BIOLIFE

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Mineral Bricks for Dairy Industry in Bangladesh

Minerals Licking Brick is quite popular for livestock farming worldwide as it ensures that animals fulfill their nutrient needs on their own. ACI Animal Health introduces new dosage form -PEPRICK B5 (Minerals Licking Brick) for the first time in Bangladesh. This Minerals Licking Brick is enriched with Himalayan Rock Salt, source of trace minerals, Vitamin E - Selenium and Fructose. Minerals ensure proper growth and productivity and Vitamin E - Selenium maintains reproductive health. The unique thing about PEPRICK B5 is that animals themselves will lick the brick as per their requirement and fulfill their nutrient requirements. Generally, for livestock farming in Bangladesh, minerals are supplied to the animals as feed additives. As a result, there are high chances of inadequate mineral supply due to inappropriate mixing or other issues in feed. Minerals Licking Brick of ACI ensures appropriate nutrients supply. Besides, this dosage form also prevents many vices of animal like- PICA, Tongue swing, etc. caused by mineral deficiencies.

Livestock farmers are benefited with maximum production with low production cost. This innovation from ACI will ensure adequate production of meat and milk. We hope that such innovative solutions will play a vital role for the development of livestock sector in Bangladesh.

Dr. F H Ansarey
Managing Director & CEO
ACI Agribusiness

https://youtu.be/_Y9mBFw_NVc

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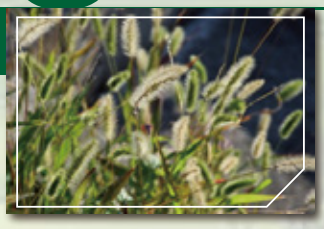
Genetic Mechanism found to Enhance Cereal Crops' Yield



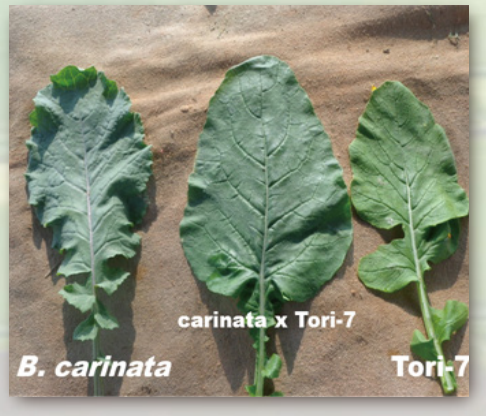
A research team from the Donald Danforth Plant Science Center led by Andrea Eveland has identified a genetic mechanism that could increase the yields of cereal crops.

Development of hexaploid Brassica

Brassica contains many important crop plants, which includes mustard. There are six cultivated species of the genus represented by the genomes A, B and C. There are also three allotetralpoid species- B.napus (AACC=10+9 =2x=2n=38), B.juncea (AABB=10+8=2x=2n=36) and B.carinata (BBCC=8+9 2n=2x==34). As we know, genes that control specific traits in diploid organism gets doubled when the same genomic composition is doubled to auto tetraploid; again, each genic combination acts in controlling all forms/types of traits of all organism. The B. napus has a narrow gene pool from intensive breeding for high-quality oil and meal traits, while the B. nigra is undeveloped landrace crop, which is rich in genetic diversity. B. nigra produces black mustard seed which is hardy, suitable as a rainfed crop under varied climatic conditions and provides good yield under extreme conditions. The B genome of B. nigra is an important source of useful genes including disease and pest resistance and other biotic as well as abiotic stress tolerances. The genome of B. carinata exhibits resistance to drought, pod shattering and better performance under saline and late sowing conditions.

Developing a “super” Brassica has been of great interest to

scientists both in Bangladesh and worldwide. Research has been undertaken to develop variety having hexaploid genomic constitution (AABBCC) for cultivation. This attempt, in fact, will be very good and high-level contribution to scientific knowledge as well as materials having wider adaptation through genes of different species in combination.



To develop such a variety, multiple techniques are used in combination. This includes hybridization among the parents of definite genome combination followed by colchicine treatment of the F1 germplasm. These materials are tested through chromosome number identification systems. In case of brassica hexaploidy covering ABC genomes marker-assisted selection and followed by field selection will reduce gestation period of breeding. In case of this hexaploidy having 27 (8+9+10) chromosomes from 3 genomes when duplicated will be 54. but there is, however, possibility of losing one or two sets of chromosomes which, if takes place will create variations of different degree in F2 and subsequent selections. According to scientific information available in Bangladesh, hexaploidy brassica populations of F2 have produced higher yields than their parents. This indicates that further selection from the transgressive segregant will help selection for higher-yielding lines. Also, these lines will have a higher tolerance to stress conditions than the parents.

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

Prof. Lutfur Rahman,
Advisor, ACI Agribusiness and Advisory Editor, Biolife

ACI Seed Field Visit in Comilla

ACI Seed organized a field visit on 20 January 2018 at Comilla. The aim of the field visit was to observe the performance of ACI seed's potato variety 'Diamant' in different plots of 15 local farmers and exchange views with the local stakeholders. Moreover, observing production practices to assess the potential of the variety was in the agenda. ACI Seed team emphasized the role of stakeholders including sales team, dealers, retailers, and farmers in the seed supply chain. The fifteen farmers had cultivated ACI Seed's potato variety Diamant in their 5 acres of land during the Rabi season. Other participant farmers of the program also recognized the performance of the variety in the field due to the crop's faster growth and excellent quality. About 50 local farmers were highly motivated to cultivate the ACI Seed's Diamant potato variety next year. Seed dealer Mr. Mominul Haque from M/S Hazi Beej Vandar and Mr. Abdul Kader Sarker from M/S Mayer Doa Beej Vandar also participated in the program. They are expecting to sell 150 MT of ACI Seed's Diamant potato seed next year. From ACI Seed, Mr. Sudhir Chandra Nath, Head of Business along with Area Sales Manager, and Portfolio Manager (FC) attended the filed visit program.

ACI Fertilizer launched Soil Diagnosis Center at Nilphamari

On 25 January 2018, ACI Fertilizer launched a Soil Diagnosis Center at Sadar, Nilphamari. The center started as a joint initiative with Soil Science Division of Bangladesh Agricultural University (BAU). Mr. Md. Majedul Islam, UAO of Sadar, Nilphamari was present as the chief guest while Mr. ABM Ferdous Habib, Research Assistant of Soil Science Division of BAU was the special guest. Mr. Aminur Rahman, Ex-Chairman of

Chapra Union, Nilphamari presided over the program. Representatives from Department of Agricultural Extension (DAE), M/S Ovi Enterprise (local business), and 40 model farmers were present in the inaugural ceremony. Besides, Mr. Md. Jahidul Islam, Product Development Officer along with Mr. Rejaul Islam, Zonal Sales Manager participated in the inauguration program from ACI Fertilizer. Determining the pH and fertility level through soil testing is the first step in the planning of a sound nutrient management program. Pre-plant media analysis provides an indication of potential nutrient deficiencies, pH imbalance or excess soluble salts. This is particularly important for growers who mix their own media. Media testing during the growing season is an important tool for managing crop nutrition and soluble salts levels. Generally, farmers apply fertilizer in land without any proper analysis of the soil quality. The newly launched Soil Diagnosis Center is expected to bridge the gap and help local farmers for effective nutrient management for better yield.

ACI Fertilizer Regional Strategy Workshop at Bogra

ACI Fertilizer conducted its North Regional Strategy Workshop on 13 January 2018 at Hotel Siesta, Bogra. Business Director Mr. Bashir Ahmed attended the workshop along with Sales Manager Mr. Md. Mustafizur Rahman Khan, Asst. Marketing Manager Mr. Yusuf Alam, Asst. Product Manager Mr. Md. Asadur Rahman and other officials of ACI Fertilizer. Analysis of business activities as well as outcomes for the current season was the main agenda of the workshop. Key topics of discussion included portfolio strategy, sales and credit strategy, time and territory management, and credit management regarding the fertilizer business were discussed in different sessions. The management shared their experience and different business scenario during the workshop. Field force restructuring was also an important deliberation point for the workshop to meet the 3rd quarter of 2017-18 sales target. The Regional Strategy Workshop came to an end with a refreshing cultural program.

Integrated Marketing Communication for NEB & Ratno

ACI Fertilizer is promoting NEB and NPKS Fertilizer-Ratno through extensive integrated marketing communication for past couple of months. As part of these efforts a number of roadshows, leaflet, poster, festoon, etc. are being used vastly. In January 2018, several activation programs took place at different spots of Netrokona. ACI Fertilizer had arranged different campaigns to increase awareness on the effectiveness of both products among the end users. Different demonstration, training and partnership programs in collaboration with Department of Agricultural Extension (DAE) has been conducted by field force. The products also received broader coverage from all kind of online, print and electronic media.

Nitrogen Efficiency for Bioavailability (NEB) is a blend of natural Root Exudates that maximizes microbial activities in the soil. Plants get more of the N for a longer period of time by using NEB which assists to provide significant growth advantages of plants. NEB is now applied to increase its uptake and decrease environmental impact by reducing usage of urea fertilizer. On the other hand, Ratno is a balanced fertilizer containing a proper mixture of Nitrogen (N), Phosphorus (P), Potassium (K) and Sulfur (S) which are most important nutrients for yield. Generally, farmers apply single fertilizer which is not sufficient for multi-cultivating lands. To bridge the gap, "Ratno" provides balanced nutrients to soil which ensures timely yield, growth, flowering and fruiting cycle.

ACI Motors' Purchase Point Improvement Program

ACI Motors started its Purchase Point Improvement Program through the inauguration of an elegant display center for Sonalika Tractors at Royal Motors, Jhenaidah on 1 January 2018. The inauguration program included the meeting of local stakeholders i.e. drivers and sales agents, tractor roadshow, cultural program etc. To meet the growing need for farm mechanization, ACI Motors is continuously expanding its presence countrywide while ensuring great after sales service for the customers.

Motorcycle Riding Training by Yamaha

Yamaha Motorcycles Bangladesh - ACI Motors Limited successfully completed the 5th and 6th sessions of Motorcycle Riding Training on 6 and 27 January 2018 respectively. The training sessions were organized at BG Press Sports and Recreation Club ground, Dhaka. The training program started in October 2017 to train new and prospective motorcycle riders for a safer riding experience. The majority of the participants in this training are youths. To facilitate the participation of both male and female, separate dedicated trainers and other necessary arrangements were made available during the training events.

New Yamaha Platinum Dealer Point at Mirpur-2

On 18 January 2018, a new Yamaha Platinum Dealer Point was inaugurated at Mirpur-2, Dhaka. With a grand opening ceremony, the showroom was inaugurated by Dr. F H Ansarey, Managing Director, ACI Motors and the young Speed Star of Bangladesh National Cricket Team, Taskin Ahmed. Mr. Kumamoto Kaichi, Senior Supervisor, Yamaha Motor Corporation Limited, Japan; Mr. Subrata Ranjan Das, Executive Director, ACI Motors Ltd. and other senior executives of Yamaha were also present in the program. Besides, Ms. Maksuda Akhtar Prioty, , Miss Ireland was present at the inauguration of the new showroom. Crescent Enterprise, the new platinum dealer of Yamaha, has all the advanced facilities with both Sales and Service sections in a wide area of 3700 square feet and 8 Service Bays. The address is Crescent Enterprise, 3/8 Uttar Pirerbag 60 Feet Road Main Road, Mirpur-2, Dhaka-1216.

Yamaha's Platinum Dealer Program has been developed to highlight the dealers who show exceptional levels of customer service for sales and service. ACI Motors is the sole distributor of Yamaha Motorbikes and its spare parts in Bangladesh. Yamaha presently has 37 dealer points, known 3'S (Sales, Service, Spare parts), all over the country.

Genetic Mechanism found to Enhance Cereal Crops' Yield

A research team from the Donald Danforth Plant Science Center led by Andrea Eveland has identified a genetic mechanism that could increase the yields of cereal crops. The team performed the research in Setaria viridis, a grass that is closely related to economically important cereal crops and bioenergy feed stocks such as maize, sorghum, switchgrass, and sugarcane. In their study, the scientists mapped a genetic locus in the S. viridis genome that controls growth of sterile branches called bristles, which are produced on the grain-bearing inflorescences of some grass species. They discovered that these bristles become spikelets that produce flowers and grain. The conversion is determined and regulated by a class of plant hormones called brassinosteroids (BRs), which modulate a range of physiological processes in plant growth, development and immunity.

The study also showed that localized disruption of BR synthesis can lead to the production of two flowers per spikelet rather than the single one that it typically forms. Eveland said that the discovery of the BR-dependent phenotypes represents two potential avenues for enhancing grain production in millets, including subsistence crops in many developing countries that remain largely untapped for genetic improvement.

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

Drought Defense: Root Microbiome

Just as the microorganisms in our gut are increasingly recognized as important players in human health and behavior, new research from the University of Toronto Mississauga demonstrates that microorganisms are equally critical to the growth and health of plants. For example, plants that are able to recruit particular bacteria to their root microbiomes are much more drought resistant than their fellows, says UTM PhD candidate Connor Fitzpatrick.

The plant's root microbiome is the unique community of micro-organisms living in and on plant roots. Similar to the gut microbiome in animal species, the root microbiome is the interface between a plant and the world. The root microbiome is responsible for important functions such as nutrient uptake and signals important to plant development. Fitzpatrick's study is published in the latest issue of the Proceedings of the National Academy of Sciences. His exploration of the role of the root microbiome in plant health could eventually assist farmers to grow crops under drought-ridden conditions.

For the study, Fitzpatrick grew 30 species of plants found in the Greater Toronto Area from seed in identical soil mixtures in a laboratory setting. These included familiar plants like goldenrod, milkweed, and asters. The plants were raised for a full growing season (16 weeks), with each species grown in both permissive and simulated drought conditions. Fitzpatrick's research explores the commonalities and differences among the root microbiomes of the various host plant species, dividing the microbiomes into the endosphere (microbes living inside roots) and rhizosphere (microbes living in the soil surrounding roots). He found variation across the 30 species, with related species having more similarity between microbiomes than diverse species.

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

Fitzpatrick grew 30 species of plants found in the Greater Toronto Area including familiar plants like goldenrod, milkweed, and asters.

Photo Credit: Connor Fitzpatrick

Wild Rice from Australia to Boost Global Food Security

Professor Robert Henry from the Queensland Alliance of Agriculture and Food Innovation (QAAFI) have mapped the genetic family tree of wild rice growing in northern Australia's crocodile-infested waters. According to Professor Henry, wild rice could help boost global food security as its valuable traits such as drought tolerance and pest and disease resistance – can be bred into commercial rice strains.

"Northern Australia's wild rice contain a wealth of untapped genetic diversity and at least two species are very closely related to domesticated rice, so they can be cross-bred with this species," Professor Henry said. The research revealed that in the era when the ancient human ancestor known as Lucy lived in Africa, a genetic divergence occurred in the rice variety that is now found only in northern Australia. This divergence led to the Asian and African rice species commonly used in commercial rice production today. Professor Henry added that Australian wild rice may have more beneficial health qualities than other rice species. A University of Queensland (UQ) doctoral thesis study on the grain quality of Australian wild rice showed the species had the lowest "hardness" of cooked rice, and a higher amylose starch content.

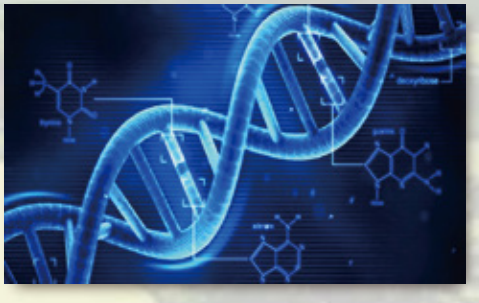
(Source: Crop Biotech Update, International Service for Acquisition of Agri-Biotech Applications. www.isaaa.org)

Digging Deep into Distinctly Different DNA

A University of Queensland discovery has deepened our understanding of the genetic mutations that arise in different tissues, and how these are inherited. Researchers from UQ's Queensland Brain Institute, led by Dr Steven Zuryn, found the rates of genetic mutations in mitochondrial DNA vary across differing tissue types, with the highest rate occurring in reproductive cells.

"Mitochondria are known as the cell's power plant -- they are found in all animal and human cells -- and in humans they generate about 90 per cent of the body's energy from the food we eat and the oxygen we breathe," Dr Zuryn said. "In addition to regular DNA, which is contained in the nucleus, each cell also contains DNA in the mitochondria. Mitochondrial DNA is only passed down from the mother's side, and transmits the genetic information from one generation to the next." The team studied the transparent roundworm (C. elegans), which shares about 60-80% of the same genes as humans, to shed light on the importance of mechanisms regulating the frequency of gene mutations in different cells and organs. "C. elegans and humans share very similar mitochondria, and it is a useful organism as we can genetically tease apart the mechanisms of what is happening at a cellular level," he said. The researchers developed an exceptionally pure method of isolating mitochondria from specific cells in the body to study them in detail.

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

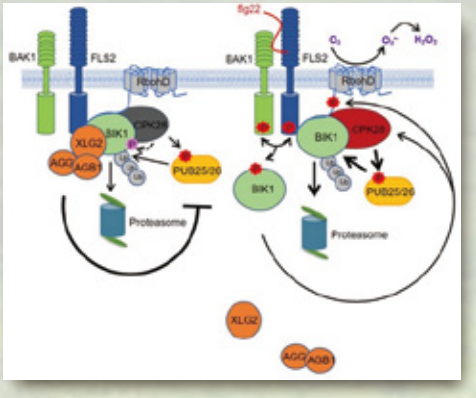


Scientists Find "Thermostat" in Plant Immunity

A research conducted at the Institute of Genetics and Development Biology of the Chinese Academy of Sciences (CAS) led by Zhou Jianmin has discovered how plants use a sophisticated mechanism to accurately control immune responses.

The research team previously found that a protein kinase called BIK1 is a central player that relays signals from multiple immune receptors to different cellular defenses. BIK1 is a rate-limiting component, whose phosphorylation and accumulation are central to immune signal propagation. In the study, they show that a pair of ubiquitin E3 ligases, PUB25 and PUB26, that are responsible for adding poly-ubiquitin chains to BIK1, and both CPK28 and the heterotrimeric G proteins regulate BIK1 stability through PUB25/26. In the resting state, the immune receptors and BIK1 are not activated, and plant immunity is regulated as heterotrimeric G proteins that directly inhibit PUB25/26 E3 activity to stabilize BIK1.

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



Model for the PUB25/26-mediated control of BIK1 homeostasis.
Photo Credit: IGDB

Robotic Weeders: To a Farm near You?

The future of weeding is here, and it comes in the form of a robot. The growing popularity of robotic weeders for specialty crops has grown partly out of necessity, says Steven Fennimore, an extension specialist at the University of California, Davis. Specialty crops are vegetables like lettuce, broccoli, tomatoes, and onions. They are not mass-produced like corn, soybeans, and wheat.

The need for robotic weeders stems from two issues. One is a lack of herbicides available for use in specialty crops. Another is the fact that hand-weeding has become more and more expensive. Without pesticides, growers have had to hire people to hand-weed vast fields. Hand-weeding is slow and increasingly expensive. That motivates some growers to look to robotic weeders. "I've been working with robotic weeders for about 10 years now, and the technology is really just starting to come into commercial use," Fennimore says. "It's really an economic incentive to consider them."

Fennimore works with university scientists and companies to engineer and test the weeders. The weeders utilize tiny blades that pop in and out to uproot weeds without damaging crops. He says that although the technology isn't perfect, it's getting better and better. The weeders are programmed to recognize a pattern and can tell the difference between a plant and the soil. However, they currently have trouble telling the difference between a weed and a crop.

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

This robotic weeder is operating in a field near Santa Maria, CA in June 2015.
Photo Credit: Steven Fennimore

Cancer Prevention: Omega-3s from Fish over Flax

Omega-3s from fish pack a stronger punch than flaxseed and other oils when it comes to cancer prevention, according to a first-ever University of Guelph study. Prof. David Ma has discovered that marine-based omega-3s are eight times more effective at inhibiting tumour development and growth.

"This study is the first to compare the cancer-fighting potency of plant- versus marine-derived omega-3s on breast tumour development," said the professor in the Department of Human Health and Nutritional Sciences. "There is evidence that both omega-3s from plants and marine sources are protective against cancer and we wanted to determine which form is more effective." There are three types of omega-3 fatty acids: a-linolenic acid (ALA), eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA). ALA is plant-based and found in such edible seeds as flaxseed and in oils, such as soy, canola and hemp oil. EPA and DHA are found in marine life, such as fish, algae and phytoplankton.

Published in the Journal of Nutritional Biochemistry, the study involved feeding the different types of omega-3s to mice with a highly aggressive form of human breast cancer called HER-2. HER-2 affects 25per cent of women and has a poor prognosis. Ma exposed the mice to either the plant-based or the marine-based omega-3s, beginning in utero. "The mice were exposed to the different omega-3s even before tumours developed, which allowed us to compare how effective the fatty acids are at prevention," said Ma. "It's known that EPA and DHA can inhibit breast tumour growth, but no one has looked directly at how effective these omega-3s are compared to ALA."

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

Wearable Sensors to Measure Water Use in Plants

Researchers from Iowa State University developed a low-cost, easily produced, graphene-based, sensors-on- tape that can be attached to plants to provide various kinds of data to researchers and farmers.

"With a tool like this, we can begin to breed plants that are more efficient in using water," said plant scientist Patrick Schnable. "That's exciting. We couldn't do this before. But, once we can measure something, we can begin to understand it." The tool, which is now known as "plant tattoo sensor", is making these water measurements possible, as the tiny graphene sensor can be taped on to plants. According to the lead researcher Liang Dong, the sensors are made with graphene oxide, a material that is highly sensitive to water vapor. The presence of water vapor modifies the conductivity of the material, which is quantified to accurately measure the release of water vapor from a leaf. The plant sensors have been successfully tested in lab and pilot field experiments.

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

Iowa State University researchers have developed these "plant tattoo sensors" to take real-time, direct measurements of water use in crops.

Photo Credit: Liang Dong

Believe it or not!

- Cucumbers are 96% water.
- Most of the flavor in the cucumber comes from the seeds.
- Cucumber is one of the earliest domesticated vegetables. It was adopted around 4 thousand years ago and was used not only for eating but also in medicine.
- Cucumbers have many types, shapes, textures and colors, including orange, yellow, green and white.
- Cucumbers have ability to very easily remove the feeling of hunger from our minds.

Source: VegetableFacts.net

Nutrition Chart

Cucumber (100 grams)	
Calories	16
Sugar	1.7 g
Total Fat	0.1 g
Protein	0.7 g
Sodium	2 mg
Potassium	147 mg
Dietary fiber	0.5 g

Source: USDA

Tips

- Cucumber peel is a good source of dietary fiber that helps reduce constipation, and offers some protection against colon cancers by eliminating toxic compounds from the gut.
- It is a very good source of potassium, an important intracellular electrolyte. Potassium is a heart friendly electrolyte helps bring a reduction in total blood pressure and heart rates by countering effects of sodium.
- Cucumbers contains unique antioxidants in moderate ratios such as beta carotene and a-carotene, vitamin-C, vitamin-A, zeaxanthin and lutein. These compounds help act as protective scavengers against oxygen-derived free radicals and reactive oxygen species (ROS) that play a role in aging and various disease processes.
- Cucumbers have mild diuretic property, which perhaps attributed to their free-water, and potassium and low sodium content. This helps in checking weight gain and high blood pressure.
- They surprisingly have a high amount of vitamin K. Vitamin-K has been found to have a potential role in bone strength by promoting osteotropic (bone mass building) activity. It also has an established role in the treatment of Alzheimer's disease patients by limiting neuronal damage in their brain.

Source: nutrition-and-you.com

Sharing is caring!

Cucumbers are very easy to grow and make for a delicious treat. But this wonderful low-calorie vegetable has more to offer than just nutrients, water, and electrolytes. You can use it for carving as well. Cucumber carving is the art of carving cucumber to form beautiful objects, such as flowers or birds. You can even teach kids about proportions, animals, and proper cutting methods with cucumber carving.