

BIO LIFE

Letter from Executive Director, Agribusiness

Volume 01 Issue 29 October 2014

ACI Plant Breeding: Innovations Incessant

Conventional plant breeding resulting in hybrid varieties is a highly dynamic science that has experienced a tremendous impact on agricultural productivity over the last decades. ACI started plant breeding in 2008 with some experienced plant breeders and established three R&D stations gradually. Over the course, it has developed a total of 21 competitive F1 hybrid varieties of various crops such as: Bottle gourd, Sponge gourd, Snake gourd, Ridge gourd, Pumpkin, Bitter gourd, Egg plant, Cucumber, Tomato and maize etc. Besides, over 20 crop varieties are in pipeline and will be released in due course. ACI has also a rich gene bank with more than 3,000 Germplasm of various crops that allows more testing & seeking opportunities for new varieties.

In recent days, our great achievement is bringing new tomato varieties - Agomony and ACI Super. Agomony is heat tolerant, early hybrid, high round, thick hardy skin and flesh, tolerant to leaf curl virus and bacterial wilt, weighs is 85-90 gm, suitable for distant transport and yield per acre is around 45 ton. ACI Super is also early hybrid, red and round, weighs 130-140gm, tolerant to leaf curl virus and bacterial wilt and yield per acre is around 50 ton. These two varieties have extended our innovations and we'll keep exploring more crop varieties to contribute to agriculture sector of the country.



Agomony



ACI Super

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Recofast Entericum - an Advanced Anti-diarrhoeal Powder



In September ACI Animal Health launched a new product 'Recofast Entericum', an advanced anti-diarrhoeal powder, which is diluted in milk or water easily and helps in the fast recovery of ruminants affected by diarrhoea.

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Launching of CASE Construction Equipment in Bangladesh: a New Benchmark by ACI Motors



ACI Motors Limited launched CASE Construction Equipment in Bangladesh with a grand event at Hotel Westin, Dhaka on 15th September 2014. Mr. Pankaj Sharan, High Commissioner of India to Bangladesh was present as honorable chief guest in the program.

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Importance of Molecular Characterization of Commercial Crops through DNA Markers

Prof. Lutfur Rahman

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

Crop plants, which include wheat, maize, rice, vegetables, etc are the most valuable crops in terms of production, nutrition and fodder qualities. Some of the crops are also staples in many regions of the world. But with the growth of population, well ahead of grain production, the production of agricultural products have to be scaled up. This increase in demand can be met by an increase in yields, cropping intensity, stress tolerance varieties and introduction of new technologies.

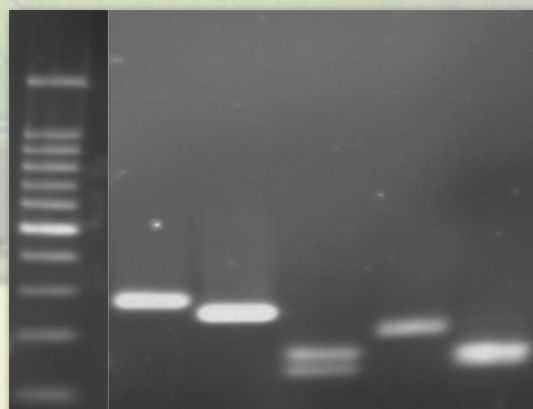
The introduction into breeding programs of modern biotechnological approaches based on the use of molecular markers can help development of newer varieties of desirable traits faster than the use of conventional system. One such approach is marker-assisted selection (MAS), is used in breeding programs as a methodological technique to intensify the process of selection. A large number of genes and loci controlling the resistance of different kinds of cereals to biotic and abiotic stresses, grain yield and quality have been indentified and mapped, using DNA markers.

DNA marker data provide useful information on the origins, relationships, genetic diversity and genepool development of prioritized crops. The data help to identify the lines that are genetically distinct. Genetically differentiated lines can carry genes and gene combinations of economic and scientific importance and which determine a crops capacity to adapt to particular environments. Knowledge on the relationships within and among populations can also be used in the management of endangered crop species. This particularly important when there is a

threat of loss in the gene pool due to a high rate of inbreeding or through natural factors of erosion.

Analysis of DNA markers can be carried out under laboratory conditions at any stage of crop development. This reduces the need for phenotypic evaluation in the field at a certain time of the year in a particular region. There is a significant reduction in material costs, due to the reduction in the number of analyzed samples. Over recent years the laboratory equipment and techniques used to investigate the genomes have developed very rapidly. It is now possible to analyze simultaneously hundreds of thousands of DNA markers (using so-termed SNP Microchip technique; Single Nucleotide Polymorphism), and to sequence DNA of the whole genome of a crop. Using this genomic information, key genes can be located and characterized that affect distinct traits such as disease resistance. These new methods will provide critical information on crop genetic resources and on the importance of the various germplasm for the maintenance of species-level biodiversity.

After development of new lines, it is important to characterize them at the molecular level. The necessity behind this is to see the difference between the new lines and the parents, to understand expression of a desired trait at the molecular level, stability of a desired gene, intellectual property rights and for registration purpose of commercial agricultural products. All of this can be done using DNA markers in the 21st century. The method is being adopted in the developed world and it is time Bangladesh begins to follow the similar path.



ACI Animal Health Launched new Products

Recofast Entericum - an Advanced Anti-diarrhoeal Powder

In September ACI Animal Health launched a new product 'Recofast Entericum', an advanced anti-diarrhoeal powder, which is diluted in milk or water easily and helps in the fast recovery of ruminants affected by diarrhoea. It acts as an astringent which helps to avoid dehydration; as a rehydrating agent which provides minerals and electrolytes; and as a nutritional supplement which provides nutrients such as proteins, carbohydrates, lipids and vitamins. Recofast Entericum is manufactured by Invesa International, S.A. of Spain. It is available as 100g sachet.



SANGROVIT® RS – Rumen protected Natural Feed Additive

SANGROVIT® RS, a rumen protected natural, flavouring and appetising feed additive, was launched by ACI Animal Health in September 2014. It is manufactured by famous German company Phytobiotics. It stimulates animals' appetite and digestion, improves feed conversion and reduces metabolic stress, thus enhancing animals' vitality and performance.

SANGROVIT® RS also increases bacterial fermentation to digest roughage, absorption rate, immunity and improves FCR value as well as liver function. Enhanced milk yield and improved milk quality can also be achieved by using it. SANGROVIT® RS is available in the pack size of 20g and 100g sachet.



G.C. Greentil Liquid – an Effective drug against Mycoplasmosis

G.C. Greentil Liquid is a fast and effective drug against Mycoplasmosis. It is used for the treatment of respiratory diseases in poultry like Mycoplasmosis caused by Mycoplasma gallisepticum, Mycoplasma synoviae which are sensitive to Tilmicosin. G.C. Greentil Liquid is also used for the treatment of CRD (Chronic Respiratory Disease) and CCRD (Complex Chronic Respiratory Disease). Each 100 ml G.C. Greentil Liquid contains Tilmicosin phosphate 25g (Activity). It is manufactured by Green Cross Veterinary Products Co., Ltd of Korea. G.C. Greentil Liquid was launched in Bangladesh by ACI Animal Health on 1st September 2014. It is available in 100 ml pack.



BonaCal-P Granules – Water soluble Oral Calcium, Phosphorus & Vitamin Supplement

On 15th September 2014 ACI Animal Health launched a water soluble oral calcium, phosphorus & vitamin supplement named 'BonaCal-P'. It is used to prevent deficiency symptoms of Calcium & Phosphorus, to form strong egg shell, to increase bone development, to prevent Rickets, Cage layer fatigue & Osteoporosis etc. BonaCal-P is available in a 500 gm pack in Raspberry flavour.

Events and Activities

Launching of CASE Construction Equipment in Bangladesh: a New Benchmark by ACI Motors

ACI Motors Limited launched CASE Construction Equipment in Bangladesh with a grand event at Hotel Westin, Dhaka on 15th September 2014. Mr. Pankaj Sharan, High Commissioner of India to Bangladesh was present as honorable chief guest in the program. Mr. K M Mozammel Hoq - Additional Secretary, Local Government Division, Ministry of LGRD & Cooperatives; Engr. Wahidur Rahman - Chief Engineer, Local Government Engineering Department and Mr. Abhijit Gupta - Managing Director, CASE Constructions, India made their

valuable presence as special guests on the occasion. Dr. Arif Dowla - Managing Director, ACI Limited delivered welcome speech followed by the inspirational words from Mr. M Anis Ud Dowla, Chairman, ACI Group. Finally, Mr. Ajay Aneja - General Manager, CASE Construction made a presentation on CASE equipments and Dr. F H Ansarey - Executive Director, ACI Limited delivered closing speech on the ceremony. Mr. Subrata Ranjan Das-Business Director of ACI Motors Limited and senior officials from different government and private

organizations along with personnel from both the conglomerates attended the event.

With 170 years of experience, CASE is one of the largest construction machinery manufacturers from USA. Being a global company, CASE starts its operations in Bangladesh jointly with ACI Motors Limited. Various products like Backhoe Loaders, Wheel Loaders, Motor Grader and Vibratory Soil Compactor will be launched initially, many more to follow soon.



Indian High Commissioner's Speech



Contract & Key Handover to Customer



Audience from Different Sectors

ACI Agribusiness at Agro Bangladesh Expo 2014: Country's Largest Agro Integrator Showcased

ACI Agribusiness, country's largest integrator in agriculture, livestock and fisheries, took part & showcased in "4th Agro Bangladesh Expo 2014" from 11-13 September 2014 at Bangabandhu International Conference Centre (BICC), Sher-e-Bangla Nagar, Dhaka. Different Business Units of ACI Agribusiness showcased their innovative products and advanced technologies for seed, fertilizer, animal healthcare, crops and agro-machineries in this three day long exhibition. The prime objective of this showcasing was to apprise farmers as well as other stakeholders on existing and upcoming technologies, knowledge and experience. Commerce Minister Tofail Ahmed along with other guests visited different booths of ACI Agribusiness just after the inauguration of the exhibition show. Through-

out the three days of showcasing, progressive farmers, Agri input traders, Agri extension officers and media delegates from all over Bangladesh and abroad visited the stalls of ACI Agribusiness. Apart from showcasing, ACI was also a proud sponsor of this Agro Expo, country's largest agro-technology show.

"This is an opportunity for us to shake hands with the leaders from agro sector across Bangladesh. The fair is striving to bring every farmer face to face with the advanced technologies and innovations in the agriculture. Agro Bangladesh exhibition serves as a pathfinder for the agro community and urge them to compete and capture the world market, however, we are ready to observe the expo," Dr. F H Ansarey - Executive Director, ACI Agribusiness, said.



Product demo to Honorable Commerce Minister



ACI Agribusiness Products Showcasing

Events and Activities

Sesame Export & Fish Marketing: New Milestones for ACI Cropex

In September 2014, ACI Cropex has created a milestone by exporting 105 ton sesame to China. After the recent successful exhibition at Agro Bangladesh Expo 2014, more export orders are now under process. On the other hand, ACI Cropex started to sell 300-400 kg branded fish on a daily basis at the fish wholesale point of Karwan Bazar in Dhaka. These fishes are specially collected from selected fish cultivators of Trishal, Mymensingh who received training from ACI Cropex team. Based on consumers' increasing demand, it is now searching for more fish cultivators in different regions of the country.

Tractor Owners Vs Drivers – a Friendly Football match at Thakurgaon by ACI Motors

An exciting, friendly football match between Sonalika Tractor Owners' team & Drivers' team was organized by ACI Motors on 26th September 2014 at Vully, Thakurgaon. It was a tight and well contested match as none of the teams could score a goal during the match time. As a result, winner was decided in tie-breaker. The Drivers' team won in tie-breaker by a margin of 6 – 5 goals with the presence of a huge crowd inspiring both teams and enjoying the excitement of the game. Prizes were awarded to the teams after the match.



New Partnership for FRS System: ACI Fertilizer and Innovision

ACI Fertilizer has started the partnership program collaboration with Innovision and Katalyst from September 2014. The objective of the partnership program is to promote balanced fertilization including Organic & Micro Nutrients Fertilizer among the farmers and traders through FRS System. FRS System is an online based digital recommendation system of fertilizers for every specific Union all over the country. The farmers can get crop specific fertilizer recommenda-

tion through FRS System at any time where internet access is available.

ACI Fertilizer arranged three ToT training programs for Field Force in three regions – Dhaka, Bogra & Jessore who will give training to farmers and traders. Under the partnership program, the Field Force conducted 26 Farmers Training Program, 12 Retailers Training Program, 10 DAE Meeting, 2 NGO Meeting and 10 Result Demonstration in 26 Districts.



ACI Fertilizer has started working with Department of Agriculture Extension (DAE) under IAPP project. DAE is promoting balanced fertilization through IAPP Project. ACI Fertilizer arranged a training program in Barisal for Community Facilitators who work in the field under IAPP Project. There were 30 participants in the training program. Under the project, 8 result demonstrations have also been set up by ACI Fertilizers in 8 districts – Barisal, Jhalokathi, Borguna, Patuakhali, Rangpur, Nilphamari, Kurigram & Lalmonirhat.



DAE partnered with ACI Fertilizer through IAPP Project

GE Tobacco Developed for More Efficient Photosynthesis

The second of three major steps needed in turbocharging photosynthesis in crops such as wheat and rice was completed by researchers from Cornell University in the United States, and Rothamsted Research in the United Kingdom. The team, led by Myat Lin in Cornell and Alessandro Occhialini in Rothamsted, successfully transferred genes from cyanobacteria into tobacco plants. The genes allow the plant to produce a more efficient enzyme for converting carbon dioxide from the atmosphere into sugars and other carbohydrates, something that could boost yields by around 36 to 60 percent.

The Cornell and Rothamsted researchers replaced the gene for a carbon-fixing enzyme called Ribulose-1,5-bisphosphate carboxylase/oxygenase

(RuBisCo) in a tobacco plant with two genes for a cyanobacterial version of RuBisCo, which works faster than the plant's original enzyme. Crops with cyanobacteria's faster carbon fixation would yield more, according to a computer modeling study by Justin McGrath and Stephen Long at the University of Illinois. Maureen Hanson, plant molecular biology professor at Cornell, said, "This is the first time that a plant has been created through genetic engineering to fix all of its carbon by a cyanobacterial enzyme. It is an important first step in creating plants with more efficient photosynthesis.

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



No Sign of Health or Nutrition Problems from GMO Livestock Feed, Study Finds

A new scientific review from the University of California, Davis, reports that the performance and health of food-producing animals consuming genetically engineered feed, first introduced 18 years ago, has been comparable to that of animals consuming non-GE feed. The review study also found that scientific studies have detected no differences in the nutritional makeup of the meat, milk or other food products derived from animals that ate genetically engineered feed.

The review, led by UC Davis animal scientist Alison Van Eenennaam, examined nearly 30 years of livestock-feeding studies that represent more than 100 billion animals. Titled "Prevalence and Impacts of Genetically Engineered Feedstuffs on Livestock Populations," the review article is now available online in open-access form through the American Society of Animal Science.

(Source: Agriculture and Food News, Science-Daily. www.sciencedaily.com)



Green Soybean Plants, Mixed Organic and GMO.
Photo Credit: Oticki / Fotolia

Diversified Farming Practices might Preserve Evolutionary Diversity of Wildlife

As humans transform the planet to meet our needs, all sorts of wildlife continue to be pushed aside, including many species that play key roles in Earth's life-support systems. In particular, the transformation of forests into agricultural lands has dramatically reduced biodiversity around the world.

A new study by scientists at Stanford and the University of California, Berkeley, in a recent issue of Science shows that evolutionarily

distinct species suffer most heavily in intensively farmed areas. They also found, however, that an extraordinary amount of evolutionary history is sustained in diversified farming systems, which outlines a strategy for balancing agricultural activity and conservation efforts.

(source: Agriculture and Food News, Science-Daily. www.sciencedaily.com)



The Great Tinamou is an Evolutionary-distinct bird that Declines in Farmland but Thrives in Tropical Rainforest.

Photo Credit: Daniel Karp

Japanese Scientists Complete Genome Sequence of Eggplant

Researchers from Japan's Kazusa DNA Research Institute and National Agriculture and Food Research Organization (NARO) Institute of Vegetable and Tea Science (NIVTS) report for the first time the completed genome sequence of eggplant (*Solanum melongena* L.).

Clustering analysis of the predicted genes of eggplant along with the genes of three other solanaceous plants as well as *Arabidopsis thaliana* revealed that, of the 35,000 clusters generated, 4,018 were exclusively composed of eggplant genes that would perhaps confer

eggplant-specific traits, they said. They also found that between eggplant and tomato, 16, 573 pairs of genes were deduced to be orthologous (homologous sequences descended from the same ancestral sequence), and 9,489 eggplant scaffolds could be mapped onto the tomato genome.

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



Photo credit: egorxfi / Fotolia

'Most Famous Wheat gene' Discovered, Clears way for non-GMO Breeding

Washington State University researchers have found "the most famous wheat gene," a reproductive traffic cop of sorts that can be used to transfer valuable genes from other plants to wheat.

The discovery clears the way for breeders to develop wheat varieties with the disease- and pest-resistance traits of other grasses, using a legion of genetic tools that can reduce crop losses and pesticide use while foregoing the cost,

regulatory hurdles and controversy of Genetically Modified Organisms, or GMOs.

"The real exciting part of this gene is that it has tremendous potential for application," said Kulvinder Gill, a WSU professor, who reports his findings in the journal Proceedings of the National Academy of Sciences.

(Source: Agriculture and Food News, Science-Daily. www.sciencedaily.com)



Washington State University wheat researcher Kulvinder Gill has found 'the most famous wheat gene,' a reproductive traffic cop of sorts that can be used to transfer valuable genes from other plants to wheat.

Photo Credit: Washington State University

Mystery of cereal grain defense explained

op scientists at Washington State University have explained how genes in the barley plant turn on defenses against aging and stressors like drought, heat and disease. Professor Diter von Wettstein and assistant research professor Sachin Rustgi showed that specific genes act as a switch that enables barley to live longer and become more tolerant of stress, including attack by common diseases like mildew and spot blotch.

The finding, reported in the Proceedings of the National Acad-

emy of Science, solves a long-standing mystery and offers hope for the production of grain crops able to thrive during unpredictable weather and climate change. Cereal grains such as wheat, barley, corn and rice need an essential amount of growing time to produce abundant yields. Environmental stressors such as heat and drought can trigger early aging of plants, which slows growth and decreases yield and grain quality.

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



New Water-saving Irrigation System Tested in China

Scientists have successfully tested a new water-saving irrigation technology in the growing area of Hami in China's Xinjiang Uygur autonomous region. With the Trace Quantity Irrigation (TQI) technology, date trees in the test land yielded the same output with 30-40 per cent of the water volume that would be needed with drip irrigation. The key part of the TQI system is a water-controlling tip that is put underground near crops' roots. The tip delivers water directly to the roots at a speed that's consistent with crops' absorption rate.

Drip irrigation sends water to the soil through small holes in plastic pipes. With the same amount of water, the TQI system can irrigate twice as much land as with drip irrigation, and more than 10 times that of flood irrigation. The TQI technology has also been tested in Beijing, Hebei and Ningxia. It was invented jointly by a research centre at Huazhong University of Science & Technology in Hubei province and Beijing Puquan Science & Technology Co Ltd.

(Source: Far Eastern Agriculture, www.fareasternagriculture.com)



With drip irrigation, one cu/m of water can irrigate 2,000 square metres.

(Image source: H2O-C/Wikimedia Commons)



Did you know???



It takes 24 to 26 hours for a hen to produce an **Egg**; there is 30 minutes between each egg-producing cycle.



A **Honey** bee can fly 15 miles per hour.



The **Banana** plant can grow as high as 20 feet tall. That's as big as a two-story house!



Almost a third of the world's total land area is covered by **Forests**.



If you ate a different kind of **Apple** everyday, it would take more than 19 years to eat each variety of **Apples** grown on earth! (Consider the 7,000 varieties of apple!)



Calorie Chart

Fresh Fruits		
Type	Quantity	Calories
Rutab/ripe dates	10 beads	150
Plum	100 g	52
Lemon	One, 60 g	17
Black berry	One cup	117
Tamarind	Half a cup	82

Source: <http://www.moh.gov.sa/>

Agro Tips

If you are planning to use Calcium and Sulfur Fertilizer for farming you may like to know a few things. This type of fertilizers provides necessary Calcium & Sulfur for the crops. They neutralize soil acid. As a result, other nutrients become more effective. You may apply 15-20 kg fertilizer per acre which may vary slightly based on type of soil & crops produced. You can apply it to the soil while preparing for farming or in between the growth phase of crops.

WORD Game

Figure out the Items from the box!



L	X	G	L	T	Y	J	H	K	X	S	X
D	L	Q	T	Y	R	A	D	I	S	H	L
C	C	F	U	M	G	C	A	S	W	F	O
F	I	C	R	Z	N	A	N	W	T	Z	Q
S	J	X	M	D	G	R	R	P	B	J	B
S	H	N	E	V	K	R	T	L	H	K	L
O	E	Q	R	Z	J	O	Y	B	I	I	M
N	P	F	I	G	P	T	V	Y	Y	C	S
I	C	E	C	I	E	O	J	W	V	W	R
O	G	Q	Y	R	B	P	O	T	A	T	O
N	C	G	I	N	S	E	N	G	H	B	M
G	C	U	S	G	I	N	G	E	R	S	Z

*** To win exciting prizes, take a picture of this page with marked answers and send the picture to biolife@aci-bd.com by 31 October 2014

Winner & Answer of the previous Word Game!!!

Hossain Mohammad
Coordination Officer, ACI Motors

Dog	B	X	H	M	Y	S	D	T	A	X	C	A	M	N	
Sheep	K	P	A	H	Q	E	O	T	H	E	M	L	O	Y	R
Cow	O	W	P	Y	U	I	S	V	F	V	V	R	I	G	O
Horse	N	G	J	N	X	N	G	F	R	T	Q	Q	L	F	R
Donkey	K	M	V	D	U	I	A	K	D	H	B	U	S	Z	S
Goat	E	G	P	X	U	L	P	D	U	R	U	W	M	F	E
Camel	Y	O	T	A	C	M	Y	R	C	F	F	I	R	U	
Chicken	U	A	N	Y	P	H	V	V	K	Z	F	C	T	S	C
Duck	I	T	P	X	U	F	I	B	M	B	A	O	R	V	O
Buffalo	D	U	F	J	K	O	A	C	E	I	L	O	D	Y	J
	C	A	M	E	L	C	X	M	K	V	O	P	P	E	F
	M	Y	L	N	K	N	C	C	J	E	Q	G	E	W	P
	O	X	Q	T	S	F	W	Q	O	Z	O	B	V	E	
	Q	Z	K	D	Y	W	R	J	J	T	L	S	J	R	W

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