

Rice Transplanter: Saves Cost & Time

Yanmar Rice Transplanter

ACI recently introduced Rice Transplanter from Yanmar. Yanmar is the number one global Agricultural Machineries Company. The capacity of Yanmar Rice Transplanter is 0.4 hectare/hour. By using this machine, farmers can reduce cost up to 78% and save time up to 64%. In the traditional method, cost of rice trans-

planting is about 8,000 taka/hectare. Whereas, cost of planting using machines is about 780 taka/hectare. Moreover, 30 Kg rice seeds are required in every hectare of land by the traditional method. On the other hand, mechanical process takes only 22 Kg/hectare.

Even by using 8 Kg seed, farmers can save up to 400 taka.

Thus, about 80 percent cost saving is possible using mechanical rice transplanting process. ACI Motors is supplying Transplanter as well as training on usage, maintenance, and after-sales service.

Dr. F H Ansarey
Managing Director & CEO
ACI Agribusiness



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A study published in Genome Biology shows how plants use 'baits' to recognize and trap disease-causing pathogens before infection can start.



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“Biotechnology Incubator” for R&D based Industries in Bangladesh

We can use a number of definitions those are used to identify or define Biotechnology, among those a few are; (i) any technological application that uses Biological systems of living organisms or their derivatives thereof to make or modify products or process for specific uses; (ii) application of scientific and technical advances to develop commercial products; and (iii) Biotechnology covers all fields of biosciences for development of products leading to industrial utilization. Thus, “Biotechnology Incubator” is a space that provides support for a newborn idea to get matured through space, knowledge/skills, and funds. As the fields of biotechnology are wide open and advancing, it requires highly advanced equipment, updated knowledge and skills to test the expected results. Hence there is a need for incubation.

Sid Martin Biotech of the University of Florida, **USA** is such an incubator, which supports a wide range of companies including, clean tech, diagnostics, therapeutic drug delivery, genomic, bio-medical device, agbio, biofuels, and others. It supports both in-house for companies and also out-houses. **In India**, a good number of such incubators are working in different states, a few of those are in (i) Guwahati, (ii) Bangalore, (iii) Chennai, (iv) Lucknow, (v) Hyderabad and (vi) one specialized for Biotechnology Core instrumentation facilities in Chennai. Except one in Chennai all are open to both male and female stakeholders and supports herbal cosmetics, bio-pesticides, biofertilizer, spice fortified with herbs, etc. The one established in **Hongkong** in 1966

provides supports for clinical grade biopharmaceuticals, downstream processing equipment, protein purification, etc. on a pay-per-use basis. While the **Swedish** one (UBI) promotes growth through pre-seed financing, project management, and IPR services. The **Belgian** one at Leuven established in 2008 supports space for labs and office and there is a high growth of this support system. The Genopole at Evry, **France** of 1998 supports startups with applications in all branches of biotechnology. The Bio City of **UK** and Bio City of **Leipzig** are highly successful incubators in those countries to help newcomers to establish industries of their choice with supports from incubators of their countries.

In Bangladesh, in order to support researchers, startup entrepreneurs and bio-based companies, the honorable Prime Minister of Bangladesh and Chairperson of the National Taskforce on Biotechnology in Bangladesh has given directions to establish Biotechnology Incubators. The aim is to undertake R&D activities on Biotechnology for products at the users’ level through industrial process. So, the NIB has decided to discuss with experts and finally submitted the project for establishment of

the incubator. From the participants’ opinion in the seminar on 25th February 2018, it appeared that to start immediately, the NIB should map up the capacity of a number of Universities and Institutes already working in this field in relation to programs, equipment and manpower. Then a list of prioritized program areas can be identified in collaboration with private partners. It then can act as the Coordinating Central Incubator and designate specific Universities on merits of availability of support system and manpower to act as regional incubators. This approach will be cost-effective, positive for faster development of manpower and encourage region-specific industry development. The Central one will, in fact, be developed for the program areas not possible to perform at regional sites. Another major role of the central incubator should be to act on policy support for PPP provisions for equipment and chemicals availability along with IPR and quality control services of the industries to be involved in such industrial venture.

(Sources of information are websites Wikipedia and NIB Seminar)

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Photo Credit: Bio-Innovation.com

Potato Field Day unites 5000 Farmers



ACI Field Crops Seed conducted country-wide customer-centric field day programs to showcase the performance of tissue culture based ACI Seed potato varieties in February 2018. About 5000 farmers participated in these field days where the ACI Seed team took a community approach to assess the performance of improved crop varieties. Frontline demonstration of ACI Seeds' improved potato varieties along with recommended technology were demonstrat-

ed in randomly selected 10 acres farmland owned by local farmers in Rajshahi, Dinajpur, Joypurhat, Bogra, Comilla, Munshiganj and Patuakhali during February 2018. The performance of demonstrated varieties was better in terms of yield, disease resistance and plant growth. The participating farmers, dealers and other people were highly motivated to see the excellent performance of ACI Seed potato varieties. Majority of the farmers in these regions are still practic-

ing traditional farming, as they are not aware of quality potato seed. Therefore, ACI Seed took the community approach to introduce the potato varieties along with their production and protection technologies. These recommended technologies have been demonstrated during the field days. In all of these field day programs, Upazilla Chairman, local community leaders, Upazilla Agriculture Officer, Sub-Assistant Agriculture Officer, and Journalists of local newspapers of respected Upazillas were present. From ACI Seed, Head of Business - Mr. Sudhir Chandra Nath, Portfolio Manager (FC) - Mr. Golam Mostafa, Product Executive (FC) - Mr. Ashraf Hasan, Regional Sales Managers, Area Sales Managers and Sales Officers of ACI Seed attended the field days.



ACI Fertilizer at Bangladesh Tea Expo 2018



ACI Fertilizer participated in Tea Expo 2018 organized by the Ministry of Commerce and Bangladesh Tea Board. Honorable Prime Minister Sheikh Hasina inaugurated the three-day expo (18-20 February 2018) in International Convention City

Bashundhara (ICCB), Dhaka. The concept of Bangladesh Tea Expo was to create a national platform to exhibit and uphold the tea industry of Bangladesh among the tea connoisseurs of the country and beyond. The core aspects of

Events and Activities

Bangladesh Tea Expo 2018 were to promote and showcase the diversification of both tea and tea products and to explore the bridge that brings the tea garden's blenders and stakeholders together under the same roof along with each of their unique culture. Another objective of this event was to portray eco-tourism within the homeland.

Just like other plants, Tea plant and its growth is highly dependent on soil fertility and proper nurturing materials during its growth stage. In this aspect, ACI Fertilizer plays an influential role as it has the effective products and facilities needed for both the soil and tea plant. Tea gardens have been using organic fertilizers for last couple of years. There is also good opportunity for some products, i.e. NPKS balanced fertilizer for soil to meet



the need of macronutrients (N, P, K, and S), micronutrients (zinc, magnesium sulphate, boron, etc.), NEB to reduce the usage of Urea and during the growth stage, Bioferti and Vitamix are effective in terms of foliar application. A variety of visitors visited



the ACI Fertilizer stall at the Tea Expo. Representatives from ACI Fertilizer helped the visitors to get a better view of ACI Fertilizer's activities, products and impact in tea sector as well as in agribusiness.

Meet the Partners Program

ACI Fertilizer arranged a Meet the Partners program on 10 February 2018 at Hotel Dallas, Rajshahi. Key management personnel from ACI fertilizer including Business Director Bashir Ahmed, Asst. Marketing Manager Yusuf Alam, Asst. Product Manager Asadur Rahman, Sales Manager (North) Mustafizur Rahman Khan, Regional Sales Manager Rejaul Islam, Credit Executive Al Amin along with respective field force attended the program. The aim of the meeting was to get connected with potential customers and talk about their expectations as well as perceptions about ACI Fertilizer. Total 30



potential customers were invited to this program. At the event, they discussed basic issues and gave constructive feedback on different matters. For instance, new product expansion, promo-

tional activities, attachment of more field and promotional people, identification of skilled Territory Officer, strong engagement with DAE, etc. were the major topics discussed in this Meet the Partners Program.

Sonalika Partners' Day



ACI Motors had arranged a promotional program titled "Sonalika Partners' Day" throughout the country during February 2018. The Tractor Marketing Team had invited valued customers, dealers, and commission agents as guests for the events. There were 22 events celebrated in 9 regions. In these programs, about 1,300 people

participated and made a total of 177 inquiries. Spot booking for 14 tractors was also made during the Partners' Days. Additionally, delivery of tractors in Mymensingh and Sylhet areas took place during the events. To continue the spirit of event, ACI Motors is planning to organize 14 more Partners Day Program in March 2018.



Yamaha Revs Your Love Campaign

ACI Motors had arranged 'Revs Your Love' campaign to celebrate the Valentine's Day 2018. The campaign took place at Rabindra Sarobar in Dhanmondi and Mall Chattar, University of Dhaka in the Capital on 14 Feb-

ruary 2018. Other locations were CRB in Chittagong and Shivbari Moar in Khulna. As part of the program, couples took a selfie in the Yamaha Booth and won exciting prizes. There were three winner couples in every hour

who received Yamaha t-shirts. Among the participants, three couples were selected as grand winners through a facebook selfie contest and awarded with attractive couple's wrist watch.



Yamaha Happy Customer Day Celebration

ACI Motors has arranged a series of Yamaha Happy Customer Days starting from 12 February 2018. Yamaha Happy Customer Day is an occasion for celebration with Yamaha's valued customers through differ-

ent events and activities such as game show, bike rally and raffle draw for participants. Another major attraction of the day was the Bike Show presented by KB rides. With the support of local Yamaha Showrooms, the Happy

Customer Days were celebrated in Chittagong, Cox's Bazar, Chapai Nawabganj, Natore, Feni, Kustia, Jessore, Barisal, Satkhira and Chuadanga throughout the month of February 2018.



Study Shows How Plants Use 'Baits' to Trap Pathogens

A study published in *Genome Biology* shows how plants use 'baits' to recognize and trap disease-causing pathogens before infection can start. Ksenia Krasileva and her team from Earlham Institute, together with researchers from The Sainsbury Laboratory, used phylogenetic analyses to identify how these 'bait' genes are distributed throughout different wild and domestic grasses, including crop plants such as wheat, barley, maize, and rice. Their findings could be vital in engineering crops to be resistant to emerging diseases caused by pathogens.

By studying the genetic history of the plants, the researchers found

several interesting groups that lean towards forming novel linkage with plant receptors, which were most diverse in wheat. These proteins are involved in plant stress responses in general, specifically in defense against pathogen attack. Furthermore, specific plant pathogen receptors known as nucleotide binding leucine rich repeat (NLR) proteins exhibited the ability to recognize some of the signals linked to disease-causing agents. By getting portions of proteins coded by other genes, which are often the target of pathogen infection, NLRs act as an 'integrated defense decoy'.

Pathogens that are harmful to plants are continually evolving, thus, the researchers are hoping to develop new proteins with specifically integrated domains that give resistance to plant pathogens, particularly new threats to the important crops.

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



Researchers Monitor Photosynthesis in Soybean Using Invisible Light

Researchers from the University of Illinois set up twelve-foot metal poles with long outstretched arms in a Midwestern soybean field to monitor an invisible array of light emitted by crops. This light can provide information on the plants' photosynthetic performance during growing season, according to their study published in the *Journal of Geophysical Research-Biogeosciences*.

"Photosynthetic performance is a key trait to monitor as it directly translates to yield potential," said Kaiyu Guan, an assistant professor in the College of Agriculture, Consumer, and Environmental

Sciences (ACES) and the principal investigator of this research. "This method enables us to rapidly and nondestructively monitor how well plants perform in various conditions like never before." The research team collected sun-induced fluorescence (SIF) data using hyperspectral sensors to determine how soybean plants respond to fluctuating light levels and environmental stresses. With the measurements categorized by plant growth stages, light conditions, and time scales, the results confirmed that there is a strong positive relationship between

photosynthesis and SIF.

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



Scientists evaluate the photosynthetic performance of soybeans using these towers, which use hyperspectral cameras to capture light invisible to the human eye that may one day help us predict yield on a grand scale.

Photo Credit: Image courtesy of Carl R. Woese Institute for Genomic Biology, University of Illinois at Urbana-Champaign

Green Super Rice for a Greener Revolution

A collaboration with the International Rice Research Institute (IRRI), Chinese Academy of Agricultural Sciences (CAAS), and the Bill and Melinda Gates Foundation (BMGF) has developed Green Super Rice (GSR), a new breed of rice varieties that perform well in the toughest conditions.

GSR is a mix of more than 250 different potential rice varieties that can adapt to difficult growing

conditions such as drought and low inputs. It also uses less fertilizer and no pesticides, which reduces the need for herbicides. Currently, more than 130 advanced breeding lines with these traits are undergoing national varietal testing and will soon be released in different countries as new varieties. As of August 2017, 42 GSR varieties have been developed and has been made available in 11 coun-

tries in South Asia, Southeast Asia, and East and South Africa.

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



Tomatoes with Half the Irrigation Needs

Experts from the Pharmacy Faculty and the Higher Technical School of Agricultural Engineering (Escuela Técnica Superior de Ingeniería Agronómica -- ETSIA) of the University of Seville have published a study that shows that when reducing the water used to water cherry tomato crops by more than 50%, the product not only maintains its quality, both commercially and nutritionally, but it also even increases the level of carotenoids, compounds of great interest in the food-processing industry. In addition to being natural colourings, some are Vitamin-A precursors, which are beneficial for the health and have cosmetic uses.

These findings, published in the important international review

Food Chemistry, are the result of a three-year study, during which the researchers analyzed two varieties of cherry tomatoes and other new types of tomatoes, in both autumn and spring cycles in ETSIA's own fields. The "controlled watering deficit," which is what this technique is called, consists of reducing watering as much as possible during the most resistant phase of cultivation and to increase the supply of water at the start of the phase of cultivation that is most sensitive to stress.

"This is not about using half the water for no reason, but rather studying the water status of the plants and, knowing their needs, watering the crop in the right way and at the best time," explains the Agroforestry Sciences teach-

er Mireia Corell. This methodology benefits the farmer, opening a new area in the line of water-sustainable products that are differentiated in the market by reduced consumption of both water and energy. And, on the other hand, it brings added value to the consumer who buys a better quality product in terms of nutrition and environmental sustainability.

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



These are tomatoes grown using half the water.

Photo Credit: University of Seville

Temperature Resilient Crops Now an "Achievable Dream"

A new study reveals that breeding temperature resilient crops can now be achieved. A research conducted at John Innes Centre (JIC) has established a genetic link between increased temperature and the problem of "pod shatter" (premature seed dispersal) in oilseed rape. The research, led by Dr. Vinod Kumar and Professor Lars Østergaard, reveals that pod shatter is enhanced at higher temperature across diverse species in the Brassicaceae family which also includes cauliflower, broccoli, and kale.

To study the effects of temperature on seed dispersal, Dr. Xinran Li, a postdoctoral

researcher, monitored fruit development in Arabidopsis at three different temperatures 17, 22 and 27 degrees centigrade. This showed that cell wall stiffened at the tissue where pod shatter takes place, was enhanced by increasing temperature, and occurs across the Brassicaceae family, including oilseed rape. The team established the genetic mechanism which organizes plant response to higher temperatures. Previous studies have shown that pod shatter is controlled by a gene called INDEHISCENT (IND). This study reveals that IND is under the control of a thermo-sensory mechanism in which

a histone called H2A.Z is a key player.

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



Pod shatter in oilseed rape - problem for farmers worldwide. Photo Credit: Andrew Davis John Innes Centre

Scientists Discover Secret of How to Triple Number of Sorghum Grains

In new research reported by scientists at Cold Spring Harbor Laboratory (CSHL), a simple genetic modification can triple the grain number of sorghum, a drought tolerant plant that is an important source of food, animal feed, and biofuel in many parts of the world. Led by CSHL Adjunct Associate Professor and research scientist with USDA's Agricultural Research Service (ARS) Doreen Ware and ARS colleague Zhanguo Xin, the study focused on high-yield strains of sorghum that were generated several years ago by Dr. Xin.



Evidence of the team's success: the left image shows a "terminal spike" with several sessile spikelets (round) which contain seeds, and several pedicillate spikelets (white arrows), narrow oblong compartments which don't "fill" with seeds and don't form grains. In a genetic variant (right) all the spikelet's are sessile and contain grains.

An unknown genetic mutation introduced by chemical mutagenesis resulted in an increase in the number of grains that each plant produced. Sorghum grains are produced in clusters of flowers that develop from a panicle, which produces hundreds of flowers. Only one of the two types of sorghum flowers, known as the sessile spikelet (SS) is fertile. The other flower type, called pedicellate spikelets (PS),

do not make seeds. In the modified plants Dr. Xin produced, however, both SS and PS produced seeds, tripling each plant's grain number.

To understand the cause of this change, Ware and her team sequenced the genomes of the modified plants, and they found that the key mutations affected a gene that regulates hormone production. Plants carrying the mutation produce abnormally

low levels of the jasmonic acid, particularly during flower development. They learned that jasmonic acid prevents PS from producing seeds. The team now hopes to apply the same strategy to increase grain production in related plants that are vital in the global food supply, such as rice, corn, and wheat.

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

Backyard Chickens Need More Regulation

Historically, keeping backyard chickens was a response to economic hardship -- whether it was in the Depression or during wartime food rationing. But a growing number of chickens today are roaming or are caged on small family farms and in backyards, as suburban and urban poultry gains more popularity among consumers. Many people prefer to raise their own food because they think it will be safer, fresher and more nutritious than that which was commercially raised. Yet, a new University of California, Davis, study suggests that local ordinances are not adequately addressing human and animal health when it comes to backyard poultry, and laws that do exist do not keep pace with those for commercial growers.

"Ironically, as people seek to take control over the way their food is grown, most ordinances fail to ensure basic health and welfare for birds and humans," said Catherine Brinkley, assistant professor of community and regional development, in the College of Agricultural and Environmental Sciences. She is the primary author of the study. The paper, "A Method for Guarding Animal Welfare and Public Health: Tracking the Rise of Backyard Poultry Ordinances," was recently published in the Journal of Community Health.

What needs to happen, the author recommends, is that there be more laws that mandate vaccinations, manure management and general animal welfare in urban and suburban settings

similar to policies and regulations imposed on commercial chicken ranches. "Provisions governing animal slaughter and routine veterinary care are rare, presenting a concern for monitoring and intervening in public health crises," the study says. "In addition, shelters anticipate higher poultry intakes, particularly as unwanted birds are turned loose to become strays."

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



Photo Credit: UC Davis

Better Milk from Cows That Forage

Omega-6 and omega-3 fatty acids are essential human nutrients, yet consuming too much omega-6 and too little omega-3 can increase the risk of cardiovascular disease, obesity, and diabetes. Today, Americans consume 10 to 15 grams of omega-6 for every gram of omega-3. Previous studies have shown that consuming organic beef or organic dairy products lowers dietary intakes of omega-6, while increasing intakes of omega-3 and conjugated linoleic acid (CLA), another valuable, heart-healthy fatty acid.

In a collaborative research project including the University of Minnesota, Johns Hopkins University, Newcastle University

in England, Southern Cross University in Lismore, NSW Australia, and the Aarhus University Hospital in Denmark, researchers have found that cows fed a 100% organic grass and legume-based diet produce milk with elevated levels of omega-3 and CLA, and thus provides a markedly healthier balance of fatty acids. The improved fatty acid profile in grass-fed organic milk and dairy products (hereafter, "grassmilk") brings the omega-6/omega-3 ratio to a near 1 to 1, compared to 5.7 to 1 in conventional whole milk.

Co-author Dr. Bradley Heins, Associate Professor of Dairy Science at the University of Minnesota's West Central

Research and Outreach Center points out that "With growing consumer demand for organic dairy products, producers may be able to expand their profitability and market share by converting to grass-based pasture and forage-feeding systems."

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





Believe it or not!



- Eggplants aren't really vegetables, they're berries. Which isn't that strange, considering other fruits are commonly mistaken for vegetables.
- Eggplants and tomatoes are actually related. They both belong to the nightshade family with the famous literary poison – deadly nightshade. But don't worry, eggplant isn't toxic (at least not in normal amounts).
- Some varieties of eggplant produce white, lavender, green or red-striped fruit that can be elongated, rounded or pea-shaped.
- You may not immediately recognize eggplant on a menu abroad. Its many names include: Brinjal (India), Berenjena (Spanish), Eggplant (US English), Patlican (Turkish) and Melanzana (Italian).
- The eggplant consists of 95% water and 50% of the volume is air!



Nutrition Chart

Eggplant (100 grams)	
Calories	25
Sugar	3.5 g
Total Fat	0.2 g
Protein	1 g
Potassium	229 mg
Sodium	2 mg
Dietary fiber	3 g

Source: USDA

Tips

- Eggplant is a rich source of dietary fibers, vitamins C, K and vitamins of the B group, and minerals such as copper, phosphorus, and magnesium.
- Juice made of leaves and roots of eggplant can be used in the treatment of throat and stomach disorders, cough, asthma, toothache, and rheumatism and skin problems.
- Delphinine is a substance isolated from eggplant that exhibits anti-tumor properties.
- Modern-day scientists found that the Black Magic variety of eggplant contains nearly three times the amount of antioxidant phenolic they found in other eggplant types. Phenols are known to be one of the most powerful free radical scavengers, which can prevent cancer development and heart disease.
- Scientists have found eggplant to contain powerful antioxidant phenols, including the anthocyanin phytonutrient nasunin, which is important for neutralizing damaging free radicals in your body.

Sharing is caring!

Name "eggplant" originates from the 18th century when cultivars with small, white fruit, shaped like hen's egg were popular. Eggplant is known as "crazy apple" in Italy due to widespread belief that diet rich in eggplants leads to madness.

People in the U.K. called them

aubergines. The word "aubergine" goes all the way back to the ancient Indian language Sanskrit. The eggplant is believed to have originated in India, where it is considered to be the King of Vegetables.

The word "eggplant" that is used in North America comes from

British-colonized India, where at the time, a small, white, egg-like variety of the vegetable was all the rage.

Japan even has a proverb about eggplant:

"The happiest omen for a New Year is first Mount Fuji, then the falcon, and lastly eggplant."



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.

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