

## DRIP IRRIGATION

## Farming method that promises bounty

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FARMERS, since the early days of agriculture, are aware of the importance of irrigation in crop production. Thousands of years ago, the settlers of Sindh and Baluchistan constructed barrages on Sindh, Saraswati and other rivers to irrigate their dry crop fields. But little improvement was made in the irrigation system until the steam engine was invented.

In Bangladesh, mechanical irrigation system started in mid 1950s with the introduction of power pump. It was used to irrigate rice fields by basin method. Later, groundwater and canal irrigation systems were developed. However, efficiency (Water Use Efficiency, WUE) of this method is rather low (between 30 and 40 per cent). That is because, in this process known as surface irrigation method, a lot of water is wasted (conveyance loss) during its passage from the source to the field to be irrigated.

## Drip irrigation

In Bangladesh, drip irrigation is a new method in which water is applied to the root zone in drops. Its concept is to create a continuous wetted strip along the lines of the plants. It increases the efficiency of both water and fertilizer use to a great extent.

Worldwide acreage under drip and micro-sprinklers has increased (annual anticipated



increase between 6 and 12 per cent) tremendously in recent years. In most cases, fruits and vegetables are irrigated by these

irrigation methods. WUEs of these methods are 80 to 90 per cent. Higher water and fertilizer use efficiencies contribute to quicker return on investment.

Study findings from different research institutions in India have shown that in the drip irrigation method from 30 to 70 per cent water is saved. The study further showed that if the fertigation

method is used, yields of crops like tomatoes, potatoes, carrots, cucumbers, watermelons and strawberries turns out to be almost double of that produced through traditional fertilization. Fertigation is the application of fertilizer and irrigation water together to plants and trees.

In Bangladesh, traditionally flood or border irrigation method is used for fruit and vegetable cultivation. But it adversely affects soil health and crop production as water is not used judiciously. A

study was undertaken at the Bangladesh Agricultural Research Institute (BARI) to investigate the performance of drip fertigation on tomato crop in terms of its technical and economic feasibility.

In the study, different doses of nitrogen fertilizer were compared with traditional furrow irrigation method. Used oil drums of 215-litre capacity were placed at 1.5 metres height supported by a bamboo structure. Water from drums was carried to each plant through mainline, sub-mainline

and micro-tubes. These tubes are prepared from rubber hose pipes made locally. At the end of each micro-tube was connected a dripper.

Results of the experiment reveal that the yield in drip fertigation (85 t/ha) was 38 per cent more than that produced through furrow irrigation (62 t/ha). Nitrogen requirement was only 100 kg/ha against 250 kg/ha in furrow method. Water applied in drip fertigation was only 224 mm compared to 416 mm in furrow method. The gross margin in drip method was Tk 306,000/ha against Tk 249,000/ha in furrow method. Labour used in drip was 20 per cent less than that in the furrow method.

It can thus be concluded that drip fertigation is technically suitable and economically viable in Bangladesh. It saved 60 per cent urea and 46 per cent water. Other high value crops like brinjal (aubergine), papaya, banana, guava, lemon, orange etc. can be grown profitably by drip fertigation. The method is especially suitable in the salinity-affected and hilly areas. Extension programme should be undertaken to popularize this modern and very profitable technology among farmers and entrepreneurs in different areas of the country.

The writer is former DG Bangladesh Agricultural Research Institute (BARI).

## NEW RESEARCH



A sculpture of an iceberg featuring a stranded polar bear is pictured on the River Thames in London in to raise awareness of melting ice caps.

## No to global warming sceptics

BRITAIN'S Met Office national weather service said it would publish data from weather stations worldwide and had "every confidence" it would show temperatures had risen in the last 150 years.

The decision comes in the wake of claims that British scientists sought to suppress data backing climate change sceptics' views.

"The Met Office does intend to release data from more than 1,000 weather stations," a spokesman said.

"It will be available on our website."

He said the Met Office had "every confidence" in the data, which would show that global temperatures had warmed up over the last 150 years.

The Met Office wrote to 188 countries for permission to publish the remainder of the historic data.

The Met Office works closely with the University of East Anglia's Climatic Research Unit (CRU), a world-leader in the field, which is at the centre of the data row.

A top United Nations panel is to probe claims that CRU scientists sought to suppress data backing climate change sceptics' views, its head said ahead of the landmark Copenhagen summit.

Computer hackers penetrated the CRU and posted online thousands of emails from researchers. The emails allegedly called into question the scientific basis for climate change.

The university has launched an investigation into the leaked email exchanges to see if there was any evidence of manipulation or suppression of data which would cast doubt on the research findings of the centre.

SOURCE: AFP

## CLIMATE CHANGERS

## LOST IN TIME

## Rice joins the club



A Filipino farmer is seen inspecting his rice field in Tiaong town, Quezon province, southeast of Manila.

ASIAN rice farmers typically do not fly around the world on holidays or own big-engine cars but scientists say they have an important role to play in helping cut the world's output of greenhouse gases.

"If you step through a rice field, there is a lot of gas bubbling out and the large bulk of that is methane," said Reiner Wassmann, a biologist specialising in climate change at the International Rice Research Institute.

While carbon dioxide is the most famous of the gases that cause global warming, methane is at least 20 times more effective at trapping heat in the earth's atmosphere.

In an interview with AFP from the institute's headquarters in Los Banos, a farming area on the Philippines' main island of Luzon, Wassmann explained that methane was responsible for one-fifth of all greenhouse gas emissions.

About 10 per cent of the methane comes from rice farming, while other sources include the flatulence of cows and decomposing landfill garbage dumps.

Wassmann said it was essential that rice farmers in Asia and the rest of the world did their bit to tackle climate change, but lumping them in with more obvious, fossil-burning culprits of climate change was wrong.

"Culprit gives an emotional tone to it that is not necessary," he said, describing some calls by green groups for the billions of people who rely on rice as their staple to eat less of it as being too extreme.

"I have heard suggestions like that but I don't think that makes sense. The key is on the production side, not on the consumption side," he said.

Offering some hope, Wassmann said reducing greenhouse gas emissions from rice fields did not necessarily require a sacrifice, rather the implementing of smarter and more efficient farming strategies.

The first step is for farmers to use less water, because the methane is created when submerged organic material decomposes.

Wassmann said this was a logical path to follow regardless of the climate change issue because water would only become more scarce in an increasingly populated world.

Using less water can be done through draining the rice fields regularly during the growing season.

SOURCE: AFP

## Mythical city of Khazars

RUSSIAN archaeologists recently said they had found the long-lost capital of the Khazar kingdom in southern Russia, a breakthrough for research on the ancient Jewish state.

"This is a hugely important discovery," expedition organiser Dmitry Vasilyev told AFP by telephone from Astrakhan State University after returning from excavations near the village of Samosdelka, just north of the Caspian Sea.

"We can now shed light on one of the most intriguing mysteries of that period -- how the Khazars actually lived. We know very little about the Khazars -- about their traditions, their funerary rites, their culture," he said.

The city was the capital of the Khazars, a semi-nomadic Turkic peoples who adopted Judaism as a state religion, from between the 8th and the 10th centuries, when it was captured and sacked by the rulers of ancient Russia.

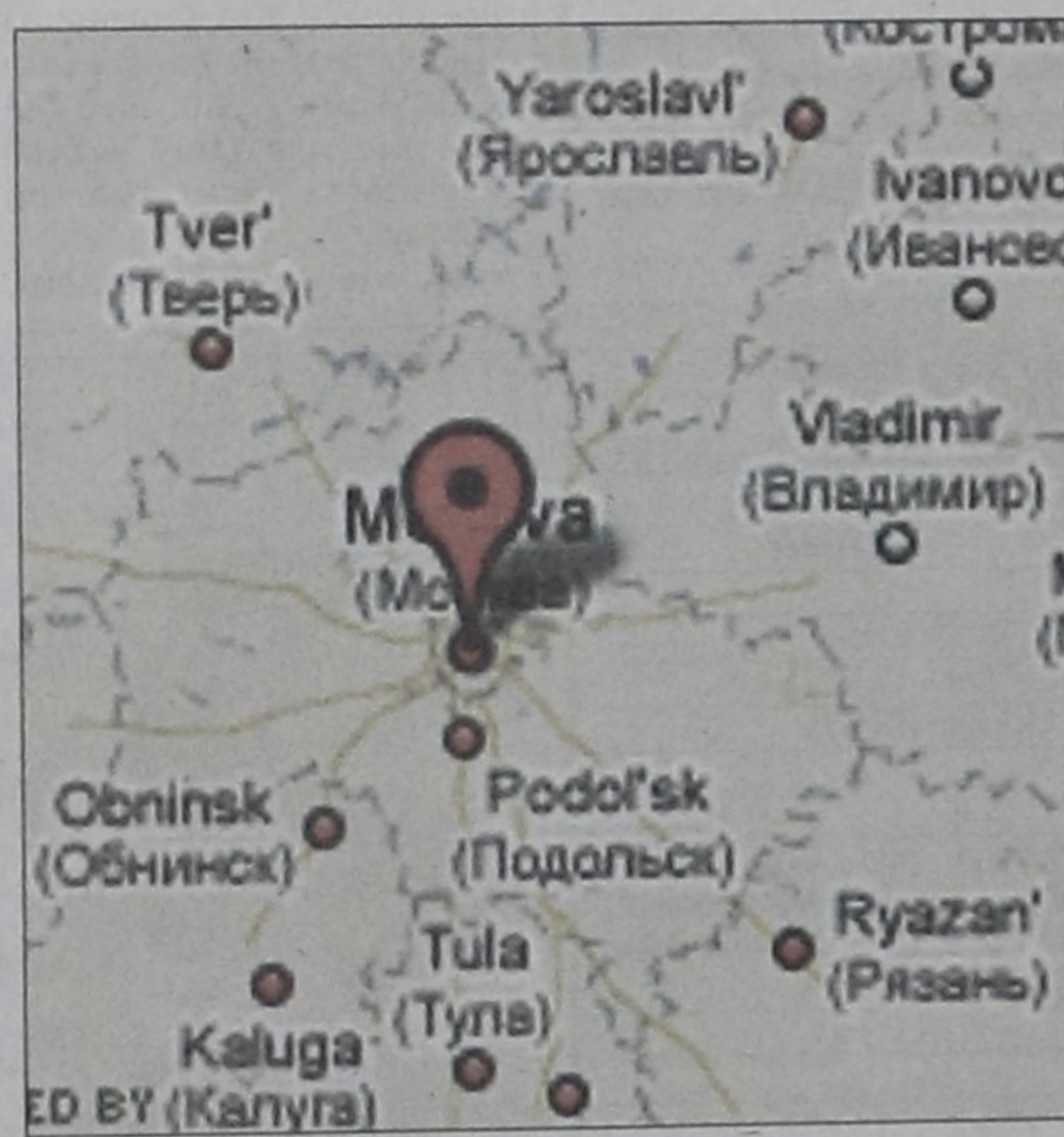
At its height, the Khazar state and its tributaries controlled much of what is now southern Russia, western Kazakhstan, eastern Ukraine, Azerbaijan and large parts of Russia's North Caucasus region.

The capital is referred to as Itil in Arab chronicles but Vasilyev said the word may actually have been used to refer to the Volga River on which the city was founded or to the surrounding river delta region.

Itil was said to be a multi-ethnic place with houses of worship and judges for Christians, Jews, Muslims and pagans. Its remains have until now never been identified and were said to have been washed away by the Caspian Sea.

Archaeologists have been excavating in the area of Samosdelka for the past nine years but have only now collected enough material evidence to back their thesis, including the remains of an ancient brick fortress, he added.

"Within the fortress, we have found huts similar to



yurts, which are characteristics of Khazar cities.... The fortress had a triangular shape and was made with bricks. It's another argument that this was no ordinary city."

Around 10 university archaeologists and some 50 students took part in excavations in the region, which are partly financed by the Jewish University in Moscow and the Russian Jewish Congress.

SOURCE: AFP

## ERODING ARCTIC

## SCIENCE QUIZ



SOURCE: AFP

A polar bear is seen outside Churchill, Manitoba in Canada. The planet could warm by seven degrees Celsius (10.8 degrees Fahrenheit) and sea levels could rise by more than a metre (3.25 feet) by 2100

## Quiz-1

The formula for this invention was originally used to treat indigestion.

Question: What was the invention?

- Coca-Cola.
- Soap.
- Gunpowder.

## Quiz-2

Earth is located in a galaxy we call the Milky Way. The Milky Way is shaped like:

- a sphere
- a plate
- a corkscrew
- a flattened spiral

## Ans for previous quiz

## Quiz-1

- Cancer

## Quiz-2

- Lazlo brio

Source: Collected

## ROBOTIC DILEMMA



Ryan Calo, with the Stanford Center for Internet and Society at the Stanford Law School, stands next to a robot that is being built for medical applications at Stanford University's Artificial Intelligence Laboratory in Palo Alto, Calif.