

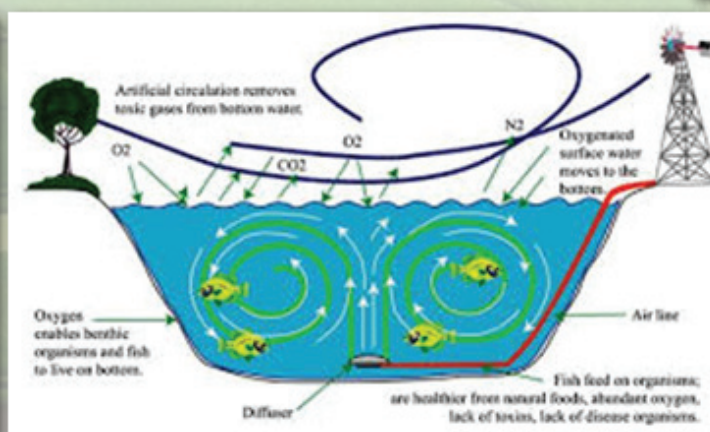
BIO LIFE

Pond Aeration System: No energy No cost

In the past decade or two, ponds have become very popular to an increasingly wide variety of people and with that, so have the demand for new, environmentally friendly techniques for the maintenance and rejuvenation of ponds. Considering the costs of constructing a pond, it makes good economic sense to prolong the life of the pond. One of the simplest and most economical ways of doing this is to use aeration.

Aeration is the process of adding oxygen to water. Maintaining healthy levels of dissolved oxygen (DO) is one of the most important water quality parameter in a pond that aids in the breakdown of decaying vegetation and other sources of nutrients that enter into the pond. This breakdown of bottom silt is carried out by microorganisms at the water/soil interface and continues to proceed a few centimeters deep in the soil. This decomposition can be carried out in two ways, aerobically and/or anaerobically. Aerobic decomposition requires a continuous supply of oxygen and proceeds more rapidly as dissolved

oxygen concentrations near saturation levels. In anaerobic conditions the decomposition is slower and less complete in anaerobic environments than in aerobic habitats where the primary end product of decomposition is carbon dioxide. So the more decomposition we can facilitate, through the addition of oxygen with aeration, the less nutrients there will be available for algae blooms and excess aquatic plant growth. Considering this ACI has brought "Koenders Aeration System" for its valued customers which will help Mother Nature keep up with the demand for dissolved oxygen and prolong the life of the pond. Koender's Aeration increases the level of dissolved oxygen so normal biological processes in a pond system can become balanced. It also helps to move water in low circulation areas (which otherwise can build up undesirable levels of algae), and facilitates mixing throughout the pond if chemical treatment is necessary. In short, aeration provides a way to help clean up stagnant ponds and improve water quality for irrigation purposes.



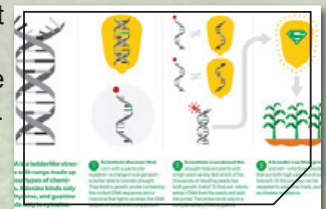
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Protection of yellow head virus infection in shrimp by feeding of bacteria expressing dsRNAs



ACI Animal Health launched two new Products in June'14 under Poultry portfolio.

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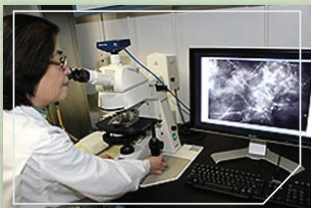
Tomato: Summer King Demonstrations

Summer King is one of the high yielding early tomato varieties of ACI Seed.



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Advance May Speed Development of Seed Rot-Resistant Soybeans



Soybeans have been called the “wonder crop” for all the products that can be made from the versatile legume—including cooking oil, tofu, livestock feed, and biodiesel, to name just a few.

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Importance of Public Private Partnership in Molecular Breeding

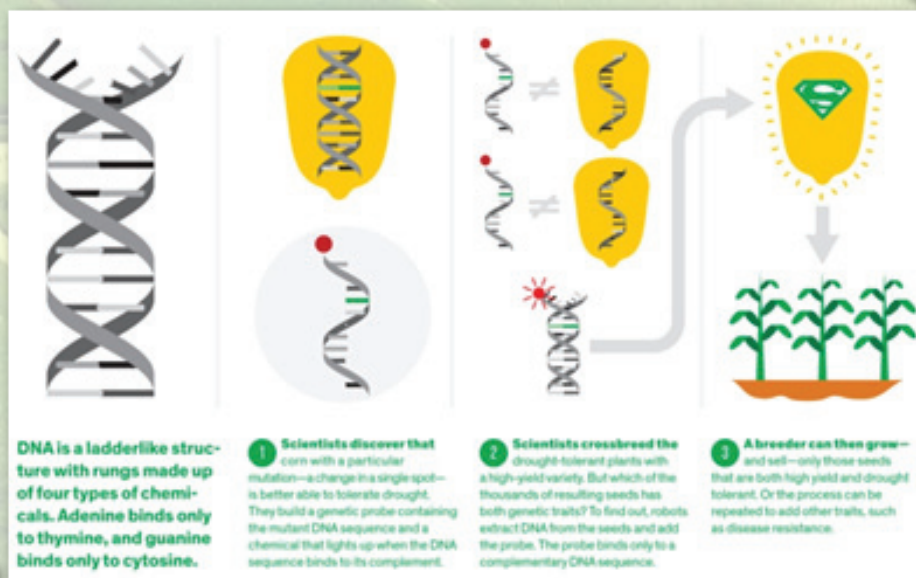
Through molecular breeding, direct manipulation in DNA of crop varieties is possible to develop new germplasm. Sexual reproduction is use on the or even bypassed and in both cases it increases the chances of the required gene of interest to be passed onto the new germplasm within a shorter time. This is extremely important to a commercial plant breeder, since not only can they introduce a new variety within a shorter time, it also expands their visions of designing new crops for the betterment of the agriculture sector.

The public sector was initially engrossed in the areas of basic plant breeding research, germplasm enhancement, and varietal development. In addition, most plant breeders in the public sector are involved in the education of future plant breeders and other training programs. Basic plant breeding research involves researching new plant breeding procedures, discovery of new plant breeding methods, comparison of transgenic and non-transgenic crops, discovery of QTLs associated with economically important traits, development of MAS strategies, comparison of plant breeding procedures, and so forth. The private sector does not exert efforts in many of these areas, because the long-term costly research does not immediately lead to the development of new high-yielding improved commercial crop varieties. Public breeders often develop materials and then release them as varieties, these are then can be used by public and private breeders as

parents for improving existing high-yielding lines.

Intellectual property protection, the ability to earn a good return on research investment has encouraged the private sector to enter into R&D involving molecular breeding. Marker-assisted selection is reducing research costs by allowing the selection of specific traits from large germplasm pools in much shorter time using fewer resources than that required by conventional techniques. This ensures that subsequent field evaluations, which are costly, will involve strains with traits that have the highest probability of becoming a profitable product.

Molecular breeding offers greater opportunities for joint public private partnership in crop improvement. Sine crop development through this process is complex and laborious; usually a single organization does not attempt to accomplish it alone. This means that there needs to be cooperation between public and private soybean breeders. There should be more interactions and dialogues between breeders and policy makers of the public sector with those of the private sector. Only through such dialogues, would the industry have a say on the qualifications of the future generation of breeders, have access to the resources and germplasm of the public sector. On the other hand the public sector will be able to understand the trend of the industry more and work together for the betterment of the agriculture sector of the country.



Innovations and New Products

Protection of yellow head virus infection in shrimp by feeding of bacteria expressing dsRNAs

ACI Animal Health launched two new Products in June '14 under Poultry portfolio.

NO-SAL, The most effective Salmonella Killer were launched at June '14. It is available under 1Kg pack, which is used as animal Feed Premix.

NO-SAL, is a product based on monoglycerides of propionic acid &

butyric acid with strong antibacterial properties against pathogens like E. coli, Salmonella & Clostridia etc.

Doses: Prevention: 400g per ton feed for 15-20days .Treatment: 800-1000g per ton feed for 10-15 days.

NO-MOLD: The most effective mold inhibitor, which is available under 1Kg pack, also used as animal Feed

Premix.

NO-MOLD, has a strong anti-mold and anti-yeast properties, effective against a large number of mold species (Aspergillus spp., Penicillium spp., Mucor spp., etc).

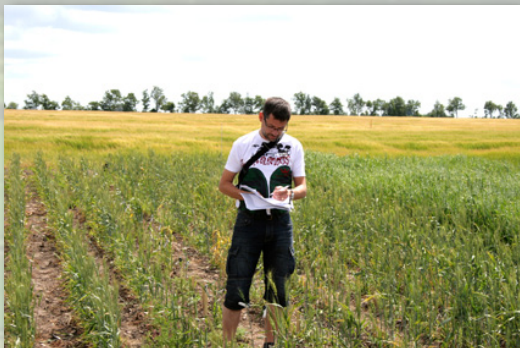
Doses: 300-400g per ton feed continuously.

Recent development in wheat research:

Recently we have been working on developing wheat variety of Bangladesh. Here is some pictures of

advancement in field for propagation of the wheat lines. We are expecting that we will have approx.

2000 lines to screen for in September after harvest.



Events and Activities

Tomato: Summer King Demonstrations

Summer King is one of the high yielding early tomato varieties of ACI Seed. Its early production means higher prices in summer often leads to higher profits. The extra labor required for intensive poly tunnel growing and trellising is generally easily recovered in increased early sales (at high margins) and reduced input costs.

The variety has been performing very well at Bagherpara, Jessore for last 3 years. Last year, in a test demonstration in Rajshahi Barind, characterized by a typical dry climate with comparatively high

temperature, the variety performed very well in terms of production and economics. With this success the variety is, therefore, in bigger promotion and extension in six other districts including Jessore and Rajshahi. The other districts are Chittagong, Comilla, Gazipur, Munshigonj, Chuadanga, Gaibandha. A total of 30 demonstrations are in progress in June, 2014. Dr Md. Saiful Islam, Upazilla Agriculture Officer, Godagari, Rajshahi visited some of the demonstrations at Gadagari and expressed much interest on the growth of plants of

the demonstration. The demonstrations are at different growth stages—seedling, at flowering and at early fruiting stage.

A follow-up meeting with cultivating Summer King farmers was held on 17/06/2014 at UP Bhaban of Iswaripur, Godagari, Rajshahi where different cultural practices, application of hormone, diseases and their control were discussed by Sub Assistant Agriculture Officer of DAE Mr Atanu Sarkar. In the meeting the farmers were supplied BamperFolon as free sample in courtesy of ACI Fertilizer.



Inaugural of first ever Exclusive Dealer Shop(EDS) in Mymensing Market

ACI Motors has opened its first ever Exclusive Dealer Shop(EDS) in the month of June 2014 at Mymensingh. Mr. Subrata Ranjan Das, Business Director of ACI Motors has inaugurated the shop on 6th of June 2014. Mymensingh is one of the biggest retail market of Power Tiller & Diesel Engine with yearly market turnover

approx. BDT 200mio. To capitalize the market attentiveness and to promote the brand, ACI Motors introduced this concept with industry changing shop decoration. In the machinery market there is no other decorated shop available to ACI EDS standard. To make the hype in the market ACI Motors arranged an

opening ceremony on that day, where hundreds of mechanics, farmers, local dealers and agriculture related persons were attended and appreciated the initiative. Later on this inaugural ceremony was covered by many local & national newspapers.



Events and Activities

Trichoderma based Organic Fertilizer Production: // // // // //

Trichoderma is a fungus which has the ability to decompose organic matter rapidly. Considering the opportunity for producing organic fertilizer utilizing Trichoderma, ACI Fertilizer has set up an experiment of organic fertilizer production with spraying Trichoderma liquid solution. In the experiment, Sugarcane fresh mart, poultry liter and

cow dung have been used as a RM to see the decomposition level of the materials and quality of the finished product. To complete the Trichoderma based organic fertilizer production, it takes time for a period of 5-6 weeks.

If the experiment gets success, then it will be very helpful to produce

quality organic fertilizer using poultry liter, sugarcane fresh mart, cow dung and vegetables waste and to supply organic fertilizer at cheaper price to the farmers. ACI Fertilizer is also trying to add live Trichoderma with finished organic fertilizer which will help to increase the microbial activity in the soil and protects crops against fungal pathogens.



“Promoter” – an Effective Solution for Increasing the Efficiency of Agrochemicals: // // // // //

Promoter is a liquid synergist which is composed of surface-active agents, sticking agent and dispersant. Mixed with agrochemicals, it can improve the capabilities of adhesion, spread and penetration of agrochemicals and increase agrochemicals' efficiency on the targets, furthermore to achieve the objectives of reducing dosage and decreasing pollution.

Key Benefits:

- Promoter improves the capabilities of adhesion, spread and penetration of agrochemicals and increase agrochemicals' efficiency on the targets.

It increases the efficiency by 20%, reduces dosage by 1/3 to 2/3, and saves cost by 30% to 50%, with high economic benefits.

It is compatible with insecticide, fungicide, herbicide as well as foliar fertilizer.

It ensures that pesticides are not lost due to environmental conditions such as rainfall after application.

It is nontoxic and reduces the environmental damages from agrochemicals

ACI Fertilizer is trying to promote the product aggressively through

demonstration and personal communication at trade and farmers level. The response of the farmers and traders is very positive for finding an effective solution for increasing the efficiency of the agrochemicals especially in rainy season.



Events and Activities

Hygienic Fruits for ACI Cropex Consumers

To continued success, ACI Cropex has taken some acclaimed actions in its hand in the month of June. As part of their strategic plans, ACI Cropex has arranged a training workshop in last 14th of June at Kansat, Chapainawabgonj where people has gathered who are directly subsumed with the mango business and cultivation. Numbers of people from katalyst, cultivators

and traders have joined and delivered important opinions which have been highly praised. ACI Cropex has been able to reach natural ripened, hygienic mangoes to the consumers in different corporate houses like Unilever, Nestle, ACME and many more in Dhaka city. Besides corporate houses, ACI Cropex has introduced mangoes to Agora(Super Shop) both in loose as

well as carton from mid of June 2014. ACI Cropex has received the order from corporate consumers near about 15 tons from the beginning of our campaign to till now and getting a huge positive response from them and has been admired particularly the quality of mangoes as well as the innovation of carton.



ACI-IAP-SIDA project holds field day for Maize Demonstration

In May 2014, two field days were held in Babuganj, Barisal for the Maize demonstrations undertaken under the ACI-IAP-SIDA projects. The farmers grew maize for the first

time and were excited to see the bumper harvest. A total of 102 participants attended the programs. The farmers eventually sold the maize to their neighbours as feed

for poultry. Through such initiatives, farmers can themselves become suppliers for poultry feed.



Advance May Speed Development of Seed Rot-Resistant Soybeans

Soybeans have been called the “wonder crop” for all the products that can be made from the versatile legume—including cooking oil, tofu, livestock feed, and biodiesel, to name just a few. But America’s second-largest field crop next to corn is no match against *Phomopsis longicolla*, a seed rot fungus, which, along with other species, cost soybean producers in 16 southern states over 2 million bushels in losses in 2012.

As part of a *Phomopsis* resistance program there, Li has sought to learn more about how the fungus inflicts harm at the cellular level. Towards that end, she and colleagues enlisted the aid of *Agrobacterium tumefaciens*, a soil bacterium commonly used in genetic engineering procedures to endow plants with new traits. In this instance, the team used the bacte-

rium to “shuttle” genes for an antibiotic marker and green fluorescent protein (GFP) into the nuclei of the fungus’s cells. This resulted in new *P. longicolla* strains that produce the protein and emit a green glow when exposed to light in the blue-to-ultraviolet range.

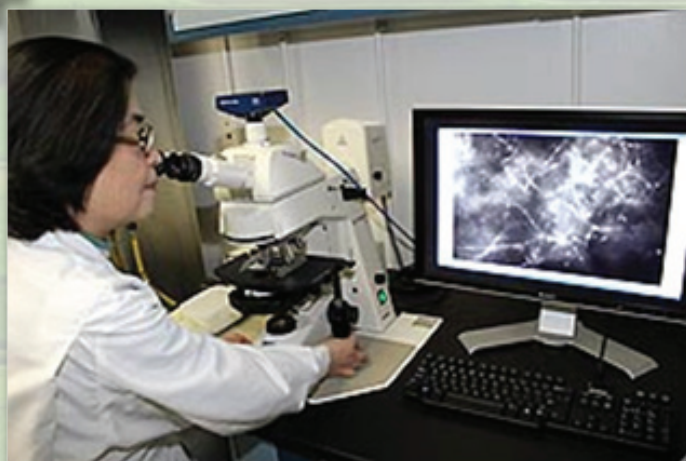
Healthy soybean seeds (left) and seeds infected by *P. longicolla*.

“Green fluorescent protein is amazingly useful in scientific research, because it allows researchers to look directly into the inner workings of cells,” says Li, who collaborated with Burton Bluhm and others at the University of Arkansas in Fayetteville. “Using this transformation method, we can monitor how the fungus infects plants.”

The researchers compared the characteristics of seven GFP-modified strains to an unmodified “parent” isolate, and they confirmed

the presence of the protein by using a molecular test method called “Southern blot analysis” and by direct observation with a confocal laser scanning microscope. A paper published in the March 2013 issue of the *Journal of Microbiological Methods* describes their research in detail.

Li plans on inoculating soybean seedlings with the modified strains to study how the infection process unfolds within the tissues of both resistant and susceptible soybean germplasm lines. She expects use of the GFP-expressing strains will also help to identify sources of PSD resistance that may escape detection using conventional disease-screening methods, such as field observation or visual assessment of seed on culture medium in the laboratory.



Healthy soybean seeds (left) and seeds infected by *P. longicolla*.

Dissecting a Potato Pathogen's Hiding Place in Its Insect Vector

Researchers are leaving no stone unturned when it comes to finding new ways of managing zebra chip disease and the insect that can spread it to potato crops.

One scientist, Agricultural Research Service entomologist Rodney Cooper, is using fine-tipped forceps and a fluorescent microscope to study the organs and tissues of the potato psyllid, a tiny, cicada-like insect that can transmit the bacterium *Candidatus Liberibacter solanacearum*, the cause of zebra chip. Cooper combines the procedure with fluorescent genetic markers to understand where and how *Liberibacter* survives in the psyllid—from the moment it is ingested by the insect pest to the time it is injected into new plants.

The disease is named for the dark bands it causes inside tubers. The bands become more pronounced once the potatoes are cut and fried

to make products such as chips. Other symptoms include curled-in leaves and tissue discoloration. Zebra chip poses no consumer danger, but it affects tuber appearance and taste and can diminish marketability at a cost to producers and processors.

The primary disease-control method is to spray potato crops with psyllid-killing insecticides, but researchers hope to provide growers with more sustainable approaches, particularly resistant varieties. In addition to expediting such efforts, information from Cooper's psyllid dissections may eventually set the stage for targeting *Liberibacter* directly.

Once a psyllid specimen is dissected, its excised organs and tissues are subjected to "fluorescent in situ hybridization." This procedure uses special probes to bind to complementary segments of bacterial

DNA, which, if present, glows (fluoresces) green. Using this microscope-aided method, Cooper and colleagues have observed *Liberibacter* in four main areas of the psyllid: the gut, hemolymph (blood), bacteriomes (organs where symbiotic bacteria reside), and salivary glands (where it gets injected into plants during psyllid feeding).

Of the organs and tissues examined, *Liberibacter* appeared most often in the psyllid's gut. Indeed, bacteria fluoresced green in the guts of 66 percent of psyllid specimens examined. It was also found in 40 percent of salivary glands and bacteriomes.

The pest's nymph stage proved less hospitable to *Liberibacter*, which rarely appeared in organs other than the gut, the researchers observed.



Research proposes formal trade in rice seeds between India and Bangladesh

A research paper has proposed that formal trade in rice seeds between India and Bangladesh could open up a tremendous market opportunity and improve livelihood of the farmers of both the countries. The paper, based on a Consumer Unity and Trust Society (CUTS) study, said that farmers of both the countries could immensely gain from the formalization of trade in rice seeds which at present was smuggled out from India and Bangladesh.

Quoting the Indian Council of Agricultural Research (ICAR), the paper said gains could be in terms of market opportunity estimated to be worth more than USD 20 million, improved

crop yield and better livelihood.

S P Singh, policy analyst with CUTS which was a leading NGO which does studies on regional trade barriers and other issues, told reporters that research had shown that farmers from both the countries use rice seeds which were smuggled out. "Farmers in West Bengal and certain other states use smuggled rice seeds from Bangladesh and vice versa," Singh said.

Informally traded seeds are of poor quality which is affecting rice yields. There is no trade barriers between formal trading in rice seeds. What is required is sensitising both the governments.

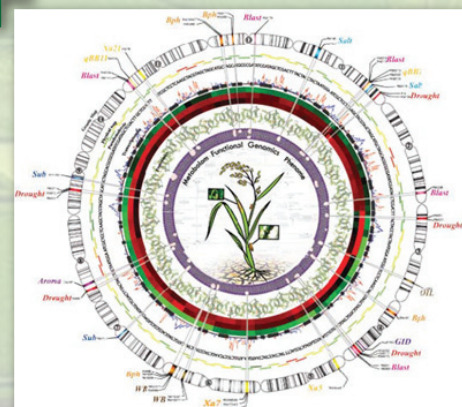


3000 Rice Genome Sequences Made Publicly Available on World Hunger Day

The open-access, open-data journal GigaScience announced the publication of an article on the genome sequencing of 3000 rice strains along with the release of this entire dataset in a citable format in journal's affiliated open-access database, GigaDB. The publication and release of this enormous data set (which quadruples the current amount of publicly available rice sequence data) coincides with World Hunger Day to highlight one of the primary goals of this project—to develop resources that will aid in improving global food security, especially in the poorest areas of the world. This work is the completion of stage one of the 3000 Rice Genomes Project, a collaborative effort made up of the Chinese Academy of Agricultural Sciences (CAAS), the International Rice Research Institute (IRRI), and BGI, and is funded by the Bill and Melinda Gates Foundation and the Chinese Ministry of Science and Technology. With more than 1/8th of the world's population living in extreme hunger

and poverty, and an every-increasing world population (estimated to reach 9.6 billion by 2050), there is a huge need to create new resources to improve crop yield, reduce the impact of agricultural practices on the environment, and develop food crops that are of high yield and nutrition and can grow successfully in environments stressed by drought, pests, diseases, or poor soil quality.

The 3000 Rice Genomes Project provides a major step forward for addressing these challenges by creating and releasing an extensive amount of genetic information that can ultimately be applied to intelligent breeding practices, which take advantage of the natural variation between different plant strains and information on the genetic mechanisms that underlie these traits to select strains for breeding that will be more successful in producing hybrid strains with characteristics that are highly suited for growing successfully in different environments.



Sweet Sweet Straw

Straw is often considered to be worthless and is therefore burnt, but it can be a precious resource. Some of its chemical components can be made into valuable products. First, the finely chopped straw has to be “opened up”: with the help of solvents, the cell walls are broken, the lignin is dissolved away. The remaining xylan and cellulose are then processed further.

The straw has to be treated with expensive enzymes to break it down

into sugar. In highly concentrated molasses, special strains of yeast can then turn the sugar into erythritol, if they are placed under extreme osmotic stress.






The enzymes opening up the straw can be obtained with the help of the mould fungus *Trichoderma reesei*. This kind of mould also plays the leading role in the new production process developed at the Vienna University of Technology.

Two big advantages have been achieved by genetically modifying the fungus: the process of obtaining the enzymes from mould cultures and chemically cleaning them used to be cumbersome – now the improved strain can be directly applied to the straw. Secondly, the mould can now produce erythritol directly from the straw. The intermediate step of producing molasses is not necessary anymore and no yeast has to be used.





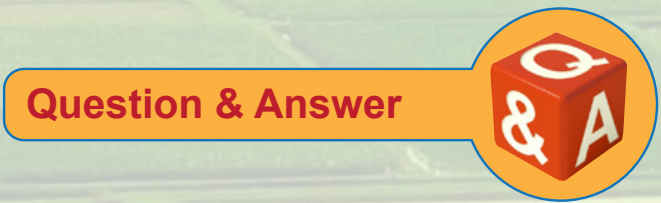
Did you know???

 **Goldfish** can see both infrared and **Ultraviolet** light
 **Macadamia** nuts are toxic to **Dogs**
 **Honey** is the only **Natural** food which never goes off
 You burn more **Calories** **Eating** celery than it contains (the more you eat the thinner you become)
 All **insects** have 6 **Legs**



Calorie Chart

GRAINS Make half your grains whole	VEGETABLES Vary your veggies	FRUITS Focus on fruits	MILK Get your calcium-rich foods	MEAT & BEANS Go lean with protein
<p>Eat at least 3 oz. of whole-grain cereals, breads, crackers, rice, or pasta every day</p> <p>1 oz. is about 1 slice of bread, about 1 cup of breakfast cereal, or 1/2 cup of cooked rice, cereal, or pasta</p>	<p>Eat more dark-green veggies like broccoli, spinach, and other dark leafy greens</p> <p>Eat more orange vegetables like carrots and sweetpotatoes</p> <p>Eat more dry beans and peas like pinto beans, kidney beans, and lentils</p>	<p>Eat a variety of fruit</p> <p>Choose fresh, frozen, canned, or dried fruit</p> <p>Go easy on fruit juices</p>	<p>Go low-fat or fat-free when you choose milk, yogurt, and other milk products</p> <p>If you don't or can't consume milk, choose lactose-free products or other calcium sources such as fortified foods and beverages</p>	<p>Choose low-fat or lean meats and poultry</p> <p>Bake it, broil it, or grill it</p> <p>Vary your protein routine — choose more fish, beans, peas, nuts, and seeds</p>
For a 2,000-calorie diet, you need the amounts below from each food group. To find the amounts that are right for you, go to MyPyramid.gov .				
Eat 6 oz. every day	Eat 2 1/2 cups every day	Eat 2 cups every day	Get 3 cups every day; for kids aged 2 to 8, it's 2	Eat 5 1/2 oz. every day
<p>Find your balance between food and physical activity</p> <ul style="list-style-type: none"> Be sure to stay within your daily calorie needs. Be physically active for at least 30 minutes most days of the week. About 60 minutes a day of physical activity may be needed to prevent weight gain. For sustaining weight loss, at least 60 to 90 minutes a day of physical activity may be required. Children and teenagers should be physically active for 60 minutes every day, or most days. 		<p>Know the limits on fats, sugars, and salt (sodium)</p> <ul style="list-style-type: none"> Make most of your fat sources from fish, nuts, and vegetable oils. Limit solid fats like butter, margarine, shortening, and lard, as well as foods that contain these. Check the Nutrition Facts label to keep saturated fats, trans fats, and sodium low. Choose food and beverages low in added sugars. Added sugars contribute calories with few, if any, nutrients. 		



Question & Answer

Hello I'm a potato farmer have been potato farming on 1.3 acres of land. Recently I've observed some problems in the field like fruits are small in size and distorted, growth of roots have been reduced, tender plant shoots growth is hampered for some unknown reason and some rusty spots observed on the fruits. Can you help me with your sensible suggestion?

Abu Al Imran, Munshigonj

Biolife team:

Dear Mr. Imran, we believe there is deficiency of boron in your field. To get rid of this problem you can use Solubor Boron from ACI Fertilizer. Mix 1-2 gm each liter of water and spray in land or trees. Boron is one of the elements of the cell wall. It helps to produce crops cell as well as proper growth of crops. It helps to have flowers and fruits. It increases the size and beautifies the fruits structure. To fulfill the deficiency of Boron in any cultivation step, it can be used.

***In order to get answer to any of your agriculture related queries, please email us at biolife@aci-bd.com or visit our Facebook page www.facebook.com/aciagribusinesses.

WORD Game

Figure out the Fruits from the box!



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

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

Winner & Answer of the previous Word Game!!

Mr. Gousazzaman, ACI Agribusiness

- Fruits
- Apple
- Orange
- Mango
- Apricot
- Pear
- Melon
- Cherry
- Kiwi
- Lime
- Plum
- Lemon
- Fig

A	K	O	L	I	M	E	C
B	I	R	E	G	E	P	A
F	W	A	M	R	L	E	P
R	I	N	P	A	O	A	R
U	F	G	L	P	N	R	I
I	N	E	U	E	L	G	C
T	L	E	M	O	N	E	O
S	C	H	E	R	R	Y	T

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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.