

e-Fisheries: can reduce 21% feeding cost



In Bangladesh, the major cost of fish farming includes the feeding cost which comprises of 70-79% of the total cost and due to overfeeding and high feed conversion ratio(FCR) the farmers incurs unnecessary cost. 'eFisheries' reduces up to 21% of the feeding cost and boost profit.

'eFishery' is providing an integrated feeding solution for fish and shrimp farming through smart technologies. The machine can feed the fish automatically, after sensing the fish's appetite. Additionally, it can adjust the amount of feed given considering the appetite as it is connected to the internet. Besides, fish farmers can control fish/shrimp feeding performance directly from their smartphone or laptop, anytime, and anywhere.

Furthermore, it can amount feed broadcast and daily temperature stored in database which can be monitored and experts can give suggestions accordingly. More interestingly, it gives the convenience in handling business remotely. It reduces the labor cost up to 30% because of less or no water quality deterioration which is a result of optimum feeding. The price of the machine is around 1, 00,000-1, 10,000 and the payback period for the machine will be around 1-1.25 years. The lifetime of the machine is five years. ACI will start the marketing of 'eFishery' from the month of April.

Dr. F H Ansarey
Executive Director
ACI Agribusiness



eFishery's automatic smart feeder uses sensors to detect hungry fish behavior and dispense the right amount of feed

Photo Credit: NewAtlas.com

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Wheat Virus Crosses Over, Harms Native Grasses



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February 4, 2017: The Day of PPP in Plant Breeding Research in Bangladesh

It was the first External Review meeting on Plant breeding programs of the ACI Ltd., which was new in the country and with 20 experts from BARC, BARI, BINA, BAU, SAU and DAE on crop breeding research domain. The function was held at the ACI Centre, Dhaka, Bangladesh. Prof. Md. Ali Akbar, Vice-Chancellor, BAU and Dr. Md. Jalal Uddin, Executive Chairman, BARC who have honoured the occasion with their presence as Chief guest and Special guest respectively. Prof. M. Shahidur Rashid Bhuiyan of SAU chaired the technical session. In the welcome address Dr. F.H. Ansary eloquently presented the need for collaboration in the fields of agricultural R&D with the ACI which has the mission to support the farming community with all forms of inputs and output marketing so that the livelihood of the farmers is improved. The program of activities related to the concept and missions of the plant breeding research activities was introduced

by Prof. Lutfur Rahman, Advisor, Agribusiness, ACI Ltd. This was done along with the lab facilities developed by ACI for seed research and biotech studies. Thereafter five presentations were given on Rice, Potato, Vegetables, and Molecular breeding programs on different crops, followed by a discussion on the seed business-linked research needs.

A number of issues of collaboration came in the discussion where the public Institutional members were positive to share their knowledge, skills and the products with the private sector seed industries like the ACI Ltd. There has been opinion that the promising varieties of the public sector can easily be put under regional tests for adoption in joint programs of PVS aiming at faster adoption with seed production and marketing. Frequent meetings and discussions on specific cases with specific organization and breeders will be fruitful and the ACI agribusiness can take the lead.



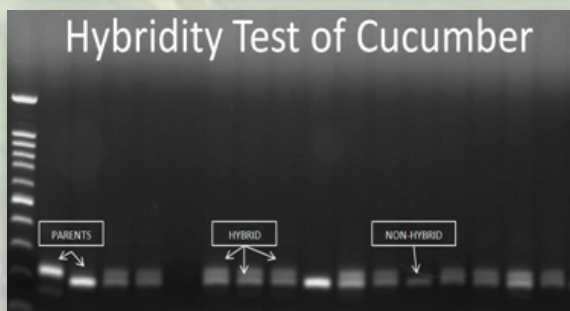
Biotech Corner

The ACI Plant Breeding Research Team presented the mode of plant breeding and the varieties of which the ACI seed is the market leader. The expert members from all the participating organization have participated in a lively discussion. The included an extended portfolio of crops. There has been inclusion of target trait based breeding activities, where duration, yield, investment cost and the qualities of the product were of primary importance. The program ended with a tour of the Advanced

Seed Research & Biotech Centre laboratories. The success stories and activities of the lab were appreciated by the expert members, which encouraged them to strongly express their willingness for collaboration. Pictures of some of the successes by the ACI Plant Breeding Research Team are given here.

Prof. Lutfur Rahman

Advisor, ACI Agribusiness & Head of Advanced Seed Research & Biotech Centre



Aciplex vet

On 8 January 2017, ACI Animal Health launched Aciplex vet. Each liter of Aciplex vet contains Calcium 3.40%, Phosphorus 1.70%, Vitamin D3 20,00,000 IU. For layer it helps for prevention and control of deficiency diseases of Ca, P and Vit-D3 as example- poor egg shell quality, cage layer fatigue, prolapse and cannibalism etc. In case of broiler chicken, Aciplex vet ensures proper growth of bone, prevents bone disorders and thus ensures proper growth. Aciplex vet also prevents and controls of milk fever, prevents rickets in young animal and osteomalacia in old animal, prevents lameness, increase fertility rate and increase milk production in case of ruminants. Aciplex vet is available in 100 ml and 500 ml packs.



G-Tide

G-Tide is an ideal suspension enriched with 21 essential Amino Acids and 12 Bio-Active Minerals. To ensure maximum growth of Broiler and longtime production of Layer, each 100 ml contains-Lysine 0.15 g Methionine 0.046 g Threonine 0.096 g Tryptophan 0.024 g Glycine 0.14 g Histidine 0.046 g Arginine 0.07 g Alanine 0.136 g Asparagine 0.166 g Aspartic Acid 0.166 g Cystine 0.02 g Glutamic Acid 0.024 g Glutamin 0.024 g Isoleucine 0.09 g Leucine 0.174 g Phenylalanine 0.086 g Proline 0.134 g Serine 0.088 g Tyrosine 0.072 g Hydroxyproline 0.02 g Valine 0.122 g. It also contains Calcium 0.04 g Phosphorus 2.00 g Magnesium 0.06 g Potassium 1.80 g Sodium 9.20 g Chlorine 0.98 g Sulphate 17.60 g Copper 101.00 mg Manganese 13.00 mg Iron 48.00 mg Zinc 130.00 mg Cobalt 2.00 mg. All the Amino acids actively work to maximize growth and production. Minerals act to ensure ionic balance through participating in different enzymatic and bio-chemical reactions. Using G-Tide improves eggshells, prevents weakness and strengthens bones and feathers. It also improves FCR and reduces feeding cost. Improvement in weight, energy boost



and prevention of diseases are some of the direct results of using G-Tide. On 17 January 2017, ACI Animal Health launched G-Tide Oral Suspension. It is available in 100 ml, 500 ml and 1 liter packs.

ACI Agribusiness got Award in Nat'l Veg Fair 2017



ACI Agribusiness won an award for demonstrating its technology Organized by Department of Agricultural Extension. product and services in the National Vegetable Fair 2017. The three-day long fair kicked off on 5 January 2017 at AKM Giasuddin Milky Auditorium, Khamarbari in the city as Prime Minister Sheikh Hasina urged all to create awareness about vegetable and nutrition for making a healthy nation. For the second time, agriculture ministry organized the fair at Khamarbari. This year, 48 organizations that included nine public and 39 private horticultural

farms and companies, took part in the fair. The Chief Guest of the inaugural, Primary and Mass Education Minister, Mostafizur Rahman, highlighted the issues farmers are facing in getting just price for their yields. Agriculture Minister Matia Chowdhury, on the other hand, explained the notion behind introducing GM crops in our country despite criticism. Three business units of ACI Agribusiness i.e. ACI Vegetable Seed, ACI Fertilizers and ACI Agrolink (ACI Farmer's) displayed their products and services as complete solutions for vegetable farmers.

Events and Activities

ACI Agribusiness at 7th Agro-Tech Bangladesh 2017

ACI Agribusiness participated in the “7th Agro-Tech Bangladesh 2017” during 11-13 January 2017 in International Convention City Bashundhara - ICCB, Dhaka. Rural Development and Cooperative Division under Ministry of Local Government, Rural Development and Cooperative, Rural Development Academy Bogra and LIMRA Trade Fairs and Exhibitions Pvt. Ltd jointly organized the fair for the seventh time. FCM was the Title Sponsor of this International Exhibition. Mr. Khandakar Mosharof

Hossain, MP, Local Government, Rural Development and Cooperative Minister inaugurated the program as the Chief Guest. Different companies and organizations from 15 different countries participated in this international agricultural technology fair. ACI Seed, ACI Fertilizers, ACI Motors and ACI Animal Health displayed their technology and products in the fair and achieved the 2nd prize for outstanding contribution through wealth creation of the farmers.



Balanced Fertilizer Promotion at Rangpur Region

ACI Fertilizer, as part of its partnership program with iDE and DAE, sponsored and participated in a balanced fertilizer promotion meeting on 23 January 2017 at DAE Conference Room, Sadar, Kurigram. The objective of the meeting was to evaluate the current activities and find out the key points to increase more effectiveness of the project activities. Under this project ACI Fertilizer is giving training to the traders and farmers about ACI Fertilizer products and creating a retail channel with the support of iDE and DAE employees. The collective effort is aimed at developing inclusive and sustainable agriculture market through ensuring quality agri-inputs and strong market channel. Mr. Firoz Hossain, Regional Sales Manager, ACI Fertilizer participated in the meeting and gave valuable insights on improving the retail channel and working more with



the advanced farmers to disseminate the new technology rapidly among the farmers. The Field Officers of iDE and DD, ADD, UAO, AEO of DAE were present at the program.

Events and Activities

Fertilizer Group Campaigns in Rajshahi Area

In January 2017, ACI Fertilizer Field Force in Rajshahi region organized a group of campaigns targeting the ongoing Boro season. Apart from traditional training programs for farmers and retailer, the field force was engaged in a series of promotional activities like creating awareness through miking, prescription point as well as spot meeting for farmers etc. at different local marketplaces of potential retailer and dealer points in Rajshahi and Chapai Nawabgonj. The Territory Officers, Trainee Officers, Market Development Officer, Field Supervisor and Area Manager were highly involved throughout the campaigns. During the group campaigns the stakeholders get to know about different products like Organic Fertilizer, Gypsar, Zinc, Boron and Compound Fertilizer. Mr. Shahinul Islam, Sr. Area Manager



led the program with his team in 2nd and 3rd Week of January 2017. The newly adopted group approach has received positive feedback from both dealers and retailers.

Yamaha Test Rides at Dhaka and Cox's Bazar



In January 2017, ACI Motors arranged test rides for prospective customers of Yamaha Motorcycles in Dhaka and Cox's Bazar. A test drive, as the name suggests, is the driving of the automobile to assess its drivability, or roadworthiness, and general



operating state. The test drives took place on 21 and 28 January 2017 in Dhaka and Cox's Bazar respectively. Around 200 people got the opportunity of test drive and more than 500 people enquired about different specifications of Yamaha Motorcycles.

Events and Activities

ACI Agribusiness Annual Conference 2017

On 14 January 2017, ACI Agribusiness celebrated the milestone of reaching 15 million farmers of the country during the Annual Conference 2017. The conference was held at International Convention City Bashundhara - ICCB, Dhaka. Dr. Arif Dowla, Managing Director, ACI Limited addressed the programme as the chief guest. ACI Agribusiness has targeted to reach two crore (20 million) farmers with technology based agricultural products and services by the end of 2017. Its annual turnover has increased by 26 percent in 2016, said Dr. FH Ansary, Executive Director, ACI Agribusiness while

addressing the conference. ACI Agribusiness is working to ensure that the farming communities are adopting agricultural technology in order to boost production at a time when the amount of arable land is reducing gradually. Different business sessions, fireworks, cultural events and networking dinner were the main highlights of the conference. High achieving individuals and teams from different Strategic Business Units (SBUs) were awarded in the conference. ACI Motors received the best business award for its outstanding performance in 2016.



Wheat Virus Crosses Over, Harms Native Grasses

Once upon a time, it was thought that crop diseases affected only crops. New research shows, however, that a common wheat virus can spread and harm perennial native grasses. In the current issue of the *Journal of Ecology*, researchers from Michigan State University, University of Kansas and University of Virginia show that farmers and scientists need to think about how best to protect native plants from diseases emanating from crops.

"Crop fields were once considered tiny islands in a sea of wild vegetation, so farmers and scientists focused on protecting crops from wild pathogens," said Carolyn Malmstrom, MSU plant biologist and co-lead author of the study. "Now, around the world, the situation has reversed, and diseases from agricultural fields affect not only crops, but also substantially harm native plants, such as switchgrass." The findings were based on a multi-year field study in Kansas. There, like in much of the Midwest, plains of native grasses have been transformed to fields of wheat or other cereal crops. Now, it's the patches of grasses that are the islands in an ocean of crops. A widespread wheat pathogen, barley yellow dwarf virus, can cross over and affect switchgrass, a prime candidate for biofuel research.



The research team combined the field results with a statistical model and showed that the virus can reduce the vitality of switchgrass by 30 percent. Interestingly, the infection can affect switchgrass' growth even though the native plant displays hardly any signs of sickness.

(Source: Agriculture and Food News, ScienceDaily. www.sciencedaily.com)

BARI Scientists Apply for Commercial Release of GE Potato in Bangladesh

Bangladesh is set to gain from its second biotech crop after Bt brinjal. Scientists from Bangladesh Agricultural Research Institute (BARI) developed a new variety of potato exhibiting resistance to late blight and they have applied for its commercial release. Late blight is one of the most devastating diseases of potato caused by fungal attack. Each year, farmers in Bangladesh spend up to Tk 100 crore (US\$12.8M) in applying 500 tonnes of fungicide to protect potato crops from late blight. At present, Bangladesh is the 7th top producer of potato worldwide.

According to Md Abu Kawochar, a scientific officer at BARI's Tuber Crops Research Center, the final regulatory trials held in six locations in Bangladesh during the previous potato season showed positive results. Thus, the application for



commercial release was submitted on December 29, 2016.

(Source: Crop Biotech Update, International Service for Acquisition of Agri-Biotech Applications. www.isaaa.org)

Genetic History of Cocoa in Brazil Uncovered



In 2015, cocoa growers in Brazil resumed exporting cocoa, after more than 20 years of crop losses and being exiled from the global market. The decline of Bahian cocoa was due to witch's broom caused by the fungus *Moniliophthora perniciosa*.

Anete Pereira de Souza, professor at the University of Campinas's Biology Institute (IB-UNICAMP) in São Paulo State, in collaboration with researchers from several universities and research institutions in Bahia studied the genetic structure and molecular diversity of cocoa varieties grown in Bahia for over 200 years. Souza and colleagues sequenced the nuclear DNA of 270 samples, and focused on 30 molecular markers. They found that the genetic base of Bahian cocoa is very narrow, and all of Bahia's cocoa trees are the descendants of only a few individuals. The researchers discovered trees growing on local farms that were resistant to witch's broom, and that displayed greater genetic diversity than the previously known hybrids. "The cocoa trees concerned were planted before the



appearance of witch's broom and have never been attacked. That's why they were left intact and continued producing," Souza said. New hybrids from the disease resistant trees are now being obtained by plant breeders at Bahia's research centers.

(Source: Crop Biotech Update, International Service for Acquisition of Agri-Biotech Applications. www.isaaa.org)

How Plants Manage Immune Response



New research, being published January 20 in the journal *Science*, has uncovered a previously unknown means by which plants are able to regulate how their immune systems respond to pathogens. A group of small peptides, referred to as RALFs (Rapid ALkalinization Factors), serve to dampen immune signaling -- preventing further response once the infection has been dealt with by the plant's immune system. The finding could pave the way to improve the immune systems of food crops, which would have a tremendous impact on food security.

The study, co-authored by Queen's plant biologist Jacqueline Monaghan, examined how plant immune systems work to respond to threats, as well as how plants regulate their pathogen responses in order to avoid negative impacts to their growth and development.

"Most people are familiar with their own immune system and how it functions, but we don't often consider immune systems in other organisms," explains Dr. Monaghan, who took part in the study while a postdoctoral researcher at the Sainsbury Laboratory. "Immune responses need to be 'turned



off" once the threat is eliminated -- otherwise, there can be negative effects on the organism. In humans, this can result in autoimmune disorders. In plants, we see stunted growth and other detrimental effects."

(Source: Agriculture and Food News, ScienceDaily. www.sciencedaily.com)

Researchers Crack Arabica Coffee Genome

Researchers at the University of California, Davis (UC Davis) have released the first public genome sequence of *Coffea arabica*, the species providing 70% of global coffee production. Arabica coffee is a hybrid cross derived from robusta coffee (*C. canephora*) and the closely related *C. eugenioides*. As a result, *C. arabica*'s complex genome has four sets of chromosomes, while most plants (and also humans) have only two chromosome sets.

The researchers collected genetic material from different tissues and developmental stages of 23 Geisha coffee trees in California. Geisha is known for its unique aromatic qualities, and is a high-value *C. arabica* variety that originated in the mountains of western Ethiopia. Plant material from UCG-17 Geisha was used for developing the *C. arabica* genome sequence.

UC Davis researchers used sequencing technology developed by Pacific Biosciences of Menlo Park, California. The researchers estimated that UCG-17 Geisha has a genome made up of 1.19 billion base pairs — about one-third that of the human genome. The study revealed an estimated 70,830 predicted



genes. They sequenced samples from 22 other Geisha coffee trees to obtain a glimpse of the genetic variation within that variety and among 13 other *C. arabica* varieties. These are important in developing plants that can resist disease and cope with other environmental stresses.

(Source: Crop Biotech Update, International Service for Acquisition of Agri-Biotech Applications. www.isaaa.org)

Meatballs, Falafel Made from Mealworms, Bugs?

VTT Technical Research Centre of Finland has developed food ingredients from mealworms and crickets which, due to their promising structure and flavour, have the potential to be used in the manufacture of foods such as meatballs and falafel. EU legislation will change in the coming years, and the farming of insects and their processing for consumption will become a business activity also in Europe.

Mealworms and crickets are the most widely farmed insects in Western countries. A dry fractionation method developed by VTT can be used to easily produce insect fractions with varying flavours and degrees of coarseness: fine fractions contain small amounts of the insect chitin shell which tends to feel rough on the tongue and have a strong meat-like taste, while coarse fractions are milder in flavour and contain more chitin. Fat was removed from the insects prior to fractionation, due to which the insect fractions contained up to 65-80% crude protein. Because insect fractions effectively bind water and fat, they are particularly suitable as ingredients in various solid foods. The fractions were tested as a raw material for meatballs and falafel balls in VTT's test kitchen, by



VTT has developed raw materials from mealworms and crickets which, due to their promising structure and flavour, can be used in the manufacture of foods such as meatballs and falafel.

Photo Credit: VTT

replacing 5-18% of meatball or falafel dough with insect fractions. Insects are rich in high-quality protein -- a small addition of the insect fractions into falafel dough even tripled the protein content of falafel balls.

(Source: Agriculture and Food News, ScienceDaily. www.sciencedaily.com)

Intense Industrial Fishing

China, the world's largest seafood producer, has done something extraordinary. For the past 20 years, despite minimal management and some of the most intense industrial fishing in the world, it has maintained large catches of key species in its most productive waters.

That same kind of intense, lightly managed industrial fishing has collapsed other fisheries, such as Newfoundland's cod fishery in the 1990s. China's ability to sustain its catches has puzzled scientists, some of whom have even questioned the accuracy of the country's catch reports.

A new study from UC Santa Barbara, published in the Proceedings of the National Academy of Sciences, suggests another explanation: By reducing the population of predatory fish, China has increased populations of preyed-upon species.

"If you fish down the large predatory fish, then you can catch more small prey fish, because they are no longer being eaten before you get to them," explained lead author Cody Szuwalski, a fisheries scientist in UCSB's Sustainable Fisheries Group. The group is a collaboration of the campus's Marine Science Institute and Bren School of Environmental Science & Management.



Small yellow croaker is one of four important traditional species fished in the East China Sea.

Photo Credit: Christopher Costello

Key to the success of this approach is that predators typically need to eat 10 pounds of prey to add one pound to their own weight, so fishing out predators tends to increase prey catches by much more than it reduces predator catches.

(Source: Agriculture and Food News, ScienceDaily, www.sciencedaily.com)



Believe it or not!



- Mushrooms do not require sunlight to produce energy.
- The DNA of the mushroom has more commonalities with human DNA than that of the plant.
- Mushrooms are composed of 90% water.
- There is a mushroom that looks like a brain and so dangerous to eat that Switzerland and Germany prohibit it to be sold, while some others regard it as a delicacy.
- Mushrooms are often used in place of meat in many dishes making them great for vegetarians and earning them the name of 'beefsteak for the poor'.



Nutrition Chart

Mushroom (100 grams)			
Calories	22	Sodium	5 mg
Sugar	2 g	Dietary fiber	1 g
Total Fat	0.3 g		
Protein	3.1 g		
Potassium	318mg		

Source: USDA

Tips

Mushrooms are useful not only as food but also as medicine because:

- Mushrooms provide lean proteins source as they have zero cholesterol, fats and very low carbohydrates.
- Mushrooms are one of the few natural sources of vitamin D, which is essential for healthy bones and teeth.
- Mushrooms contain more potassium than most other fruit and vegetables: one medium brown mushroom contains more potassium than banana.
- Mushrooms are one of the richest, natural sources of selenium, an essential mineral which strengthens the immune system and may help reduce the risk of cancer and other chronic illnesses.
- Mushrooms are scientifically proven to reduce stress and blood pressure.

Sharing is caring!

Mushrooms have been used medicinally in China for more than 6,000 years.

In ancient Egypt mushrooms were declared to be a food for royalty and no ordinary citizens could touch them. It was also believed that whoever ate these mushrooms would become immortal.

The Romans called mushrooms "food of the gods," and served them on festive occasions. They were thought to provide warriors with unusual strength. In pre-modern Europe people thought mushrooms were grown by evil spirits.

The greatest event in the history of mushroom culture in the United States occurred in 1926 when a farmer found a clump of pure white mushrooms in a bed of uniformly cream-colored fungi. Most of the mushrooms grown in the US today are descendants of this white clump.



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ACI Agribusinesses

Creating Wealth for Farmers

ACI Agribusinesses, the leading agriculture integrator in Bangladesh, is dedicated to gaining prosperity of Bangladesh through food security. ACI Agribusinesses offers complete solutions to farmers and also educates them about the technical know-how.