (33 decimals), while the output, roughly 10 maunds, is valued at Tk 15,000 to Tk 16,000.

This allows a farmer to earn a net profit of Tk 10,000 per bigha from land that would otherwise lie idle.

Currently, Bangladesh has a growing demand for wheat, which has reached 7.5 million tonnes. But the country is growing only one million tonnes of wheat a year, and the rest has to be imported.

Method of Relay Cropping

According to Dr Neogi, relay cropping in the coastal belt offers a solution to vast salinity caused by climate change.

Wheat is a winter-loving plant that requires temperatures below 15 degrees Celsius during its vegetative and heading stages.

As is known, the duration of winters in Bangladesh is shortening. The coastal region has around 15 degree Celsius temperature mostly in January.

"To get the best result, farmers have to sow the wheat by mid-November so that head formation, or inflorescence, occurs during the peak cold of January," he said.

However, farmers cannot sow in mid-November because the Aman rice is still in the field. Aman is typically planted in June or July, depending on the rains, and harvested in December.

This is where relay cropping, a method where a second crop is sown before the first is harvested, comes in, the researcher added.

In mid-November, while the Aman rice is still ripening, wheat seeds are broadcast into the standing crop. The residual moisture in the soil provides a favourable environment for germination. By the time the rice is harvested in early December, the wheat seedlings are already one to two inches tall.

"Although the seedlings may suffer minor trampling during the rice harvest, I see in my research they survive and recover," said Dr Neogi.

Wheat cultivation only needs light irrigation if the land becomes too dry.

Asked how farmers would ensure

light irrigation where arranging fresh water is a challenge, Neogi said according to the Bangladesh Bureau of Statistics (BBS), 347,671 water bodies are available in the coastal regions, covering an area of 37,530 hectares.

Using these water bodies for rainwater storage can facilitate relay wheat cultivation on 375,300 hectares of fallow land, where farmers can also engage in fish farming for a period of six months by utilising those water bodies.

Through renovation of these water bodies, farmers may ensure additional production of wheat, mustard and other crops from these fallow lands.

Also, farmers can dig a pond on 10 percent of their land, about six feet deep with six feet length and breadth, then place a thick plastic sheet at the bottom and around the pond to retain rainwater.

This water can support fish farming for six months and irrigate the remaining 90 percent of the land for relay wheat cultivation.

But Dr Neogi said farmers have to follow certain rules strictly to get the best result. According to his research findings, 20 to 22 kilogrammes of wheat seed will be required for coastal areas per bigha (33 decimals) of land.

For instance, if there is prior preparation and wheat seeds are to be broadcast in a paddy field, then the process must be managed properly, including how and when the paddy seeds are sown, the appropriate amount of fertiliser and the correct dosage of herbicide are applied. All these steps must be carried out meticulously to get a good harvest.

"This is a proven technology," he said. "If farmers follow the 12-step protocol, they will succeed."

But growing wheat in the coastal land would not be possible until the government takes it up as a programme and encourages farmers to grow wheat, he stressed.

"Now even if a farmer wants to cultivate wheat, he would not find wheat seed in his locality as traditionally wheat is cultivated only in the Northern region, which is a comparatively colder region," he said.

"If the government takes an initiative to grow wheat cultivation, it is possible to produce over two million tonnes of additional wheat in the country following the relay cropping method," he added.

