

Extra Job Opportunity for Tractor Operation to cross Canals, Marshlands & Rivers

Bangladesh is a land full of small canals, rivers and marshlands. Crossing rivers is always a challenge for tractor rental service providers in parts of the country. Through continuous innovation from International Tractor Ltd. (ITL) - Sonalika Tractor manufacturer, R&D & ACI Motors product development engineers, all the engine parts of Sonalika tractor were made well-sealed. Moreover, oil immersed brake was introduced. So, by only securing air cleaner and exhaust pipe, any Sonalika tractor user can easily cross small canals and rivers of up to 5 feet depth. When other tractors have

very confined mobility around the small canals, rivers and marshlands, Sonalika takes a great initiative to overcome the barrier. With the Sonalika tractors, farmers as well as tractor rental service providers are getting more land to cultivate. This added feature is increasing their daily income and subsequently improving their lifestyle. It was only made possible due to the upgraded technology used in Sonalika Tractor.

Dr. F H Ansarey
Managing Director & CEO
ACI Agribusiness



The picture demonstrates Md. Abdur Rashid of Khutumara Village, Lalmonirhat crossing Dharla River every day to expand his farm mechanization service business and earn extra profit with his Sonalika Tractor of ACI Motors.

Contents

- 3 Biotech Corner
- 4 - 8 Events and Activities
- 9 - 13 Agri-tech and Communication
- 14 - 15 Readers' Corner

3

Wheat Variety Development: Future Challenges of Traits and Technique

The bread wheat is hexaploid (*Triticum aestivum* with 42 chromosomes) and is a winter crop of about 110 days in Bangladesh.



4

Small Changes Deliver Big Results for Potato Dealers & Farmers



ACI Field Crops Seed has organized a win-win interactive program entitled "Training Workshop for Seed Dealers and Farmers" in October 2017.

9

Sustainable Aquaculture in World's Oceans?

Covering 70 percent of Earth's surface, the world's oceans are vast and deep. So vast, in fact, that nearly every coastal country has the potential to meet its own domestic seafood needs through aquaculture.



EDITORIAL BOARD

Advisory Editor

Prof. Lutfur Rahman
Advisor, ACI Agribusiness

Editor

Shamim Murad
Head of Partnership &
Business Development
ACI Agribusiness

Members

Mohammad Muhebbullah Ibne Hoque
Product Development Service Manager
ACI Seed

Yusuf Alam
Asst. Marketing Manager
ACI Fertilizer

Tanmoy Majumder
Assistant Product Manager
ACI Motors

Abrar Shahriyar Mridha
Asst. Manager
ACI Agrolink

Adeeba Raihan
Senior Scientist
Advanced Seed Research
& Biotech Centre

Mahmudul Haque Jishan
Planning Executive
Premiaflex Plastics Ltd.

Wheat Variety Development: Future Challenges of Traits and Technique

The bread wheat is hexaploid (*Triticum aestivum* with 42 chromosomes) and is a winter crop of about 110 days in Bangladesh. The seeds are usually sown in mid-November and the crop is harvested by about mid-March at the latest. The yield of the crop is quite low 3.06mt/ha on average of more than 436,814 hectares (2014-15). However, the yield in other wheat growing country does vary between 4.00 and 6.00mt/ha.

With the increase in population, decline in rice consumption, increase in temperature, and dryness of the environment added with increased salinity in the coastal belt, there is very little scope left for growing wheat varieties of yields lower than 6-7 tons/ha at the farmers level. In order to reach that goal which is almost double the present yield; there is a need for identification of traits through molecular genetics leading to breeding for newer traits of demand. The end product will have to pass through G-E interaction using participatory breeding approach.

Since the early 1960s there has already been 30 plus varieties released for large-scale cultivation. The recent varieties are more tolerant to heat and also salinity than the previous ones. However, the future wheat breeding programs now depend on identification of physiological traits like high iron, zinc, gluten and protein contents in the grains of larger size. Almost in the same breadth one will ask for a variety which has a yield higher than 7 tons/ha at experimental levels with plant ideotype that supports erect flag leaf, stronger rachis, blast resistant and tolerant to dry environment with salinity resistant genes inside. This will then require identification of the gene/s responsible for such traits among the genetic resources available world over. Among techniques; use of hybridization for genes of known traits including gene pyramiding of the favorable genes, TILLING, CRISPR-Cas9,

and mutation breeding using physical agents can be utilized. Development of hybrids and GM varieties will have restricted adoption because of high cost for seed and production.

Extensive assistance of Adeeba Raihan, Senior Scientist, ASRBC, ACI Limited, is highly acknowledged.

Prof. Lutfur Rahman,
Advisor, ACI Agribusiness & Editor, Biolife



Covers the variants selected from breeding populations developed using chemical mutagens over generations of field and lab selection of plants 2015-16 season under ASRBC controlled experiments.

Events and Activities

Small Changes Deliver Big Results for Potato Dealers & Farmers

ACI Field Crops Seed has organized a win-win interactive program entitled “Training Workshop for Seed Dealers and Farmers” in October 2017. The aim of the event was to introduce lab-based disease-free tissue culture seed potato which can deliver better yields and higher profits. Two consecutive programs were arranged in Rajshahi and Joypurhat on 18 and 19 October 2017 respectively. In Rajshahi, around 163 participants attended in the training workshop. On the other

hand, around 90 participants attended in Joypurhat. Upazilla Agriculture Officer, DAE (Paba, Mohonpur); Head of Business, ACI Seed; Portfolio Manager (Potato & Maize); Product Executive (Field Crops); Regional Sales Managers and Area Sales Managers were present in the programs. The dealers felt highly encouraged to promote the tissue culture seed potato for higher profit. Moreover, the farmers were highly motivated to adopt modern technology for better yield after the event.



NEB Launching Program in Mymensingh

On 17 October 2017, ACI Fertilizer has organized a launching program of NEB at Apex NGO in Mymensingh. KBD Bashir Ahmed, Business Director of ACI Fertilizer was present there as chief guest, Mr. Md. Firoz Hossain, Sales Manager of ACI Fertilizer was present as special guest while Mr. Md. Faruk Ahmed, Area Manager attended the program with his team. 30 super value stockiest, agricultural and media personnel were present in the event and gave their valuable speech with suggestions for developing the market of the product. They especially focused on result demonstration in the farmers' field.



Events and Activities

Nitrogen Efficiency for Bioavailability (NEB) is an environment friendly product which helps to increase the efficiency of Urea usage and reduce use of Urea. NEB increases the microbial activity and suppresses the harmful microbes in the soil

which supports the plant to uptake more nutrient- especially nitrogen within shortest time and Nitrogen also sustains for a long time in the soil. ACI Fertilizer is continuously organizing regional launching and workshop program from last 2 months

NEB Workshop in Munshigonj for Potato Season



ACI Fertilizer organized a workshop on NEB on Thursday, 26 October 2017 for Department of Agricultural Extension (DAE) personnel in Munshigonj. The aim was to share the knowledge and experience regarding the product performance in potato production. KBD Bashir Ahmed, Business Director of ACI Fertilizer was present there as chief guest,

Mr. Md. Humayun Kabir, Additional Director of Department of Agricultural Extension was the special guest, while Mr. Md. Firoz Hossain, Sales Manager, Mr. Alauddin, Area Executive and Territory Officer of ACI Fertilizer were present in the program. The key discussion was on the features, benefits, application and impacts on economy of using NEB at different crops especially on potato. A decision was made to conduct result demonstration under DAE in upcoming potato season and recommend the farmers to produce quality yield at optimum cultivation cost.

Nitrogen Efficiency for Bioavailability (NEB) has given a sustainable result in potato production over a couple of years in the trial plot of BARI and farmers' field. Munshigonj is the most potential area for potato production. So the Business is giving focus in the area by conducting several workshops for traders and model farmers in October 2017.

ACI Fertilizer Participated in Agricultural Fair at Satkhira

A two-day long agricultural fair was held at Shaheed Abdur Razzak Park in Satkhira where ACI Fertilizer actively participated. The fair got momentum with the presence of thousands of people from all walks of life. It was held 30-31 October 2017. The Agro Value Chain (AVC) project of USAID and Department of Agricultural Extension (DAE) jointly organized the fair. To promote balanced fertilization; especially organic fertilizer and micronutrient, ACI Fertilizer participated in the fair while around 100 stalls showcased thousands of varieties of trees and agro inputs. Technical solution from experts was also available at ACI Fertilizer stall. Agriculturist provided usage, dosage, and applications information of fertilizer on plants. Visitors including farmers, gardeners and traders spontaneously took information from them to apply on plants later on.



Events and Activities

Farmers Campaign Program at Meherpur

An exclusive farmers' campaign program was organized at Meherpur Territory under Kushtia Area by ACI Fertilizer. The campaign took place on 18 October, 2017. Mr. Mustafizur Rahman Khan, Sales Manager of ACI Fertilizer; Mr. Abu Mohammad Sayem, Area Manager of Kushtia Area, Mr. Monirul Islam, Marketing Officer of Kushtia territory and the Promotional People participated in the event.

The objective of the program was product branding especially for Organic fertilizer, Gypsar and Bioferti. There were 50 farmer participants in the program. ACI Fertilizer Personnel prescribed the products against the problem in the field as the farmers shared their problems. Resource persons



also conducted spot farmers meeting and result demonstration in the field of model farmers.

ACI Power Tiller Service Festival 2017

ACI Motors organized Power Tiller Service Festival 2017 in October. The festival was organized in Rajshahi and Rangpur on 18 and 19 October 2017 respectively. Bismillah Machineries at Mohonpur, Rajshahi was the local organizer where around 165 existing and future customers attended the festival. In total 45 units of Power Tillers were serviced at Rajshahi as part of the event. Director Sales ACI Motors Md. Azam Ali, Sales Manager North Part Md. Shamim Ahmed, APM Md. Arafat Hossain,

RSM Rajshahi Md. Shamim Hossain, SCE Md. Abdullah Al Mamun, along with sales and service team members were present in Rajshahi.

The festival at Rangpur took place at Boruahut, Bailey Bridge, Kaunia. In total, 65 stakeholders and 28 units of power tillers were served during the day. Besides the sales and service team members, Regional Sales Manager ACI Motors Rangpur Md. Atiar Rahman, Territory Incharge Rangpur Krishibid Daholoby Reza were present at the service festival in Rangpur.



Events and Activities



Sonalika Allrounder 55 Launching



Events and Activities

On 14 October 2017, ACI Motors launched Sonalika Allrounder 55 Tractor at ACI Center, Dhaka. The newly launched tractor has an engine capacity of 55 Horse Power (HP) with 4 cylinders. Dr. F. H. Ansarey, Managing Director & CEO, ACI Agribusiness, Mr. Subrata Ranjan Das, Deputy Executive Director of ACI Motors, Mr. Sunil Sondhi, Deputy General Manager, International

Tractors Ltd. India and other higher officials of ACI Motors were present on the occasion. Later a press conference was held at the ACI Center regarding the launching event. It is estimated that, with the enhanced capacity and productivity, farmers will be able to recover their investment for the newly launched tractor in about 2 years of active operation.

Water Bangladesh International Expo 2017

ACI Motors participated in the Water Bangladesh International Expo 2017 held on 26 - 28 October 2017 at International Convention City Bashundhara (ICCB), Dhaka. The Expo was held at CEMS Global. ACI Motors showcased its drip irrigation technology products to the visitors of the expo. Drip irrigation is a technology enabled efficient irrigation method which saves water, energy and time for the farmers. Mr. MS Ramesh, Sr. Vice President, Business Development, and Mr. Abhay P. Barhate, Sr. Manager, Business Development, Jain Irrigation System, India along with Engr. A.K.M. Raisul Alam Khan, Product Development Executive, ACI Motors were present in the Expo as the key resource persons on Drip Irrigation. Other participating SBUs from ACI Motors were YANMAR Generator and ACI Water Pumps.



Sustainable Aquaculture in World's Oceans?

Covering 70 percent of Earth's surface, the world's oceans are vast and deep. So vast, in fact, that nearly every coastal country has the potential to meet its own domestic seafood needs through aquaculture. In fact, each country could do so using a tiny fraction of its ocean territory. So finds a study led by scientists from UC Santa Barbara and including researchers from the Nature Conservancy, UCLA and the National Oceanic and Atmospheric Administration. Their research, published in the journal Nature Ecology and Evolution, demonstrates the oceans' potential to support aquaculture. Also known as fish farming, the practice is the fastest-growing food sector, and it's poised to address increasing issues of food insecurity around the globe.

"There is a lot of space that is suitable for aquaculture, and that is not what's going to limit its development," said lead author Rebecca Gentry,

who recently completed her Ph.D. at UCSB's Bren School of Environmental Science & Management. "It's going to be other things such as governance and economics." According to the study, among the first global assessments of the potential for marine aquaculture, the world's oceans are rife with aquaculture "hot spots" that provide enough space to produce 15 billion metric tons of finfish annually. That is more than 100 times the current global seafood consumption. More realistically, the researchers note, if aquaculture were developed in only the most productive areas, the oceans could theoretically produce the same amount of seafood that the world's wild-caught fisheries currently produce globally, but in less than 1 percent of the total ocean surface -- a combined area the size of Lake Michigan.

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



Net pen aquaculture in deep coastal waters.
Photo Credit: NOAA

Biochar Shows Benefits as Manure Lagoon Cover

Manure is a reality in raising farm animals. Manure can be a useful fertilizer, returning valued nitrogen, phosphorus, and potassium to the soil for plant growth. But manure has problems. Odor offensiveness, gas emissions, nutrient runoff, and possible water pollution are just a few. Timing is also a problem. Livestock produce manure 24/7 -- even when it is impractical or unwise to move it to the field. Delivering manure to the field needs to be timed to nutrient needs, soil moisture levels, and temperature. How can farmers handle this timing issue, as well as other manure problems?

In cities, sewers and water treatment facilities deal with human waste. On farms, manure storage lagoons can hold the manure until the time is ripe. This solves the timing and delivery problem -- but what about odor and gas emissions? In addition to the inconvenience of odor, manure can release gases connected to air pollution and climate change. Methane, nitrous oxide, ammonia, and hydrogen sulfide are examples. Scientist Brian Dougherty and colleagues researched methods to reduce these negatives while potentially adding some positives: biochar covers. Biochar is plant matter,



Over 12 weeks, each biocover was evaluated for its effectiveness at reducing odor. The biochar could have a future use as a nutrient-rich soil amendment.

Photo Credit: Brian Dougherty

such as straw, woody debris, or corn stalks, that has been heated to high temperatures in a low- to no-oxygen environment. The result is a black, carbon-rich material similar to charcoal.

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

Adjusting Fertilizers Vital in Claypan Ag Soils

All soils are not equal. Rich loams support the world's most productive agricultural regions, including swaths of the American Midwest. But in some parts of the Midwest, including areas in Missouri and Illinois, claypan soils dominate. And where claypans reign, problems for producers abound. New research from the University of Missouri could help claypan farmers improve yields while saving costs. Claypans have a clay-rich layer beneath a layer of loose topsoil. This clay layer poses challenges for producers, according to Lance Conway of the University Of Missouri Department Of Plant Sciences. Conway studies productivity in claypans.

"Claypans are really interesting and pose some unique problems," Conway said. Those problems include erodibility. Claypans can easily erode even on fields with little slope. That's because water does not flow quickly through the clay layer, which can then lead to surface runoff.



Lead researcher Lance Conway conducts a soil test on one of the research plots used in the study he authored on claypan soils.

Photo Credit: Matt Yost

Agri-tech & Communication

Springtime erosion is often exaggerated after fresh tilling in the fields. But claypan soils often require this tilling to prevent the field from being too wet for planting. "Because claypans don't drain very well, they stay wet and cold in the spring," Conway said. "On the flipside, in the summer they dry out really easily. Then you get drought issues. You can easily get both extremes in one growing season." Another challenge with claypans is nutrient management. Nitrogen loss is the main problem, Conway said. When the cold, waterlogged soils warm up in the spring, nitrogen loss as a gas is inevitable.

Conway wanted to know if there were other aspects

of farming claypans that could be optimized to improve yields and reduce nutrient losses. He and his research team saw an opportunity in understanding phosphorus and potassium dynamics in claypans. Like nitrogen, these two nutrients are vital for crop growth -- but also likely to become runoff if there's extra. "The University of Missouri only has a general phosphorus and potassium recommendation for the whole state, but the claypan soils behave very differently from the other soils," Conway said. "We wanted to see how topsoil depth affects phosphorus and potassium management."

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

Archaeologists Find Key to Tracking Ancient Wheat in Frozen Bronze Age Box

A Bronze Age wooden container found in an ice patch at 2,650m in the Swiss Alps could help archaeologists shed new light on the spread and exploitation of cereal grains following a chance discovery. The team of archaeologists were expecting to find a milk residue left behind in the container -- perhaps from a porridge-type meal wolfed down by a hunter or herder making their way through a snowy Alpine pass. But instead they discovered lipid-based biomarkers for whole wheat or rye grain, called alkylresorcinols. The team say the discovery of these biomarkers in the residue could be used as a new tool to help archaeologists map and trace the development of early farming in Eurasia.

The domestication of plants, such as wheat, was one of the most significant cultural and evolutionary steps of our species, but direct evidence of their use in early culinary practices and economies has remained frustratingly elusive. Plants quickly degrade in archaeological deposits therefore archaeologists are increasingly using molecular techniques to look for their remains. Dr André Colonese, from BioArCh, Department of Archaeology, University of York, said: "We didn't find any evidence of milk, but we found these phenolic lipids, which have never been reported before in an archaeological artefact, but are abundant in the bran of wheat and rye cereals and considered biomarkers of wholegrain intake in nutritional studies."



Bronze Age wooden container found in an ice patch at 2,650m in the Swiss Alps.

Photo Credit: Archaeological Service of the Canton of Bern

"This is an extraordinary discovery if you consider that of all domesticated plants, wheat is the most widely grown crop in the world and the most important food grain source for humans, lying at the core of many contemporary culinary traditions. "One of the greatest challenges of lipid analysis in archaeology has been finding biomarkers for plants, there are only a few and they do not preserve very well in ancient artefacts. You can imagine the relevance of this study as we have now a new tool for tracking early culinary use of cereal grains, it really is very exciting. The next step is to look for them in ceramic artefacts," Dr Colonese added.

(Source: Successful Farming, www.agriculture.com)

Heritage and Ancient Grain Project Feeds a Growing Demand

After a century of markets dominated by a few types of wheat and white flour, ancient and heritage wheat varieties are making a comeback. Restaurants and bakeries that promote organic and local agriculture have sprouted up across the country in the last decade, meeting a rising consumer demand for tasty and nutritious foods that support an ethic of sustainability. In the Northeast, for example, Gramercy Tavern in Manhattan serves local and seasonal dishes. Its rotating menu offers "roasted beets and kale salad with einkorn and candied pistachio" and "sea urchin risotto with ancient grains and ruby red shrimp." The artisanal Wide Awake Bakery in Mecklenburg, New York, offers sourdough breads made from a variety of unconventional grains, largely sourced from its partner, Oechsner Farms, in Newfield, New York.

Marketing and economic analyses by Cornell researchers show that the demand for these unusual grains outstrips supply, and food lovers are willing to pay more for bread, pasta and baked goods made from them. Still, since older varieties and ancient forms of wheat such as emmer and einkorn have been out of mainstream production for close to a century, little was known about what varieties might be best-suited for organic growing in the region. A Cornell-led project provides research-backed, farm-to-table information on which modern, ancient and heritage wheat varieties



This is emmer grain from field trials at Cornell.
Photo Credit: June Russell, GrowNYC's Greenmarket Program

are most adapted for Northeastern and north-central climates under organic conditions, best processing practices, avenues for marketing them, and how these varieties fare as bread, pasta and baked goods. Results from the Value-Added Grains for Local and Regional Food Systems project were summarized in a paper, "Evaluation of Wheat and Emmer Varieties for Artisanal Baking, Pasta Making and Sensory Quality," published this year in the Journal of Cereal Science.

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

Protein Produced With Electricity to Alleviate World Hunger

A batch of single-cell protein has been produced by using electricity and carbon dioxide in a joint study by the Lappeenranta University of Technology (LUT) and VTT Technical Research Centre of Finland. Protein produced in this way can be further developed for use as food and animal feed. The method releases food production from restrictions related to the environment. The protein can be produced anywhere renewable energy, such as solar energy, is available. "In practice, all the raw materials are available from the air. In the future,



Sample from study.
Photo Credit: Lappeenranta University of Technology, LUT

the technology can be transported to, for instance, deserts and other areas facing famine. One possible alternative is a home reactor, a type of domestic appliance that the consumer can use to produce the needed protein," explains Juha-Pekka Pitkänen, Principal Scientist at VTT.

Along with food, the researchers are developing the protein to be used as animal feed. The protein created with electricity can be used as a fodder replacement, thus releasing land areas for other purposes, such as forestry. It allows food to be produced where it is needed. "Compared to traditional agriculture, the production method currently

under development does not require a location with the conditions for agriculture, such as the right temperature, humidity or a certain soil type. This allows us to use a completely automatised process to produce the animal feed required in a shipping container facility built on the farm. The method requires no pest-control substances. Only the required amount of fertiliser-like nutrients is used in the closed process. This allows us to avoid any environmental impacts, such as runoffs into water systems or the formation of powerful greenhouse gases," says Professor Jero Ahola of LUT.

(Source: Successful Farming, www.agriculture.com)

Feed Intake Study in Beef Cattle Could Lead to More Efficient Breeds

A change is coming to the cattle seedstock industry. Breed associations have long been interested in finding the genetic basis for feed efficiency, with the aim of breeding more efficient animals. But the first step -- accurately measuring how much cattle eat across different life stages and diet types -- has been a missing piece. A new study from the University of Illinois helps fill the gap. "Grain intake in the feedlot is relatively easy to measure and the industry now has a substantial number of feed intake records. But forage intake while a cow is grazing is extremely difficult to measure. We need to get a handle on that to really capture feed efficiency for the entire beef production system," says Dan Shike, associate professor of beef cattle nutrition in the Department of Animal Sciences at U of I.

The concern relates to the fact that intake regulation varies depending on diet type. In other words, a cow can fill up on forages before meeting her basic nutritional requirements. The same cow being fed grain in a controlled setting like a feedlot will likely meet those requirements on less feed. However, feed intake evaluations are typically done in the feedlot, potentially misrepresenting the efficiency of the animal over her lifespan. "Prior to our study, there were limited data evaluating the relationship of intake on a grain diet with intake on a forage diet. If they are related, we may be able to use the intake data we have from the feedlot to extrapolate throughout the cow's life," Shike explains.

Shike and a large team of collaborators from 11 institutions set out to determine if there was a relationship



Dan Shike with the GrowSafe system.
Photo Credit: David Riecks

between feed efficiency in forage-fed cattle and in grain-fed cattle. Both heifers and steers were fed out of a GrowSafe system, which precisely tracks intake to individual animals. Heifers were fed forage during a growing period of 70 days, then switched to grain for a 70-day finishing period. Steers were fed grain for both periods. The team looked for relationships between dry matter intake and average daily gain in the two periods, and found a strong correlation for both heifers and steers for dry matter intake. "The study suggests that dry matter intake is repeatable across varying stages of maturity and diet types in cattle, and accurate feed efficiency measures can be obtained in either the growing or finishing period," Shike says. "And our results show that measures of dry matter intake and feed intake in heifers are relevant, no matter what they were fed."

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



Believe it or not!



- In 1493, explorer Christopher Columbus found pineapples on Guadeloupe Island in the Caribbean.
- It takes almost 3 years for a single pineapple to reach maturation.
- American colonists regarded pineapples as a luxurious treat because of their rarity and cost.
- A pineapple is neither a pine nor an apple. The name was given to it by early European settlers in America who thought it looked like a pine cone.
- Pineapples contain the bromelain enzyme, which can break down proteins, so you can use them to tenderize meat.



Nutrition Chart

Pineapple (100 grams)			
Calories		50	
Sugar		10 g	
Total Fat		0.1 g	
Protein		0.5 g	
Potassium		109 mg	
Sodium		1 mg	
Dietary fiber		1.4 g	

Source: USDA

Tips

These are the most abundant vitamins and minerals in pineapple.

- **Vitamin C:** A vitamin that has antioxidant properties and is required for immune function and healthy skin (10, 11).
- **Manganese:** An essential trace mineral usually found in high amounts in vegetables, fruit, whole grains, and legumes.
- **Copper:** A trace mineral that is critical for many important functions in the body, such as being a cofactor in the production of red blood cells (12).
- **Folate (B9):** Part of the vitamin B family, important for normal cell function and tissue growth and particularly important for pregnant women

Sharing is caring!

When it drizzles on a sunny day in Hawaii, locals call it “**pineapple juice**”. And when older parents are “surprised” by a pregnancy, the baby is called a “**ratoon crop**”, the bonus fruit that grows after a pineapple plant’s initial harvest.

In Australia, “**to get the wrong (or rough) end of the pineapple,**” means to get a bad deal.

In the 1930s in Britain, “**being on the pineapple**” became a phrase for being on the dole.



ACI Agribusinesses

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

www.aciagribusinesses.com



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.