

# Indoor vertical farm in crowded megacity

SHYKH SERAJ

After the World War II, the Japanese government began their economic reconstruction. The Japanese government bought two-thirds of the total agricultural land from the landlords, the actual owners, and sold it to small farmers at a lower price. Prior to the reform, farmers owned only 23 percent of Japan's total agricultural land. The Japanese government then imposed a ban to stop the landlord system forever. As a result, there was no opportunity for private firms to invest in Japan's farming sector. In 1975, the number of farmers in Japan was about 1.1 crore (11 million) that gradually decreased to less than 20 lakh (2 million) in the next 40 years by 2015. The country's another major cause of concern in the agricultural sector was the age of the farmers. At present, seven out of ten farmers in Japan are aged over 60 years. On the other hand, youths' are seen reluctant to take up agriculture as a full-time profession. As a result, it became very difficult to pull up Japanese agriculture. On one hand, extensive mechanization was required, while on the other hand, youths' needed to attract to come into farming. Now, Japanese government has created opportunities for private investment in the farming sector. As a result, corporate participation, extensive mechanization and use of artificial intelligence in



Parveen Akhter talks with Shykh Seraj about her indoor vertical smart farm in the capital's Mirpur area.

PHOTO: HRIDOYE MATI O MANUSH

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honours, Swadhinata Puroshkar and Ekushey Padak, respectively. He is a BIDS, Ashoka and Bangla Academy Fellow. He also received highest award for agricultural journalism from the United Nations, FAO A.H. Boerma Award, Gusi Peace Prize (Philippines) and many other prestigious accolades at home and abroad. At Channel i, he's the Founder Director and Head of News. He's also Director and Host of Channel i's popular agro-documentary, Hridoye Mati O Manush.

agriculture creating a lot of hope. Several industrial enterprises began investing in the country's agriculture and agricultural technology field. Japan's agriculture has changed quite dramatically and positively since then.

I had the opportunity to have a close look at Japan's agricultural activities in 2006. There I saw an organization called Pasona-II create hydroponic farming management, 30 feet below the ground level, with LED lighting, air and controlled temperature as an alternative farming practice for retired adults. That was soilless farming. Later on, I have seen same practice of soilless farming from Europe to USA and to the Middle East. It is an invention that changed the definition of agriculture.

Recently, I visited an indoor farm, running with the same idea, in Dhaka's Mirpur area. A house in this crowded megacity has been transformed into a unique vegetable garden, following most modern approach of indoor farming. Cultivation is being done there in a controlled environment and of

course in indoors. They are cultivating diverse foreign vegetables in indoor where technology, research and brain are their only resource for such tremendous development.

The vertical indoor farm is built by four young entrepreneurs at an abandoned house, known as 'Farm Imagination.' The indoor vertical farm, built with hydroponic system, produces different varieties of salad and vegetable, including lettuce, buckthorn, basil, celery, capsicum and cherry tomatoes. There are also green vegetables, being produced in layers. Specialized LED lights are being used to control lighting and heat while 95 percent less water is needed compared to the normal agriculture procedure.

Parveen Akhter is one of the four entrepreneurs of the indoor farm. Having completed MBA from the Dhaka University, she has worked in various institutions in home and abroad. She is interested in good agricultural practice and was inspired by watching Hridoye Mati O Manush

on YouTube and Facebook. She now can fully comprehend what the future agri-business might look like. I must say, she was brave enough to start her indoor farm. Developed countries have also had to go through food shortages during the Covid-19 pandemic period. As we all know safe food can build a strong immune system. Parveen has concentrated here with great emphasis and she believes that the demand for fresh and safe food will increase day by day. "With this in mind, I think this is the time to work with the advanced technology," says Parveen.

The work of sowing seeds by pouring cockpit in a special plastic cup was going on in a room. There are three small rooms along the corridor. Each room has steel trays installed from bottom to the top. Green vegetables like Bakchay (Chinese cabbage), basil, lettuce etc are cultivated there. Parveen said Europeans eat burgers with it, and wholesale price of each Bakchay is Tk 50 (USD 0.55) while its retail price is Tk 75 (USD 0.88). I was looking at their experimental

indoor farm of around four thousand square feet. Although it is done in a hydroponic method, they are following 100 percent 'Good Agricultural Practice'. As a result, there is no question about the purity of the crop.

The production process is encouraging. Each room has a 100 percent automated system. Light, water, air are all being used in this production system accordingly. Parveen said that one of their goals is to introduce the new agriculture system to the new generation. Several young people, including Parveen's daughter Radia Rihanna was working there with deep concentration. I talked to her for a while. This young people are very much interested in modern technology. They are also very optimistic about this initiative. A small greenhouse surrounded by glass walls has been built. Cherry tomatoes and various colour capsicum are being cultivated there. The specialty of greenhouse is there is no artificial light as natural light and temperature are important elements for the crop production. Parveen is getting light from the roof.

Parveen says it's a pilot project. Over the past year and a half, her team has been able to build a successful structure using indigenous materials. She has been able to produce and market fresh vegetables in Dhaka as there is huge demand for vegetables produced indoors. It is not possible for her to supply it alone. She wants to spread this initiative among the youths, so that they can take the lead to change the face of farming in Bangladesh.

Farming is one of the oldest professions in the world. In the evolution of time, human nature and search for food became a natural process. But without science, it is not possible to get a single grain of crop or any other food material. The world's population is growing. All, from the policy makers to the big industrial entrepreneurs of the world, have become active in thinking about the necessity of food for the growing population.

They are also thinking to produce more safe food from a smaller place. Science is the simplest solution and at the same time its proper application is more important. The way Parveen explained various aspects of indoor farming is quite encouraging. I believe, many people would want to start vertical indoor farm after seeing what Parveen has made possible. Success will come by doing something good in the most scientific and calculative way.

## NAOGAON UP POLLS Injured man dies

STAFF CORRESPONDENT

A man, who was injured in a clash between the supporters of two chairman candidates in Naogaon's Manda upazila on November 12, died yesterday.

The deceased, Emran Hossain Rana, 38, was son of Nasir Uddin, a freedom fighter from Shrirampur village.

Locals said at least eight people including Rana were injured in a clash between the supporters of Awami League nominated candidate Hanif Uddin Mondol and independent candidate Shafiqul Islam Chowdhury on November 12.

Injured Rana was first taken to Naogaon Sadar Hospital and then shifted to Rajshahi Medical College Hospital.

He died at the hospital yesterday morning.

## Man, son found dead

OUR CORRESPONDENT, Mymensingh

Police recovered the bodies of a man and his two-year-old son from a rented house in Nagra area in Netrakona town yesterday.

The victims are Abdul Kaium, 32, a Class VI employee of the district drug administration and son of Akkas Sarder of Kurigram's Nagaswari upazila, and his minor son Ahnab Shakil.

They primarily suspect that Kaium might have killed his son first and then hung himself from the ceiling of his room over family feud.

Quoting Kaium's wife Salma Akter, police said the couple went to sleep around 1:00am early yesterday and Salma found the bodies hanging in another room yesterday morning.

## Healthcare worker runs

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body, led by Civil Surgeon Niaz Mohammad, Prakash was tasked with collecting Covid-19 test fees.

A total of Tk 4.24 crore was collected between July 2020 and July 2021. Of the amount, only Tk 1.66 crore was deposited to the exchequer.

"He didn't deposit the remaining Tk 2.58 crore and embezzled it," reads the FIR.

Seeking anonymity, a probe committee member said though Prakash had collected fees from people, but he registered only a few names.

The body was formed on August 22 as the administration became suspicious over poor fee collection.

The civil surgeon office informed the higher authorities of their findings. Upon their approval, they filed a general

diary with Khulna Police Station on September 27.

The following day, the civil surgeon office lodged a complaint with ACC's local office in Khulna.

Sources said the ACC's local office forwarded it to its headquarters on September 28 for approval.

Yesterday, the ACC lodged a case under section 409/420 of the Penal Code and 5(2) of The Prevention of Corruption Act-194 for cheating, criminal breach of trust and criminal misconduct.

Contacted, ACC Director General (Investigation-2) Zakir Hossain said it is difficult to comment over the delay instantly.

"A charge sheet will be given soon," he added.

## 30,000 more examinees this year

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She said all coaching centres across the country will remain closed from November 25 to January 3.

Exams for science, humanities, and business groups will be held on separate days, the minister added.

The government is considering changing the starting time of HSC exams, she said. "From next year, we are thinking of delaying the start of the exams of compulsory papers from the current starting time of 10:00am considering the traffic pattern of cities."

Dipu Moni said a total of 13,99,690 students are expected to take this year's HSC and equivalent exams. Of them, 7.30 lakh are boys and 6.70 lakh are girls.

Students from 9,183 colleges, madrasas, and technical institutions will take the tests at 2,621 centres across the country.

A total of 11,38,017 students will participate in the exams under nine general education boards, 1.13 lakh under the madrasa education board

and 1.48 lakh under the technical education board.

For preparing HSC results, the results of the three optional subjects and the Grade Point Average (GPA) of the students' SSC and JSC tests will be taken into consideration.

The duration of the exams for each paper will be one and a half hours and there will be no break between the MCQ and written sections.

The HSC exams will end on December 30. Usually, the tests are held in April.

### MARKS DISTRIBUTION

Science group students will have to take exams carrying 32 marks in each paper, while examinees from humanities and business groups will need to take exams carrying 45 marks in each paper, said education board officials.

The boards have uploaded the marks distribution of HSC exams on their websites and all educational institutions have already been informed about it, the officials added.

Students will get an hour and 15 minutes to answer questions in written

section and 15 minutes to answer questions in MCQ part.

This time, the examinees will have more options about answering questions, shows the marks distribution.

According to a directive of education boards, science students will need to answer two out of eight questions and the total marks will be 20. They will have to answer 12 out of 25 MCQs and the total marks will be 12.

Humanities and business students will have to answer three out of 11 questions and the marks will be 30. They will need to answer 15 out of 30 MCQs and the marks will be 15.

Prof Nehal Ahmed, chairman of Dhaka education board and also the chief of Inter-education Board Coordination Sub-committee, said although the exams will be held with fewer marks, they would convert the candidates' scores into 100 marks.

This year's Secondary School Certificate (SSC) and its equivalent exams are now underway.

## 65,127 illegal

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the Dhaka river port, 4,769 from Narayanganj river port, 141 from Barishal river port, 50 from Ashuganj and 59 from Nawapara river port.

Khalid further said the National River Protection Commission has made a list of the illegal occupants with the help of all the deputy commissioners in the country, adding that the number of illegal grabbers is 65,127.

The question-answer session in parliament yesterday took place with Speaker Shirin Sharmin Chaudhury in the chair.

According to sources at the National River Conservation Commission, one of the reasons why the eviction drives couldn't achieve the desired goal was that at least 10 percent of the encroachers were locally and politically influential people.

Insufficient funding and the inadequacy of logistical support for the deputy commissioners are other reasons.

The NRCC in its report submitted to the parliamentary body said large structures were built on rivers and their banks in every division, but those could not be demolished because the encroachers had "muscle power and influence".

The report also said different government structures also couldn't be removed despite repeated attempts.

NRCC top officials said Prime Minister Sheikh Hasina has already given them clear instructions to carry out the eviction activities, irrespective of the grabbers' identity, to save the country's rivers.

Due to encroachment, different rivers in the country have narrowed, the report added.

## Experts craft

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display at a museum in Tokyo in September and October; just weeks after the Taliban returned to power in Kabul.

The mural on the ceiling of a cave near the famous statues depicted a blue Bodhisattva -- or someone on the path to becoming a Buddha.

## Govt to enact law over

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for the private sessions, he added.

Responding to another query, the health minister said separate units would be set up in the district hospitals for treating drug-addict patients.

Meanwhile, the government has taken a tough stance to check the sale of fake and adulterated drugs in the country, he said, replying to another question from Kazim Uddin Ahmed, MP, from Mymensingh-11 constituency.

He said a total of 1,715 cases were lodged and Tk 7.58 crore was collected as fine through mobile courts, conducting drives against fake and adulterated drugs in one year from July 2020 to June 2021.

In this year [till November], the production licences of 46 drug manufacturing firms were suspended while the production and marketing licences of all products of 14 drug firms.

Responding to a question from Jatiya Party MP Mujibul Haque from Kishoreganj-3, the Health Minister said the burn units would be set up at the district-level hospitals.

"The government has a plan to set up burn units at hospitals in district towns gradually to ensure services to the burnt

patients on humanitarian ground," said Zahid Maleque.

Replying to a question from Jatiya Party MP Mashur Rahman Ranga from Rangpur-1, the health minister said there was no "paying-bed system" for patients at upazila health complexes. Instead, there are free beds for patients.

Zahid Maleque said the government has no plan to introduce such a "paying-bed system" at the moment. "But the matter will be considered in the future."

Responding to another query, Zahid Maleque informed the House that the ratio of overweight women population has increased in the country.

At the same time, the minister said the trend of women becoming underweight has improved.

Responding to a query, Zahid Maleque did not want to disclose the cost of the coronavirus vaccine in the parliament even though the procurement cost of the vaccines was announced by the health ministry through advertisement in the media.

He, however, said the vaccine was purchased at the highest competitive price to ensure honesty and transparency.

## Arthritis: Aging, injuries increase risk

FROM PAGE 12

by a joint injury or infection. Osteoarthritis also causes changes in the bones and deterioration of the connective tissues that attach muscle to bone and hold the joint together. If cartilage in a joint is severely damaged, the joint lining may become inflamed and swollen.

In rheumatoid arthritis, the body's immune system attacks the lining of the joint capsule, a tough membrane that encloses all the joint parts. This lining (synovial membrane) becomes inflamed and swollen. The process can eventually destroy cartilage and bone within the joint.

Some types of arthritis are hereditary, so one may be more likely to develop arthritis if parents or siblings have it.

Two main types of arthritis -- osteoarthritis and rheumatoid -- damage joints in different ways. Osteoarthritis, the most common type of arthritis, involves damage to a joint's cartilage -- the hard, slick coating on the ends of bones where they form a joint. Cartilage cushions the ends of the bones and allows nearly frictionless joint motion, but enough damage can result in bone grinding directly on bone, which causes pain and restricted movement. This wear and tear can occur over many years, or it can be hastened

by a joint injury or infection. Osteoarthritis also causes changes in the bones and deterioration of the connective tissues that attach muscle to bone and hold the joint together. If cartilage in a joint is severely damaged, the joint lining may become inflamed and swollen.

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## Yahya offers friendship

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Chowdhury, today said the transfer of Sajjad Hyder was in the best interest of all concerned as he had been responsible for the prevailing tension in the subcontinent.

"I know this man for a year. He has always been fanatically anti-Bengalee and anti-Indian," he added.

### ON THE WAR FRONT

Pakistani troops attacked Mukti Bahini position near Dakshingul in Sylhet district today. The freedom fighters repulsed the enemy attack and forced

the occupation troops to withdraw. In this action, 20 Pakistani soldiers were killed and a lot more were wounded.

On the same day, a similar enemy attack was repulsed by the freedom fighters at Radhanagar.

Also on the same day, Mukti Bahini ambushed Pakistani soldiers moving from Sachina to Tahirpur, inflicting five casualties on the enemy.

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## Govt wants law too but it won't hurry

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Replying to a question, the law minister said it will not be proper if an ordinance was issued bypassing the Jatiya Sangsad for formulating the EC.

Contacted, eminent jurist Shahdeen Malik, who was among the Shujon representatives, told The Daily Star that the government should enact a law for formulating the EC for holding elections in a fair manner and for its own interest.

If the government enacts such a law, people's faith in it will increase, he said, adding that if the next national election

is held under an EC, which is not formed through the law, people's faith will reduce.

In reply to a query, Shahdeen said the government can issue an ordinance through the president for formulating the EC because it is not a big task.

Shujon members Syed Abu Naser Bukhtear Ahmed, Prof Robaet Ferdous and Dilip Kumar Sarker, among others, were the representatives.

It has recently made a draft of the proposed law on "Chief Election Commissioner and Election

Commissioner's Appointment Act 2021."

According to the draft, selected citizens of Bangladesh, who have a minimum age of 45 years, knowledge on law with proven administrative skills, a minimum bachelor degree from a recognised university, and at least 20 years of working experience in any important government, semi-government or private position and who are honest and impartial supposedly, will be eligible to be an election commissioner.