

### Need of mechanization for changing lifestyle of farmers

Agriculture of Bangladesh is progressing, but yet to reach its optimal potential. There is a Common understanding that Bangladesh is a over populated country and there are abounded sources of labor in agricultural field. But reality is that labor are shifted to industrial sector due to drudgery of agricultural works and more exposure to sun compared to other works. Farmer's children do not show interest to be involved in the agricultural job in field after having some education. Because of this labor shifting during peak season of cultivation & harvesting there is labor shortage up to 40% level. To confront this labor shortage and improve productivity by reducing cost of production & make agricultural works as comfortable and conceited works there is no alternative of introduction of Mechanization. Farmers can save 50% of production cost by introducing complete mechanization practice which will help creating wealth of farmers and improve life style.

I like to thanks M/S. Ansar Energy for creating example for implementing Mechanized Cultivation and Harvesting by using Sonalika Tractor and Daedong Combine Harvester of ACI Motors. He introduced our machine in a village of Naogaon and helps farmers to save their production cost significantly and change their life style.

**Dr. F H Ansarey**  
Executive Director  
ACI Agribusiness



## Contents

- 3 Biotech Corner
- 4 - 5 Innovation and New Products
- 7 - 11 Events and Activities
- 12 - 15 Agri-tech and Communication
- 16 - 17 Readers' Corner

# 3

### Commercial utilization of Double Haploid Production for Hot Pepper

Hot pepper (*Capsicum annum L.*) is an important spice crop grown in temperate and tropical regions of the world.



# 4

### NO-FMD Powder



On 5 October 2015, ACI Animal Health launched NO-FMD Powder. No-FMD has the ability to control FMD virus by the help of Glycerol Monolaurate.

# 10

### Sparking Together: 3rd Quarter Celebration at ACI Agribusiness

On 1 October 2015, ACI Agribusiness arranged a dinner program "Sparking Together" at ACI Center to celebrate the continuous performance by the businesses during the 3rd quarter of 2015.



# 12

### BRI Scientists Set for Confined Field Trials of World's first Golden Rice



Scientists from the Bangladesh Rice Research Institute (BRI) have successfully completed the trials of Golden Rice in the screen house,

## EDITORIAL BOARD

### Advisory Editor

Prof. Lutfur Rahman  
Advisor, ACI Agribusiness

### Editor

M. Saifullah  
Chief Strategy Officer  
ACI Agribusiness

### Associate Editor

Javed Mahmood Khan  
Manager, Brand & Communication  
ACI Agribusiness

### Members

Yusuf Alam  
Product Manager  
ACI Fertilizer

Mohammad Mizanur Rahman  
Product Manager  
ACI Seed

Dr. Md. Amjad Hossain  
Market Development Manager  
ACI Animal Health

Md. Shiful Alam  
Coordination Officer,  
ACI Motors

Md. Mustafizur Rahman Khan  
Marketing Manager  
ACI Cropex

Dr. Akhter  
Head of PDS,  
ACI Seed

Adeeba Raihan  
Research Specialist  
Advanced Seed Research  
& Biotech Centre

### Commercial utilization of Double Haploid Production for Hot Pepper

Prof. Lutfur Rahman

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

Hot pepper (*Capsicum annuum* L.) is an important spice crop grown in temperate and tropical regions of the world. The crop is very important because of the high biological value of the fruits (high content of dry substance, vitamin C and B-complex, minerals, essential oils, carotenoids, etc.) and their various kinds of utilization in the culinary and food industry of different countries. Conventional breeding in hot pepper is a long-term and labor-consuming process due to uncontrolled pollination and the necessity of isolation for prevention of genetic degeneration of expected genetic parameters of the breeding material. This may be overcome through in vitro methods for haploid plant production. Conventional breeding in hot pepper is a long-term and labor-consuming process, which may be overcome by using doubled haploid production technique.

In case of hybrid seed production, cytoplasmic male sterility (CMS) can dramatically reduce the cost of production by eliminating the task of emasculation. The CMS three-line-hybridizing is an important method for heterosis utilization of hot pepper. The genotype of the CMS line (A), maintainer (B), and restorer (C) is S rrf, N rrf, S/N RFRF or S RFr, respectively. Although CMS and restorer in pepper has been known since 1958, it has found little commercial utilization, except in Korea and recently in China. Researchers reported the reason behind this. According to their reports CMS pepper lines frequently display unstable pollen sterility under low temperatures. Commercial use of CMS requires highly stable male sterility to assure genetically uniform F1 hybrid seed production, and reduce the risk of incomplete pollen sterility in temperate or hilly regions where during the winter season growing conditions can sometimes be cooler than optimum. To overcome this problem, the AVRDC has developed CMS lines and restorer suitable for various climates and these lines can be incorporated in the local popular varieties through back crossing. The only problem is that this technique delays product development by several years. The double haploid production technique can also be a solution in this case by reducing the time significantly.

In hot pepper, haploid technology includes induction and regeneration of haploid embryos from anthers or microspore culture. Plantlet regenerants with a single chromosome set, originating from microspores of in vitro cultivated anthers, are ideal for genetic analysis due to the variety of possible expressions of the genetic makeup. The doubling of the haploid genome results in fully homozygotic lines in shortened period which is important for creation of genetic diversity and a base of new varieties with higher quality.

I acknowledge the assistance offered for this note by Ms Adeeba Raihan, Zahidur Rahman of ASRBC and Md. Monirul Islam of ACI R&D, Bogra.



## Innovations and New Products

### NO-FMD Powder

On 5 October 2015, ACI Animal Health launched NO-FMD Powder. No-FMD has the ability to control FMD virus by the help of Glycerol Monolaurate. It also controls secondary bacterial infections. No-FMD boosts immune system through Glycerol Monolaurate & Nano-Coated Zinc Oxide. No-FMD repairs wounded cells. No-FMD has antioxidant properties & improves digestibility & palatability. Each 100g powder contains Glycerol Monolaurate 50 g, Nano-Coated Zinc Oxide 10 g, Riboflavin (Vitamin B2) 1 g, Sodium Hydrogen Carbonate 2 g, Ethoxyquin 0.25 g, Butylated Hydroxy Toluene 0.25 g, Di & Polysaccharide 9.75 g, Essential Oil, Trace Minerals & Calcium Carbonate q.s. to 100 g. NO-FMD Powder is available as 100 gm sachet



### Vita-Renal

On 15 October, ACI Animal Health launched Vita-Renal, a unique solution to protect Kidney and remove ascities. Each ml solution of Vita-Renal contains Potassium citrate 20.8 mg, Magnesium chloride 16.2 mg, Sodium propionate 5 mg, Citric acid 3.75 mg, Potassium sorbate 1 mg, Vitamin B2 0.036 mg. It removes ascities, maintains the electrolytes balances of the body and reduces the intracellular extra fluids. Overall, it improves the renal function and the performances during stress. Sodium propionate, Potassium sorbate and citric acid act as the buffering agent which not only helps to maintain the pH but also the source of diuretics to enhance urine output. It also purifies the Sodium-Potassium ATPase enzyme which regulates Sodium-Potassium pump as well as active transport of various unwanted substance through the kidney. Vita-Renal is available in 100 ml & 500 ml packs.



## Innovations and New Products

### Biosol-6

On 20 September 2015, ACI Animal Health launched Biosol-6 which mainly contains a mixture of six minerals methionine complex in a proper balance ratio with free methionine, sodium and potassium ion. Each liter of Biosol-6 contains-Iron (Iron Methionate) 1,500 mg, Zinc (Zinc Methionine complex) 5,500 mg, Copper (Copper Methionine complex) 5,000 mg, Cobalt (Cobalt Methionine complex) 100 mg, Manganese (Manganese Methionine complex) 600 mg, Magnesium (Magnesium Methionine complex) 3,000 mg, Methionine 50 mg, Sodium chloride 65,000 mg, Potassium 6,000 mg, Purified water q.s. to 1,000 ml. It improves general health, ensures better weight gain, growing rate and feed conversion ratio. Biosol-6 reduces incidence of diseases and helps to increase immunity significantly after vaccination. It is manufactured by VET SUPERIOR CONSULTANT CO.LTD (Thailand). It is available in 100 ml bottles.



### BioSol-ZM - a growth promoter and immune stimulator

BioSol-ZM is the combination of Zinc Methionine complex, Manganese Methionine complex added with Phyto-genics extract. Each liter of BioSol-ZM contains Zinc (as Zinc Methionine complex) 30,000 mg, Manganese (as Manganese Methionine complex) 30,000 mg, Phyto-genics extract 5,000 mg, Purified water q.s. to 1,000 ml. It increases egg size, production & shell quality along with body weight of birds. BioSol-ZM improves glossiness of feathers and leg as well as the immunity of poultry. On 15 September 2015, ACI Animal Health launched it. The available pack sizes are 100 ml & 500 ml.





## JOIN THE LEADER - UNLEASH YOUR INNOVATION

ACI, in collaboration with **International Rice Research Institute (IRRI)**, is stepping into a partnership project to introduce a cutting edge rice breeding technology in Bangladesh. The project is a unique initiative for the first time which is being funded by **USAID**.

ACI is an innovation driven company which has always inspired its scientists to bring new technologies in agriculture. The project offers the candidates with an outstanding opportunity to work with world class scientists under one roof where one would grow himself as well as bring innovation to the world.

We require highly competent individuals to fill up the following positions :

- **Deputy Project Leader** (Report to IRRI Project Leader)
- **Principal Scientist, Breeding**
- **Senior Scientist, Molecular Breeding**
- **Project Coordinator**
- **Associate Scientist**

**Note : For details, please visit - [www.bdjjobs.com](http://www.bdjjobs.com)**

**Application Deadline : 14 November, 2015**



**ADVANCING  
POSSIBILITIES**

## Events and Activities

### Participatory Research & Development: PDS Trial Activities

Aiming for a good result from adaptive trials, ACI Seed PDS has started “on job coaching” and “power point presentation on crop production technology” for the PDS Officers and hands-on training for farmers recently. In establishing the PDS trial station, there has been a growing interest in the use of participatory approaches in the selection of new materials, scientific technology transfer, and farmers’ livelihoods sectors. These have included: participatory land utilization, farmer participatory research, participatory technology development, participatory action research, participatory learning and action for new material selection, and sustainable livelihoods approach. PDS unit has been working for strengthening the capacity of PDS team and trial farmers to continuously learn and experiment ways of improving their agricultural knowledge for conducting scientific trials.



### Scientific Adaptive Trial at ACI-RU Innovation Center

Presently ACI-RU innovation center is conducting adaptive trials in RCBD format with appropriate check for selecting and screening different crops suitable for existing market. Here agronomic yield data is being collected to evaluate better yield performance of supplied trial materials e. g. Cauliflower, Tomato, Brinjal, Bottle Gourd, Sponge Gourd and Cucumber. Besides, different crops like Okra, Cucumber, Tomato, Pumpkin, Ridge Gourd, and Radish are being cultivated in 3 acres of land as living crop display to motivate local farmers, retailers, dealers, and sales force.



## Events and Activities

### ACI and Sylhet Agricultural University signed MoU



On 17 October 2015, a Memorandum of Understanding (MoU) was signed between ACI Ltd and Sylhet Agricultural University (SAU) at the Advanced Seed Research & Biotech Centre (ASRBC) of ACI Limited, Dhaka. Dr. F. H. Ansarey, Executive Director of ACI Agribusinesses signed on behalf of ACI Ltd, while Prof. Md Badrul Islam, Registrar, signed on behalf of SAU. ASRBC will start working closely with SAU regarding the varietal development of a number of crops through this new collaboration. Prof. Dr. M Golam Shahi Alam, Vice Chancellor, Prof. Dr. A.F.M Saiful Islam, Dean, Faculty of Agriculture, Prof. Lutfur Rahman, Advisor of ASRBC, Dr. M A Salam, Chief Rice Breeding Consultant, ASRBC and Dr. Md. Zahidur Rahman, Principal Scientific Officer of ASRBC were present during the signing ceremony. ACI Agribusinesses of ACI Limited has established the Advanced Seed Research & Biotech Centre (ASRBC) for molecular breeding programs to develop stress tolerant crop varieties. In order to strengthen this initiation, ACI Limited has entered into such collaborative research through Public-Private Partnership with universities and NARS institutes.



### Contract signed between ACI & Consiglieri Private Limited for Katalyst interventions



On 5 October 2015, ACI Agribusiness signed a contract with Consiglieri Private Limited for working on the Katalyst interventions. The new collaboration will foster sustainable development in the agricultural sector. Dr. F. H. Ansarey, Executive Director, ACI Agribusiness and Foyzul Bari Himel, Managing Director, Consiglieri Private Limited signed the collaboration agreement on behalf of the respective entities. Under this collaboration, both the entities will be working towards - enabling capacities of the poor farmers in Bangladesh regarding updated production technology in Horticulture and Aquaculture subsectors, updating curriculum of the Agricultural Universities to equip agri-graduates with practical knowledge and working towards women empowerment. Under the Katalyst interventions, SIS (Small Indigenous Species) as well as WEE (Women Economics Empowerment) training will be provided and 80 spot meetings will be arranged with the farming communities. Moreover, a business case competition for all the Agriculture University students will be arranged. 2 Audio-visual documentaries and 2 music videos will be produced. ACI Agribusiness will be contributing 50% of the costs. The collaboration will strengthen the partnership in the existing Katalyst projects and will create new intervention opportunities for the betterment of Agribusiness in Bangladesh. Mohasin Kabir, Senior Manager, Katalyst, M Saifullah, Chief Strategy Officer, Agribusiness, Kamrul Hasan, Director, Consiglieri Private Limited and other representatives of Consiglieri, ACI and Katalyst were present in the session.





## Events and Activities

### 4th Quarter Regional Planning Workshops for Fertilizer Field Force

In October 2015, ACI Fertilizer recruited 12 field supervisors under the M4C project and arranged a 2-days training program at Bogra on 20-21 October 2015. The topics of the training program included product knowledge, project activities guideline and women empowerment increasing tactics. The Field Force also made a month wise sales projection for the targeted Chars. Mr. Sarder Ali Mortuza, GM, Sales; Mr. Yusuf Alam, Product Manager, RSM, ZSM and AM of ACI Fertilizer and the Project Coordinators of SwissContact were present in the training program. The training was held as ACI Fertilizer has started the partnership program collaboration with SwissContact under M4C Project from October 2015 for the 3rd year. The objective of the partnership program is to promote balanced fertilization including organic & micronutrients fertilizer among the farmers and traders in char area of Bogra, Sirajgonj, Gaibandha, Rangpur, Nilphamari, Kurigram, Jamalpur & Tangail. The targeted crops are Rice, Maize, Chili, Onion, Mustard, Groundnut, Vegetables and Jute. Under the project, ACI Fertilizer will conduct 381 Farmers Training Program, 138 Farmers Campaign Program, 13 Retailer Training Program, 24 DAE Meeting, 38 Result Demonstration and 12 Field Day from October 2015 to August 2016.



### M4C Project: 2-Days Training for Field Supervisors at Bogra

In October 2015, ACI Fertilizer recruited 12 field supervisors under the M4C project and arranged a 2-days training program at Bogra on 20-21 October 2015. The topics of the training program included product knowledge, project activities guideline and women empowerment increasing tactics. The Field Force also made a month wise sales projection for the targeted Chars. Mr. Sarder Ali Mortuza, GM, Sales; Mr. Yusuf Alam, Product Manager, RSM, ZSM and AM of ACI Fertilizer and the Project Coordinators of SwissContact were present in the training program. The training was held as ACI Fertilizer has started the partnership program collaboration with SwissContact under M4C Project from October 2015 for the 3rd year. The objective of the partnership program is to promote balanced fertilization including organic & micronutrients fertilizer among the farmers and traders in char area of Bogra, Sirajgonj, Gaibandha, Rangpur, Nilphamari, Kurigram, Jamalpur & Tangail. The targeted crops are Rice, Maize, Chili, Onion, Mustard, Groundnut, Vegetables and Jute. Under the project, ACI Fertilizer will conduct 381 Farmers Training Program, 138 Farmers Campaign Program, 13 Retailer Training Program, 24 DAE Meeting, 38 Result Demonstration and 12 Field Day from October 2015 to August 2016.



### ACI Motors delegation visited India

A team of ACI Motors visited India from 28 September to 4 October 2015. The visit took place as a part of training, factory visit and field demonstration for the ACI Motors team at Punjab, India by International Tractors Ltd (ITL), the manufacturer of Sonalika Tractors. The 16-member team was led by Maksudur Rahman Maksud, Asst. Manager and Tanmoy Majumder, Product Executive, ACI Motors. ITL also arranged sightseeing events for the team at different famous places like Golden Temple, Jallianwala Bagh in Punjab and Taj Mahal (Agra).



## Events and Activities

### Training Programs for Fertilizer Market Promoters at Rangpur & Jessore

ACI Fertilizer arranged two training program on new products; like – NEB, Gypsar Plus, Fertimix etc. for the market promoters of Rangpur, Dinajpur, Jessore and Khulna area during October 2015. The main discussion was about product knowledge and it's promotional strategy in the field. The market promoters were also trained up about their job responsibility. Mr. Firoz Hossain, ZSM, Rangpur arranged the program for the Market Promoters of Rangpur, Nilphamari and Dinajpur Area at Rangpur dated on 15 October; where Mr. Akram Hossain, Sr. Training Executive, ACI Training Department played the key role in the training program. Mr. Zillur Rahman, RSM, Jessore arranged the program for the Market Promoters of Jessore and Khulna Area at Jessore on 10 October where Mr. Yusuf Alam, Product Manager, ACI Fertilizer played the main role during the training program.



### Sparking Together: 3rd Quarter Celebration at ACI Agribusiness

On 1 October 2015, ACI Agribusiness arranged a dinner program "Sparking Together" at ACI Center to celebrate the continuous performance by the businesses during the 3rd quarter of 2015. During the event, Dr. F. H. Ansarey, Executive Director, ACI Agribusiness along with other officials appreciated all the businesses for their effort and performance. Earlier this year the journey began with a Spark to Innovate, Inspire and Ignite through a Gala Celebration in Cox's Bazar. Keeping their promises till date, all the businesses are expecting to close this year with a Sparking Performance.



## Events and Activities

### ACI Motors: Spark Annual Service Meeting 2015

The two-day long 'Spark Annual Service Meeting 2015' was organized by ACI Motors for its field forces. The meeting held on 14-15 October 2015. On Friday, 14 October 2015, all the participants went to a pleasure trip to the Fantasy Kingdom and the Water Kingdom at Ashulia, Savar, Dhaka. After the refreshing trip, all the participants attended the 2nd day of the meeting at ACI Center along with a series of activities. Dr. F. H. Ansarey, Executive Director, ACI Agribusiness delivered the opening speech and distributed awards to the most accomplished participants. There were also reporting, presentation and motivational sessions with audio-visuals for the participants.



### Inception workshop for the ACI-IRRI project on “Public Private Partnership for Rice Breeding and Seed in Bangladesh”

The inception workshop for the ACI-IRRI project on “Public Private Partnership for Rice Breeding and Seed in Bangladesh” was held at the ACI Centre from 27-29 October 2015. The Workshop was inaugurated by the Managing Director, ACI Ltd. with participation of the Country Representative of IRRI, Senior Adviser from USAID, Executive Director, Agribusinesses, ACI Ltd., Advisor of ACI-AB, and Senior Scientists of IRRI. Scientists from both organizations Business Manager and his colleagues from ACI Seed and the Project Management Coordinator of USAID were also present in the inauguration meeting.

As part of the workshop the Field Research team visited ACI's rice breeding facilities in Mauna and Gazipur, where they spent time with ACI's breeding team surveying the performance of IRRI's field trials by ACI as well as discussing future programs. The Molecular Breeding team visited the Advanced Seed Research Centre (ASRBC) of ACI Ltd, where DNA marker based platforms for improving rice varieties were discussed with in house scientists. Both the teams were happy with what they witnessed and felt confident about working together towards developing rice varieties for Bangladesh.

A grand dinner was held at the Six Seasons Hotel hosted by ACI in honor of the project inception. Chairman Bangladesh Seed Association, Director General of Seed Wing, Executive Chairman of the Bangladesh Agricultural Research Council, Director Research of Bangladesh Agricultural Research Institute, Director General of the Rural Development Academy, Director General of Bangladesh Institute of Nuclear Agriculture, Vice Chancellor of Sylhet Agricultural University, Director Research of Sylhet Agricultural University, Pro-Vice Chancellor of Sher-e-Bangla Agricultural University, Member Director (Crops) of Bangladesh Agricultural Research Council along with renowned Professors and Members of the Agriculture industry in Bangladesh were present during the event. Encouraging words were said by the speakers showing their full support for the project activities as planned for reaching the goals to achieve.



## Agri-tech & Communication

### BRRRI Scientists Set for Confined Field Trials of World's first Golden Rice

Scientists from the Bangladesh Rice Research Institute (BRRRI) have successfully completed the trials of Golden Rice in the screen house, and are now set for the next step—confined field trials. According to Bangladesh Agriculture Minister Matia Chowdhury, the National Technical Committee on Crop Biotechnology has approved the request of BRRRI to conduct the confined field trials last month. The Golden Rice variety (GR-2 E BRRRI dhan29) will be tested starting November.

World Health Organization (WHO) data say that one out of five pre-school children in Bangladesh lacks vitamin A, as well as 24 percent of pregnant women in the country. When Golden Rice becomes available, 150 grams of the vitamin-A enriched rice will be enough to supply half of the required daily intake of vitamin A for an adult.

(Source: The Daily Star, 8 October 2015. [www.thedailystar.net](http://www.thedailystar.net))



Regular rice next to Golden Rice. The golden one has beta carotene, a source of vitamin A.  
Photo Credit: IRRI

### Secrets of a rice-killing fungal toxin

Researchers at the RIKEN Center for Sustainable Resource Sciences (CSRS) have discovered the enzyme needed for synthesis of tenuazonic acid (TeA), a well-known toxin that is produced by multiple types of fungus and affects fruits, vegetables, rice, and other crops. In their study published in Nature Communications, the authors describe how they found the gene for this enzyme, and reveal that its structure is unique among known enzymes. Mycotoxins are toxic compounds produced by fungi that are not directly involved in growth, development, or reproduction. These secondary metabolites typically colonize crops and are a real economic burden for farmers. TeA is known to be produced by at least three different plant pathogenic fungi, and is associated with spoiling of fruits, vegetables, and food-crops, as well as post-harvest decay.

"Now that we know the gene responsible for biosynthesis of this harmful toxin," notes co-lead author Takayuki Motoyama, "after further testing we might be able to devise a way to regulate its expression and prevent destruction of important crops." When studying microorganisms like fungus, researchers have found that genes for many secondary metabolites are silent under laboratory conditions, which has made finding them especially difficult. The CSRS group led by Hiroyuki Osada has extensive experience studying secondary metabolites, and the team reasoned that OSM1—a gene associated with responses to environmental stress—might also be related to TeA production in *Magnaporthe oryzae*, a pathogenic rice fungus. While wild-type *M. oryzae* did not yield any TeA, researchers were able to produce it from OSM1 knockout strains. They were also able to produce TeA by culturing wild-type *M. oryzae* with 1% dimethylsulphoxide, perhaps as a response to the unfavorable environment.

(Source: Agriculture and Food News, ScienceDaily. [www.sciencedaily.com](http://www.sciencedaily.com))



Rice blast disease resulting from the mycotoxin tenuazonic acid (produced by the fungus *Magnaporthe oryzae*).  
Photo Credit: RIKEN

## Agri-tech & Communication

### Plants Naturally Recycle Chloroplasts

As food demands rise to unprecedented levels, farmers are in a race against time to grow plants that can withstand environmental challenges—infestation, climate change and more. Now, new research at the Salk Institute, published in *Science* on October 23, 2015, reveals details into a fundamental mechanism of how plants manage their energy intake, which could potentially be harnessed to improve yield. "Plants are unique in that they are stuck wherever they germinate, so they must use a variety of ways to deal with environmental challenges," says Joanne Chory, senior author of the paper and director of Salk's Plant Molecular and Cellular Biology Laboratory. "Understanding the techniques plants use to cope with stress can help us to engineer stronger crops with improved yield to face our growing food shortage."

Plants have cellular organelles akin to tiny solar panels in each leaf. These microscopic structures, called chloroplasts, convert sunlight into chemical energy to enable the plant to grow. The command center of the cell, the nucleus, occasionally sends out signals to destroy all of the 50-100 chloroplasts in the cell, such as in autumn when leaves turn brown and drop off. However, the Salk team found how the plant nucleus begins to degrade and reuse the materials of select, malfunctioning chloroplasts—a mechanism that had been suspected but never shown until now.

(Source: Agriculture and Food News, ScienceDaily. [www.sciencedaily.com](http://www.sciencedaily.com))



Photo Credit: Salk Institute

### Scientists produce beneficial natural compounds in tomato; industrial scale-up potential

Scientists at the John Innes Centre have found a way to produce industrial quantities of useful natural compounds efficiently, by growing them in tomatoes. The compounds are phenylpropanoids like Resveratrol, the compound found in wine which has been reported to extend lifespan in animal studies, and Genistein, the compound found in soybean which has been suggested to play a role in prevention of steroid-hormone related cancers, particularly breast cancer.

As a result of the research led by Dr Yang Zhang and Dr Eugenio Butelli working in Professor Cathie Martin's lab at the John Innes Centre, one tomato can produce the same quantity of Resveratrol as exists in 50 bottles of red wine. One tomato has also produced the amount of Genistein found in 2.5kg of tofu. Drs Zhang and Butelli have been studying the effect of a protein called AtMYB12 which is found in *Arabidopsis thaliana*, a plant found in most UK gardens and used as a model plant in scientific investigation. The protein AtMYB12 activates a broad set of genes involved in metabolic pathways responsible for producing natural compounds of use to the plant. The protein acts a bit like a tap to increase or reduce the production of natural compounds depending on how much of the protein is present.

(Source: Agriculture and Food News, ScienceDaily. [www.sciencedaily.com](http://www.sciencedaily.com))



## Agri-tech & Communication

### MSU to Conduct Study to Improve Potato Production in Bangladesh and Indonesia



Scientists at Michigan State University will be conducting studies to enhance potato production in Bangladesh and Indonesia. The project is part of USAID's work on Feed the Future, the U.S. government's global hunger and food security initiative. USAID awarded MSU with US\$5.8 million to conduct the project.

"Genetically engineered crops are among the technologies with potential to increase agricultural productivity, benefiting livelihoods of both small-scale and commercial farmers, while reducing inputs and environmental impacts," said Dave Douches, head of MSU's Potato Breeding and Genetics program. "Internationally, potatoes are the world's third-largest food crop. So our team is committed to developing new varieties, finding potatoes that result in reduced pesticide use and more sustainable growing methods, and exploring ways to enhance the nutritional value of the potato," he added. MSU scientists will work with the University of Minnesota and J.R. Simplot Company, together with institutions based in Bangladesh and Indonesia. The researchers aim to develop varieties that will help farmers fight diseases such as late blight, and produce high yields.



(Source: Agriculture and Food News, ScienceDaily. [www.sciencedaily.com](http://www.sciencedaily.com))

### Crop Genomics to Help Feed the World



Dr. Ksenia Krasileva, Triticeae Genomics Group Leader at The Genome Analysis Centre (TGAC), and her team are working on large-scale projects to make significant advances in global food security. Dr. Krasileva's team is analyzing an extremely large collection of wheat lines to identify novel resistance genes to various diseases and understand the mechanism of action of these genes.

According to Dr. Krasileva, they are comparing DNA sequences of wheat lines with the reference genome published last year, saying that they have an efficient way of identifying genes that are involved in a given line's relative disease resistance. This enables them to enrich the cultivated wheat gene pool with novel, economically important genes.



## Agri-tech & Communication

### Camels Test Positive for Respiratory Virus in Kenya



A new study has found that nearly half of camels in parts of Kenya have been infected by the virus that causes Middle East Respiratory Syndrome (MERS) and calls for further research into the role they might play in the transmission of this emerging disease to humans. MERS was first identified in Saudi Arabia in 2012 and there is currently no vaccine or specific treatment available. To date, it has infected 1,595 people in more than 20 countries and caused 571 deaths. Although the majority of human cases of MERS have been attributed to human-to-human infections, camels are likely to be a major reservoir host for the virus and an animal source of MERS infection in humans.

A team of scientists from the University of Liverpool and institutions in the USA, Kenya and Europe, surveyed 335 dromedary - single humped - camels from nine herds in Laikipia County, Kenya and found that 47% tested positive for MERS antibodies, showing they had been exposed to the virus. Professor Eric Fèvre, Chair of Veterinary Infectious Diseases at the University's Institute of Infection and Global Health said: "Although Laikipia County camel density is low relative to more northern regions of Kenya, our study suggests the population is sufficient to maintain high rates of viral transmission and that camels may be constantly re-infected and serve as long term carriers of the virus. MERS in camels, it seems, is much like being infected by the common cold.

(Source: Agriculture and Food News, ScienceDaily. [www.sciencedaily.com](http://www.sciencedaily.com))



A team of scientists surveyed 335 dromedary – single humped – camels from nine herds in Laikipia County, Kenya and found that 47% tested positive for MERS antibodies, showing they had been exposed to the virus. (Stock image)  
Photo Credit: maria\_bk / Fotolia

### Shrimp may grow faster, bigger, healthier and tastier on sea urchin droppings diet



Researchers at the University of Alabama at Birmingham appear to have found a better way to grow shrimp that is also less expensive, and the new process could hold the key to unlocking future breakthroughs in environmental science, business and medicine. Using sea urchins and shrimp as models, UAB scientists discovered that one species could feed another from its waste, without needing to use traditional food at all.

Steve Watts, Ph.D., known for the sea urchin food of his own invention that led him to be featured on The Travel Channel's Bizarre Foods America with host Andrew Zimmern, is leading the work. Watts and his team from the College of Arts and Sciences' Department of Biology began this research after years of studying traditional aquatic animal research and combining it with cutting-edge science and medicine. "Over the years, we've found that a number of the animals we've worked with are excellent models for studying aspects of medicine," Watts said. "Many of them are great biomedical examples, and we can study a variety of diseases and issues related to human health, so our research is really twofold. We study the animals for aquaculture and biomedical research."

(Source: Agriculture and Food News, ScienceDaily. [www.sciencedaily.com](http://www.sciencedaily.com))



A team of scientists surveyed 335 dromedary – single humped – camels from nine herds in Laikipia County, Kenya and found that 47% tested positive for MERS antibodies, showing they had been exposed to the virus. (Stock image)  
Photo Credit: maria\_bk / Fotolia

## Readers' Corner



### Believe it or not!



**Egg yolks** are one of the few foods that naturally contain **Vitamin D**.



In one day, a honey bee can fly **12 miles** and pollinate up to **10,000 flowers**.

If you grew **100 apple trees** from the **seeds** of one tree, they would all be different.

Although generally regarded as a tree, **Banana** plant is really an herb.

**Pumpkin** seeds can be roasted as a snack.



### Calorie Chart

Fresh Food		
Food Type	Quantity	Calories (Kcals.)
Cow Milk	1 Cup	157
Beef	Approx 42 g	142
Full cook boiled eggs	One, big	79
Lamb shoulder, cooked with fat	63 g	220
Chicken leg (hip), with skin, grilled	85 g	223

Source: [www.moh.gov.sa](http://www.moh.gov.sa)

### Agro Tips

If you are planning to use Nitrogen type fertilizer (Ammonium Sulphate) for farming, you may like to know a few things. This type of fertilizers provides necessary Nitrogen which ensures proper growth of crops. It also helps to make leaves greener and grow more leaves. You may apply 15-20 kg fertilizer per acre which may vary slightly based on the type of soil & crops produced. You can apply it to the soil while preparing for farming or in between the growth phase of crops.



## Readers' Corner

### Sharing is Caring!

The following photos shared in different social medias online shows an apparently simple but praiseworthy initiative by a CNG driven auto rickshaw driver, Mr. Akhter, to promote tree plantation. As you can see, his CNG driven auto rickshaw is carrying small trees while there are different messages written on the body of the vehicle. These messages include "Plant tree to save the environment", "Plant at least a tree in your life". Planting a tree is perhaps the simplest way to contribute towards the preservation of the environment.

Have you ever planted a tree?



### ACI Agribusiness

ACI Centre  
245 Tejgaon Industrial Area  
Tejgaon, Dhaka, Bangladesh  
Phone: + 88 02 887-8603  
E-mail: [biolife@aci-bd.com](mailto:biolife@aci-bd.com)  
[sectoedab@aci-bd.com](mailto:sectoedab@aci-bd.com)

[www.aciagribusinesses.com](http://www.aciagribusinesses.com)



**ACI Agribusiness**  
*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.