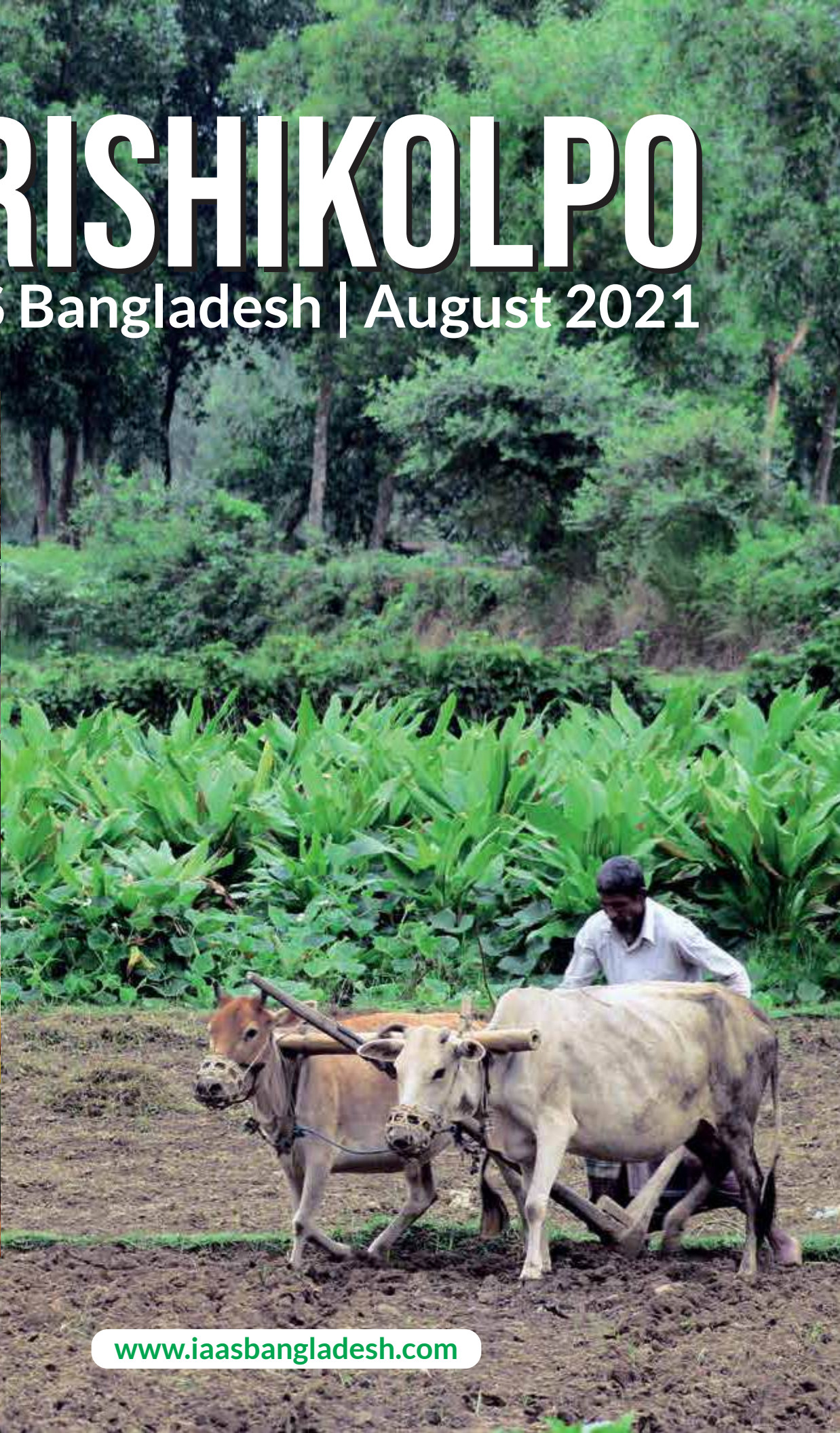


KRISHIKOLPO

IAAS Bangladesh | August 2021



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*1st Issue: August, 2020
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LET'S LINK UP

Agriculture with Science

Dear IAASer!

KRISHIKOLPO comes from a combination of the bengali words **KRISHI** (Agriculture) and **KOLPO** (Thought). Our dream is to actualize DIGITAL BANGLADESH through agricultural revolution. we want to assemble a common understanding among farmers, scientists as well as students of agriculture and allied sciences. Let's explore Bnagladesh Agriculture with **KRISHIKOLPO**.

Best regards,

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Md. Tangimul Islam Rifat

**Sustainable Agriculture:
Methods and Benefits**
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**Agri-Fate: Survival of
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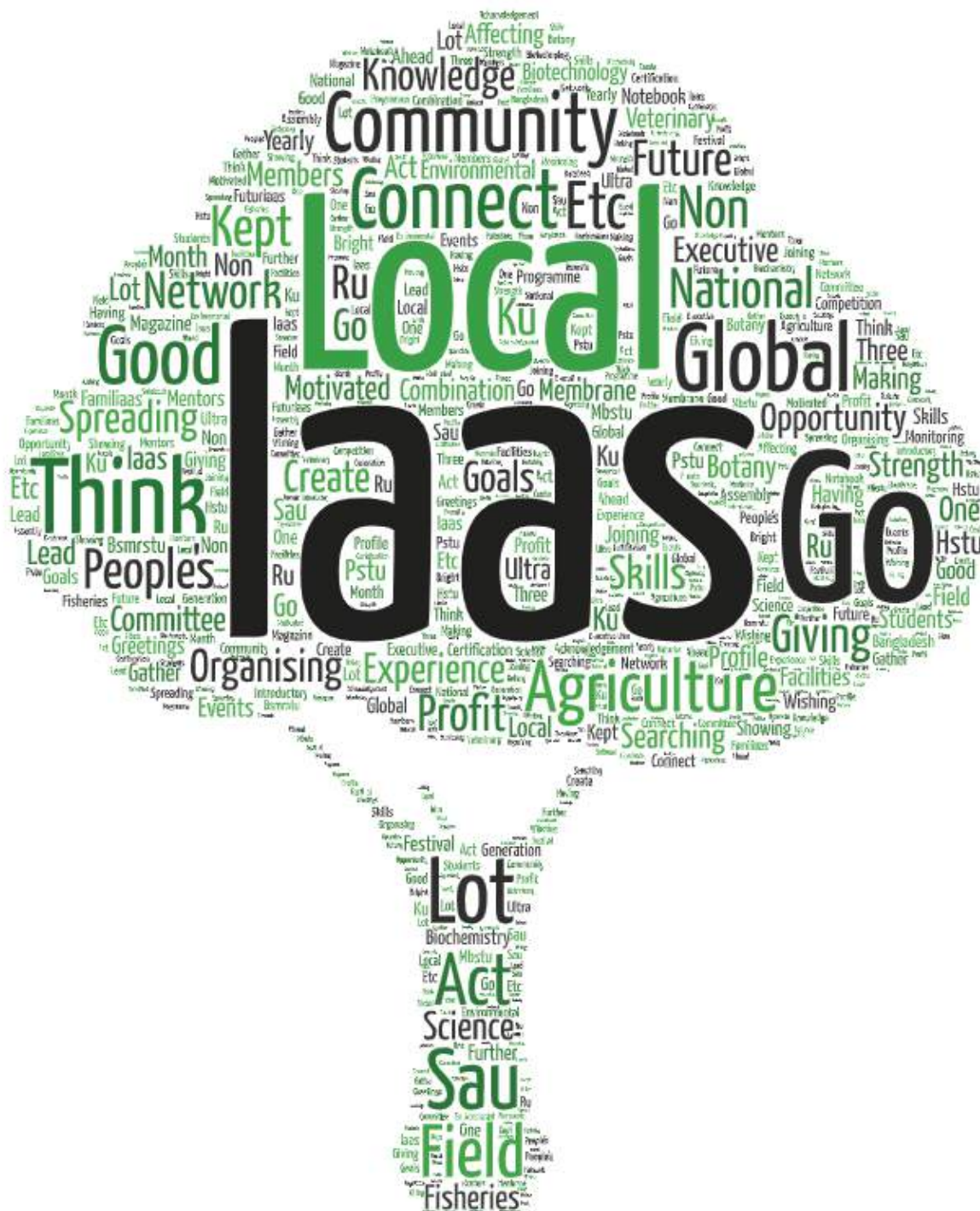
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JUTE MAN
in Search of Sustainable Treasure

About IAAS Bangladesh

IAAS Bangladesh is a national network of young, motivated people interested in solving the issues that are affecting agriculture, society and the world today and shaping it for a better tomorrow. It was born mainly by thinking of students in agricultural fields. In the same way, Bangladesh also became a member of IAAS in 2017. The Association is non-political and not profit-making.



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JUTE MAN

in Search of Sustainable Treasure

Bangladesh can grow treasure in her land and this gold is Jute. This golden fiber becomes a "Golden bag" by the magical touch of a Jute man. He is a Bangladeshi scientist "Dr. Mubarak Ahmed Khan", a leading personality in the field of jute study and its commercial uses and possibilities. He believes that Jute is a treasure of Bangladesh. In his journey of finding the hidden treasure in jute, he discovered a lot of possibilities. Among his many discoveries, some are Sonali bag, natural preservative, Jutin (Jute Reinforcement Corrugated Sheet), Sanitary napkin, Biodegradable PPE, Helmet and Tiles made from jute.

Dr. Mubarak Ahmed Khan was born on 31 January 1958 in Manikganj, Dhaka, Bangladesh.

He completed Secondary and Higher Secondary from Manikganj and his Bachelor and Master degree from the department of chemistry at Jahangirnagar University in Bangladesh. Then he went to Germany, Japan, and the USA for his Ph.D. degree in polymer and radioactive chemistry.

Among his many discoveries, some are Sonali bag, natural preservative, Jutin (Jute Reinforcement Corrugated Sheet), Sanitary napkin, Biodegradable PPE, Helmet and Tiles made from jute.

He was a research fellow in different universities in Germany and Japan and a visiting professor of Michigan State University in the USA. Then he decided to come back to Bangladesh and do something for his motherland. At the starting of his career in Bangladesh, he was a lecturer in chemistry at Mirzapur College, and then he was a part-time professor in Shahjalal University of Science and Technology and some other universities of Bangladesh and also became a Scientific Officer in Bangladesh Atomic Energy Commission at Radiation and Polymer Chemistry Laboratory. At present, he is serving as a Scientific Advisor in Bangladesh Jute Mills Corporation and consulted in private companies of Bangladesh and also an adjunct professor in Dhaka University in Bangladesh. He works in Biological Science, Environmental Science, and Nanotechnology Agriculture, and so on. Now, he is working with sustainable materials. He has more than 800 publications and 20 book chapters and also three research patents. In recognition of his success, he gained the National Jute Award (2016), a gold medal from Bangladesh Academy of Sciences (2010), National Environment Award (2019), and MIT Solve Health Security & Pandemic Award (2020).

Plastic pollution is a curse for our earth which polluting soil and destroying our plant growth however it is not possible to completely remove it. To remove plastic pollution and

meet up people's choices he has made an alternative sustainable plan. He has invented a cellulose-based biodegradable polybag from jute waste. He used jute extract, natural vegetable color, and binder in it which is fully a different process than the traditional plastic production process. In 2017, Bangladesh Honorable Prime Minister Sheikh Hasina named it "Sonali Bag". As it is made from natural ingredients so, it is biodegradable and recyclable also compostable depending on the function of microorganisms and humidity within 3-4 months in soil and also increases the soil fertility.

He has invented a cellulose-based biodegradable polybag from jute waste. He used jute extract, natural vegetable color, and binder in it which is fully a different process than the traditional plastic production process.

It started to dissolve in water after 5 hours and its cellulose is reusable and cheap in price. This Eco-friendly product has the ability to meet our necessities without compromising sustainability and can save the environment from big hazards also solve a great problem of our earth. Jutin is a tin sheet made from jute. It is a light-weight, strong, low-cost, housing material also soundproof and saline water-resistant. Its low thermal conductivity has made it excellent. It has the



ability to give comfort resistance. It's also Eco friendly and sustainable which makes us astonished and inspires us to think out of the box. Besides these, he is working with lots of projects like biofertilizer, solar cells, plant growth promoter, the alternative of formalin and so on which is made from jute or others in Eco friendly and sustainable manners.

Undoubtedly, he is finding treasure for a sustainable future. He is an inspiration for the new generation. This world is going to enter a new era and making history by this jute man.

References:

1. Bangladesh has the answer to polythene menace | Interprets Service.2019-01-18,
2. Mubarak Ahmad Khan | theindependentbd.com,
3. Mubarak Ahmed - khan.org,
4. Dr.MubarakAhmed-Khan.g o g g l e . s c h o l a r . c o m . 2 0 2 1 - 0 6 - 2 1 .
5. illustration: Scientist Mubarak Ahmed Khan/ TBS Illustration.
2. Photo: Saikat Bhadra | <https://www.tbsnews.net/feature/panorama/why-hasnt-son->

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PLANT-BASED MEAT

PBM : A Paradigm Shift to Meatless Farming

Unsplash



What Is Plant-Based Meat (PBM)?

Plant-based meat refers to products made from plant materials (soy, rice, pulse, and so on) that are designed to mimic meat in every way, from taste and smell to texture and appearance.



What Is Plant-Based Meat Made From?

Plant-based meat can be made from a variety of ingredients and nutrient profiles depending on the type of meat being produced and the company creating it.

Ingredients	Functions
Vegetable protein (Pea protein)	Used as an animal protein substitute
Coconut oil	Healthiest fats
Beet Juice	Animal-protein look and texture
Yeast extract	Animal-meat flavor
Soy leghemoglobin	Heme protein
Potato starch (Natural preservatives)	Hold the ingredients and make the desired shape
Vitamins & Minerals	B12, Zinc



PBM_why?

Plant-based meat is for everyone - vegans, vegetarians, flexitarians, reduectarians, and anyone who wants to enjoy their meal without the cloud of these pressing global issues hanging over their plate. People who wish to eat meat but don't want the health and environmental risks associated with animal-based meat should consider plant-based meat.

Animal meat is a good source of protein with a high biological value; however, it is not sustainable. Despite providing only 17% of the world's food, animal agriculture consumes 1/3 of the land. Over 70% of medically important antibiotics are utilized in animal agriculture in the United States.

Antibiotic resistance is a severe and developing problem all around the world, thus this is very crucial. Antibiotics are not required in the production of plant-based meat. It also decreases the danger of antifungal resistance, which can occur when fungicides are used on crops, and hence encourages organic farming. Furthermore, plant-based meats are free of the hormones that are provided to farm animals for high growth within the shortest period.

Key Issues	Animal Meat	PBM
Land Uses	Use 77% of all habitable land. Threatening global ecological crisis.	47%-99% less land
Climate Change	14.5% of greenhouse gas emissions	30%-90% fewer greenhouse gases
Water Pollution	Untreated manure and excess fertilizer. Ecological damage and human illness.	72%-99% less water
Antibiotic Resistance	Antibiotics cause Resistance. Making useless in human medicine.	No Antibiotics



PBM_why not?

Eating too much of anything, just like any other diet, can be harmful. Soy protein powder contains phytates, which reduce mineral absorption. However, this is rarely a problem for those who eat a well-balanced diet. Gluten enhances the flavor and texture of foods, thus it's found in a variety of processed goods. Gluten triggers an immunological response in people with celiac disease. When they consume gluten-containing meals, they experience inflammation and damage in their intestines and other regions of the body. Pulse protein, on the other hand, can be used to substitute gluten because it is low in saturated and trans fats and high in soluble fiber. Even if PBM contains a high amount of sodium (350 mg), anyone still is well below the recommended daily sodium consumption (1,500 to 2,000 mg per day).



Are Plant-Based Meats Healthier Than Conventional Ones?

The U.S. Department of Health & Human Services reports that consuming excessive amounts of red meat can be linked to high cholesterol, cancers, cardiovascular disease, obesity, Type 2 diabetes, and other chronic, potentially deadly diseases. Many processed and cured animal-based meats include sodium nitrate, a preservative that can produce cancer-causing chemicals when cooked at high temperatures, whereas PBM has no preservatives.

Plant-based meats can be healthier since they contain no cholesterol whatsoever while containing high amounts of fiber — a nutrient sorely missing from many meat-centric diets, since conventional meat lacks fiber entirely. Plant-based meat companies are also able to amplify their products' nutrient profiles by fortifying them with various vitamins and minerals, just as conventional dairy is fortified with nutrients like a vitamin.

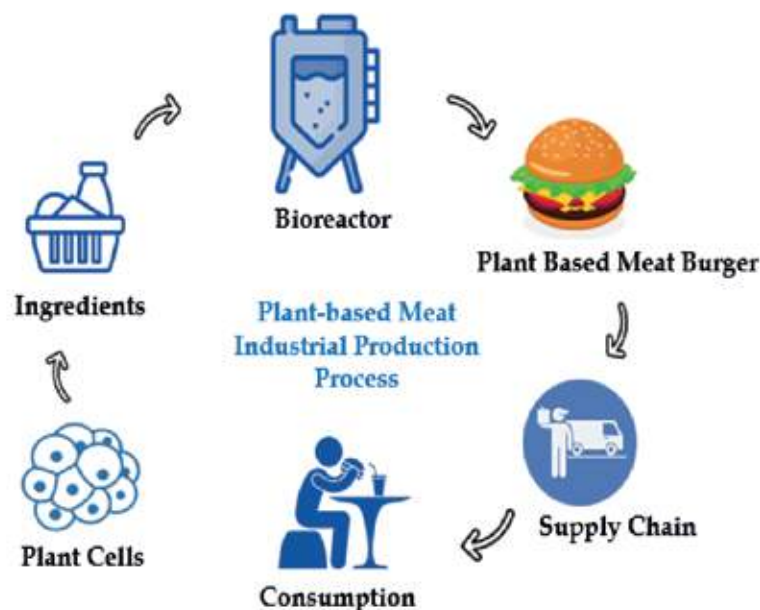
Key Nutrients	Original Meat (113g)	PBM (113g)
Calories	220	260
Protein	17g	20g
Saturated Fat	12g	5g
Sodium	75mg	350mg
Iron	1.8mg	4mg
Cholesterol	95.2mg	0mg

Are Not Plant Based Meats More Expensive?

Plant-based meats may appear to be more expensive at first. However, whenever somebody goes to a restaurant, the vegetarian option is always the cheapest on the menu because plants are far more effective as a food source than animals. As the demand for plant-based meat grows, the price should drop, making it less expensive than animal-based meat in the not-too-distant future.

Who Are The Big Players In Plant-Based Meat Industry?

The big player in the plant-based meat industry is not all new companies. Many of them have been around for decades, and they include some of the biggest animal protein companies in the world, such as Maple Leaf Foods, known for products like hot dogs and other conventional processed meats. The meat industry's interest in plant-based meat reflects the growing trend of consumer interest in alternatives. A list of some of the top players in the plant-based meat industry- Beyond Meat, Boca (The Kraft Heinz Company), Dr. Praeger's, Field Roast (Maple Leaf Foods), Gardein (Conagra), Impossible Foods, Lightlife (Maple Leaf Foods), MorningStar Farms (Kellogg's), Quorn (Monde Nissin), Sweet Earth (Nestle), Tofurky.





PBM-Future Prediction

The PMB sector is booming, it's no longer a fantasy, it's a reality, it's a multi-billion-dollar startup in the developed world over the past decade. According to the MarketsandMarkets analysis report, the global market value of PBM is estimated at USD 12.1 billion in 2019 and is projected to grow at a CAGR of 15.0% from 2019 to 2025, to reach USD 27.9 billion by 2025.

Consumer demand and positive reception over the last few years have illustrated that plant-based meats are not only here to stay, but could help to reinvent the food industry at large. Plant-based meats represent the kind of change the world needs at a time when the climate catastrophe is wreaking havoc, and many people are suffering negative health effects from consuming too much conventional meat. However, there is still more to be done.

References

1. <https://timesofindia.indiatimes.com/life-style/food-news/why-plant-based-meat-will-be-the-next-big-thing-in-2020/photostory/74132020.cms>
2. Van Vliet, S., Kronberg, S. L., & Provenza, F. D. (2020). Plant-based meats, human health, and climate change. *Frontiers in Sustainable Food Systems*, 4, 128.



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ARCGIS AND REMOTE SENSING COURSE

NExCo. came up with one week (7 Days) online training session on "ArcGIS and Remote Sensing Course" from 8th June 2021. ArcGIS helps people visualize and create information that can be used to make decisions and solve problems. This training session introduced the participants to the basic components of ArcGIS. Participants learned fundamental concepts that underlie the use of ArcGIS, Google earth with hands-on experience with maps and geographic data. During the training session, ArcGIS 10.8 or ArcGIS 10.5 version based on participants' laptop compatibility was used.

In order to facilitate this 8 Days long session we had special mentor from Nepal **Prashant Raj Giri**

Goals:

- Visually analyze feature relationships and patterns on a GIS map and remote sensing.
- Utility and use of ArcGIS in biological sciences.

Software-

ArcGIS 10.8 or ArcGIS 10.5

SUSTAINABLE AGRICULTURE: METHODS AND BENEFITS

Plabon Saha

Faculty of Agriculture

Patuakhali Science and Technology University



INTRODUCTION

In recent years, the world agriculture sector has experienced phenomenal growth since the mid-twentieth century. The green revolution has created a significant concern over the overall supply of food, ensuring food security to the growing population. Modern agriculture is dependent on the uses of chemical pesticides and inorganic fertilizers, and growth regulators. It has raised the agricultural production manifold, but at the cost of resource depletion, environmental deterioration, and loss of crop diversity. The concept of sustainable agriculture emerged because it was realized that modern agriculture is not sustainable in long run. Encouraging farmers to adopt more sustainable methods of farming that will have long-term benefits in environmental conservation and development of sustainable livelihoods is urgent.

Sustainable agriculture emphasizes natural resources maintaining the quality of the environment.



Sustainable agriculture emphasizes natural resources maintaining the quality of the environment. It is the production of plant and animal products, including food, in a way that uses farming techniques that protect the environment, public health, communities, and the welfare of animals. The key to sustainable agriculture is finding the right balance between the need to serve food and the preservation of the ecosystem.



METHODS OF SUSTAINABLE AGRICULTURE

NEED FOR SUSTAINABLE AGRICULTURE

Modern agriculture has consistently used high-yielding hybrid crop varieties which have resulted in depletion of land varieties (indigenous varieties) which are not only nutritious but also have various beneficial traits like drought, disease, and insect resistance. Excessive use of inorganic fertilizers has resulted in soil erosion problems. Fertilizers destroy the soil structure and make the soil susceptible to erosive forces (e.g., water, wind). The soil acidity is caused by the overuse of nitrogenous fertilizers like urea. For the Mismanagement of surface and groundwater resources the problem of waterlogging, soil alkalinity, and salinity happens. The problem of global warming, depletion of biological diversity, drought, and the siltation of water reservoirs are caused due to deforestation. These problems have led to a shift away from the perceived agriculture during the global green revolution, to raise awareness for a shift to sustainable agriculture in different parts of the world, and to give birth to a sense of belonging.



1. Crop rotation: It avoids the consequences that come with planting the same crops in the same soil for years. Rotations of crops break the reproduction cycles of pests. During rotation, certain crops replenish plant

2. Cover crops: Many farmers choose to have crops planted in a field all the time and never leave it barren. By planting cover crops like clove or oat, the farmer can achieve his goal of preventing soil erosion, suppressing the growth of weeds, and enhancing the quality of the soil.

3. Soil enrichment: It is possible to enrich the soil and maintain and enhance the quality of soil in many ways. For example, leaving crop residues in the ground after harvesting and using composted plant material or animal manure.

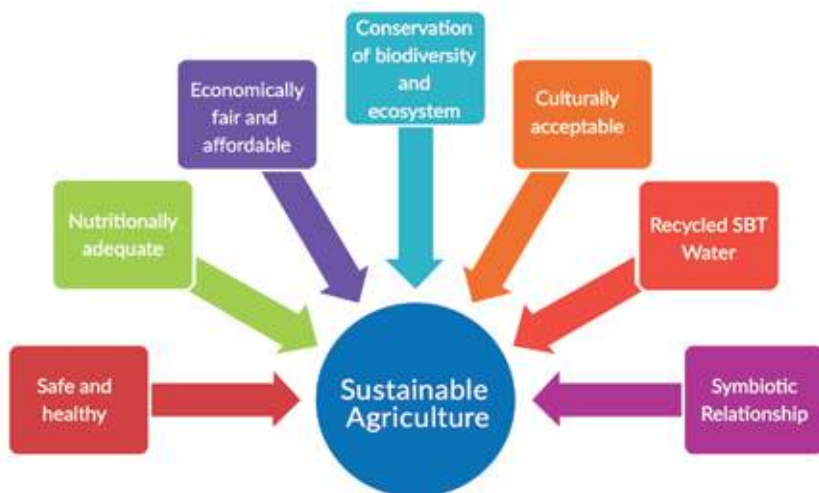
4. Natural pest predators: Many birds and other animals are natural predators of agricultural pests. Managing a farm so that it harbors populations of these pest predators is an effective as well as sophisticated technique.

5. Bio-intensive Integrated Pest Management: This is an approach that relies on biological as opposed to chemical methods. It emphasizes the importance of crop rotation in the fight against pest management. IPM refers to the appropriate response once an insect problem is identified, but disinfectant males and biological control agents such as ladybirds can be used.



BENEFITS OF SUSTAINABLE AGRICULTURE

1. **Contributes to environmental conservation:** Sustainable agriculture helps to replenish the land as well as other natural resources such as water and air ensuring that these resources will be able for future generations to sustain life.
2. **Public Health Safety:** Sustainable agriculture avoids hazardous pesticides and fertilizers so that farmers are able to produce fruits, vegetables, and other crops that are safer for consumers, workers, and surrounding communities.
3. **Prevents pollution:** Sustainable agriculture ensures that any waste from farms produces remains inside the ecosystem. In this way, waste cannot cause pollution.
4. **Reduction in cost:** The use of sustainable agriculture reduces the need for fossil fuels, which saves significant costs in procurement and transportation. This reduces the overall cost of farming.



5. **Biodiversity:** Sustainable farms produce a wide variety of plants and animals resulting in biodiversity.
6. **Beneficial to Animals:** Sustainable agriculture results in better care of animals as well as humane treatment. Sustainable farmers and herders apply animal husbandry practices to protect animal health.
7. **Economically Beneficial for farmers:** Farmers receive a fair wage for their products while engaged in sustainable agriculture. This reduces dependence on government subsidies. Organic farms typically require 2.5 times less labor than factory farms yet yield 10 times more profit.
8. **Social Equality:** Practicing Sustainable agriculture techniques also benefits workers as they are offered a more competitive salary as well benefits.
9. **Beneficial for Environment:** Sustainable agriculture reduces the need for use of non-renewable energy resources and as a result, benefits the environment.

MODEL OF SUSTAINABLE AGRICULTURE



CONCLUSION

Under the changing agricultural scenario, agricultural technologies need a shift from production-oriented to profit-oriented sustainable farming. In this direction, the pace of adoption of resources conserving technologies by the Indian farmers is satisfactory to a larger extent but under the present scenario, we are halfway through the conservation of agriculture. New opportunities are opening the eyes of farmers, development workers, researchers, and policymakers.

They now see the potential and importance of these practices for their direct economic interest and for further intensification and ecological sustainability. Lastly, proper management to improve productivity, profitability, and sustainability of the farming system will go long way for all over sustainability.





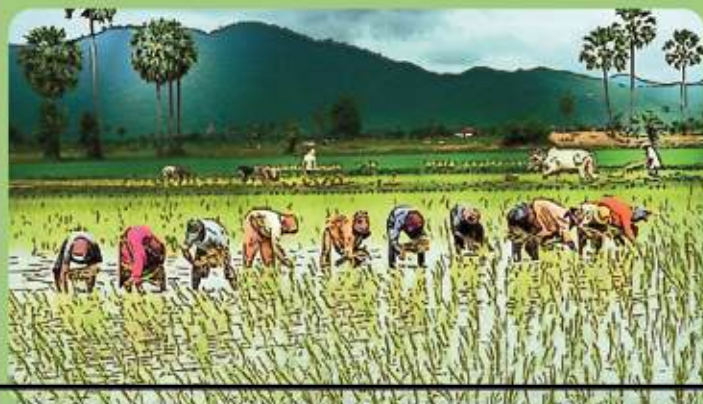
AGRI-FATE: SURVIVAL OF AGRICULTURE THROUGH SDGS

The United Nations established the Sustainable Development Goals (SDGs), also known as the Global Goals, in 2015 as a worldwide call to action to eradicate poverty, preserve the environment, and guarantee that everyone lives in wealth and stability by 2030. The Bruntland Commission Report from 1987 defined sustainable development as "advancement that fulfills current demands without endangering future generations' ability to meet their own." To feed the humans of the nations in this world, agriculture is essential. So, how do the SDGs relate to agriculture? The SDGs stress the significance of agriculture and the need to revitalize farming throughout the world by assisting farmers, boosting investments in research, technology, and market infrastructure, and expanding information exchange. This will spur innovation and give farmers more control. So, what are the SDGs' considerations for sustainable agriculture? SDG-1 focuses on reducing poverty, with agriculture and food playing a significant role. SDG-6 on water, SDG-12 on sustainable consumption and production, SDG-13 on climate

change adaptation and mitigation, and SDG-15 on land use and ecosystems all rely heavily on sustainable agriculture. The combine approach of all the 17 goals of SDGs for sustainable agriculture can reduce the cost of agriculture, nourish the biodiversity, ensure social equality, control air pollution and soil erosion, and advocate for better animal treatments.

Agriculture is the largest industry on the planet. It employs over one billion people and produces over \$1.3 trillion worth of food every year. Pasture and cropland occupy around 50 percent of the Earth's habitable land and provide habitat and food for a multitude of species. Let's focus on a point of bitter truth that is, agriculture is not sustainable. Why? Inadequate or unsuitable policies, such as pricing, subsidies, and tax policies, are among the leading drivers of unsustainable agriculture. These policies have promoted the excessive, and sometimes uneconomic, use of inputs such as fertilizers and pesticides, as well as land overexploitation. Land and water difficulties, old cultivation techniques, shortage of marketing information, impoverishment, depletion

The Bruntland Commission Report from 1987 defined sustainable development as "advancement that fulfills current demands without endangering future generations' ability to meet their own."



of natural resources, and environmental problems, overpopulation, insufficient support services, framework and institutional constraints, and inadequacy of agricultural and rural infrastructure are all major challenges for sustainable agriculture.

Sustainable agricultural development may be achieved through different approaches to agricultural policy and agricultural reform, collaboration, diversification of incomes, land conservation, and enhanced input efficiency. If we focus on our world's cultivation time-lapse, amount of cultivable lands is decreasing every year with an alarming rate. Scientists say, Earth has lost a third of arable land in past 40 years. Land degradation is responsible for 75 trillion tons of productive soil per year. Similarly, every year, desertification and drought lose 12 million hectares of land. This is a region with 20 million tons of grain to generate. Currently, over 11% (1.5 billion hectares) of the world's land is being utilized for agricultural output (13.4 billion hectares) (arable land and land under permanent crops). This region is considered to be somewhat more than one-third (36%) of the land suitable for crops. In a nutshell, we are losing our cultivable land but population of the world is increasing and we need to feed them as well as their future generations. Now, we are not getting enough yield from our native crops, so that we are developing new hybrid and high yield varieties. No people are getting double yield from half of their cultivable land comparing with his regular cultivation land area. Using various scientific methods to nurture the crops to get

the best performance. But is it enough? Can we live like this? Why don't we realize that we will lose our lands if we can't save them and don't cultivate crops in a sustainable way!! We must practice how to feed the soil, proper management of cultivation having very less resource. Once people could cultivate crops

without applying irrigation, fertilizers or pesticides. But present situation is different. An estimate shows that more than 805 million people are enduring chronic starvation globally (526 million in Asia and the Pacific, 227 million in Africa, 37 million in Latin America and 15 million in the industrialized nations). Roughly three quarters of the population lives in rural regions. Their food and livelihoods depend heavily on agriculture. One of the major environmental concerns of the 21st century is how and where we produce food. A task that is becoming more difficult every day is to sustain life in an increasingly crowded world of more than 7 billion people. By 2050, another 2 billion people will live on our globe. How will we feed them all? Not only will there be more people, but everyone will have more money to spend on food.

You may now be asked: are SDGs for sustainable agriculture truly effective? The fact is that there is not enough information to demonstrate the efficiency of the SDGs. There are not enough nations that monitor the results of SDG and generate statistics to illustrate what is being done. Although each country works together to achieve the SDGs in collaboration with a large number of civil societies organizations, it is not a simple struggle. To make the SDGs more feasible, much more may yet be done.

	Arable land in use						Annual growth		Land in use as % of potential		Balance	
	1961/63	1979/81	1997/99	1997/99	2016	2030	1961-1999	1997/99-2030	1997/99	2030	1997/99	2030
	mB						%		%		mB	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Sub-Saharan Africa	119	138	155	228	262	288	0.77	0.72	22	28	803	743
Near East/North Africa	86	91	100	86	86	93	0.42	0.23	87	94	13	0
Latin America and the Caribbean	104	138	159	203	223	244	1.22	0.57	19	23	883	822
South Asia	191	202	205	207	210	216	0.17	0.13	94	96	13	4
excl. India	29	34	35	37	38	39	0.37	0.12	102	108	-14	-16
East Asia	176	182	227	232	233	237	0.86	0.06	63	65	134	129
excl. China	72	82	93	98	105	112	0.82	0.43	52	60	89	75
Developing countries	676	751	845	956	1012	1076	0.68	0.37	34	39	1826	1706
excl. China	572	602	713	822	889	951	0.63	0.49	32	37	1781	1652
excl. China and India	410	483	543	652	717	774	0.81	0.54	27	32	1755	1633
Industrial countries	379	369	387				0.07		44		487	
Transition countries	291	280	265				-0.19		53		232	
World	1351	1432	1505				0.34		36		2682	

Source: Columns (1)-(3): FAO/STAT, November 2001.
Note: excl. China includes a few countries not included in the other country groups shown.

If we focus on our world's cultivation time-lapse, amount of cultivable lands is decreasing every year with an alarming rate. Scientists say, Earth has lost a third of arable land in past 40 years.



The fact that the bigger countries often coerce or harass small nations seems like a negative connotation of multilateralism and synergy. The SDGs are for nations with poor and low incomes since they most require them. Corruption is typically widespread in these nations, and the monies provided to them are poorly administered. The cost to governments of tax evasion and offshore bank accounts is very much to tax losses. More than \$1.2 trillion in taxes is lost annually as a result.

But the sustainability goal remains the way ahead, notwithstanding all this. Somewhere we must begin. The Millennium Development Goals have been a solid start, but additional state players, civil society and resources have joined the SDGs. Nearly 50 million lives have been spared since the year 2000. The MDGs and the SDGs can do this. Defects in our attempt to change are innate. But that doesn't imply that we need to give up. It means we need to put more resources to ensure success if we want to live and save our future.

Reference:

1. <https://www.undp.org/sustainable-development-goals>
2. <http://www.fao.org/3/y4252e/y4252e06.htm>
3. https://farmingfirst.org/sdg-toolkit#section_2
4. <https://medium.com/nonviolenceny/the-short-comings-of-sdgs-and-possible-solutions-a8563a7b16e0>
5. Kroll, Christian. "Poor Implementation: Rich countries risk achievement of the global goals." Bertelsmann Foundation. Accessed August 10, 2018. <https://www.bertelsmann-stiftung.de/en/topics/aktuelle-meldungen/2018/juli/poor-implementation-rich-countries-risk-achievement-of-the-global-goals/>.
6. Transparency International. "NO SUSTAINABLE DEVELOPMENT WITHOUT TACKLING CORRUPTION: THE IMPORTANCE OF TRACKING SDG 16." Accessed August 5, 2021. https://www.transparency.org/news/feature/no_sustainable_development_without_tackling_corruption_SDG_16.
7. <https://www.worldwildlife.org/industries/sustainable-agriculture>
8. Photo: <http://www.expo2015.org/magazine/en/economy/agriculture-remains-central-to-the-world-economy.html>



The fact that the bigger countries often coerce or harass small nations seems like a negative connotation of multilateralism and synergy.



Md. Asaduzzaman Nur
National Vice President of External Relations
IAAS Bangladesh



REVIEW PAPER WRITING COMPETITION-2021

Theme: Progress of Agricultural Research in Independent Bangladesh
(From 1971-2020)

Paper must include the following headings:

- » Abstract
- » Introduction
- » Materials and Methods
- » Result and Discussion
- » Conclusion
- » Reference

Limitations:

- » Word Limit: 6000 words
- » Font Style: Lato
- » Font Size: 12
- » References should be written in APA style
- » Paper having more than 25% plagiarism will be disqualified.

Submit through:

bangladesh@iaasworld.org
cc: iaasbangladesh@gmail.com

Deadline for submission: 16th March, 2021



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REVIEW PAPER WRITING COMPETITION-2021

Theme: Progress of Agricultural Research in Independent Bangladesh

IAAS Bangladesh arranged something amazing focusing on the 50th year celebration of our independence.

A different type of competition-related agricultural research.

Participants had to collect information about agricultural research (data and results) from 1971 till 2020 and show the progress of agriculture.

The paper included the following headings:

- » Abstract
- » Introduction
- » Materials and methods
- » Result and discussion
- » Conclusion

What are the
Suitable Growing Space?

Health Benefits??

EDIBLE MUSHROOM CULTIVATION

Is Good Spawn
an Essential Factor?

Mushrooms
the plant of
immortality?



What are the
Requirements for
Mushroom Cultivation?



Prabesh Rai

VP of National Exchange

Department of Agronomy and Agricultural Extension

University of Rajshahi

Unsplash

Mushrooms the plant of immortality?

That's what ancient Egyptians believed according to the Hieroglyphics of 4600 years ago. The delicious flavor of mushrooms intrigued the pharaohs of Egypt so much that they declared that mushrooms were food for royalty and that no commoner could ever touch them. This assured them of the entire supply of mushrooms. In various other civilizations throughout the world, including Russia, China, Greece, Mexico, and Latin America, mushroom rituals were practiced mushroom is also considered a favorite and valuable among many of the tribesmen of the Chittagong Hill Tracts. In the late 19 century, mushrooms production moving from an easy backyard crop in the early days of cultivation, to large money-making industry and now the leading countries in mushroom productions are Japan, Korea, Italy, Malay, U.S.A., etc. Mushroom cultivation in Bangladesh is a recent phenomenon.

Mushroom is a general term applied to the fruiting bodies of the fleshy fungi and as such belongs to different groups of fungi. The majority of these mushrooms (fleshy fungi) belong to Hymenomycetes of Basidiomycotina, characterized by the presence of a spore-bearing layer known as Hymenium. This layer may be present on either side of the gills as in the gill fungi e.g., *Agaricus*; it may form the lining of the numerous pores present in the fruiting body e.g., *Boletus*; it may form the covering layer of teeth-like structures as in *Hydnum*; or it may cover the more or less upright club of branched fructification e.g., *Clavaria*.

In the puffballs (*Lycoperdon*) belonging to Gasteromycetes, the basidiospores are produced and matured inside a closed saccate fruiting structure, which opens, by an apical pore at maturity. Other fleshy fungi, viz., *Morchella* belong to the Discomycetes (Ascomycotina). Here in

contrast to basidiospores, ascospores are produced inside a sac-like ascus and bear generally two to eight ascospores. These asci may be intermixed with paraphyses and form the hymenium, lining the fruiting body, which may be cup-shaped apothecia, e.g., *Alegria*, others may resemble basidiocarps, which are clavate to pieleate with the surface convoluted, wrinkled, or pitted as in *Morchella*. This is also commonly known as "sponge mushroom" or the morels. However, the common term "mushroom" often refers to the fruiting body of the gill fungi.

Requirements for Mushroom Cultivation:

Mushroom is a fast-growing fungus, which naturally grows in dark, damp places on tree trunks or logs, or any other materials. But the edible commercial mushrooms are cultivated in buildings and caves in which temperature and humidity are strictly regulated or cultivated in controlled conditions. Many factors influence the growth, fructification, and production of mushrooms such as Temperature, Moisture, Ventilation, Good spawn, Light, Different gasses, Nutrition, Biological stimulation, suitable growing space, etc.

1. Temperature:

The temperature is very important for the spread of the mycelium or vegetative growth, fruiting. Within limit, it is prescribed that the temperature should be uniform throughout the growth of the crop. If it is too cold the development of the spawn will be retarded or arrested. A high temperature will favor the development of molds and bacteria, which will soon destroy the spawn or crop. 20°C-25°C for oyster mushroom, 25°C-35°C for milky white, Straw Mushroom 25°C-30°C to 28°C-36°C. Shitake Mushroom 22°C-28°C to 15°C-22°C. Button Mushroom 24°C-30°C to 15°C-24°C. Medicinal 22°C-28°C to 25°C-35°C Mushroom.



2. Moisture:

Moisture is an important factor in the cultivation of the mushroom and needs careful application. The mushroom requires an atmosphere nearly saturated with moisture, yet the direct application of water on the beds is more or less injurious to the growing crop. They should be protected from a dry atmosphere or spring, drought, when watering becomes necessary it should be applied in a fine spray around the beds to restore the moisture. In general, 90% humidity is required for initiating fruiting body formation and 80% during their further development in fleshy species. The water contains in the substrate should be around 55-65%.

3. Ventilation:

Good aeration is essential for a healthy crop, as ventilation is one of the important factors governing mushroom production. Ventilation is responsible for the maintenance of congenial environmental conditions and also for the removal of toxic gasses by the introduction of adequate fresh air.

4. Good spawn:

Spawn is merely mycelium from a selected mushroom grown on some convenient medium and it is the strain of mushroom selected which decides the type of mushroom the spawn will produce.

Good spawn is an essential factor for mushroom cultivation and good spawn should have the following qualities:

- i. It should be of a strain originated from a single specimen of a perfect crop.
- ii. The substrate should be fully covered with mycelium.
- iii. Must be uniform in growth.
- iv. Should be free from mold and other organisms.
- v. Should have a strong mushroom odor.

5. Light:

Light plays role in the initiation and maturation of

fruiting bodies. Light may be necessary for the initiations of primordial or it may affect subsequent stages of differentiation, ie. Stripe development. pileus formation, hymenium and spore formation. Light is found less important factor, it influences discoloration which is not desirable in dye production.

6. Different gasses:

The composition of the atmosphere gasses-oxygen, carbon dioxide, and others around developing mushrooms has a significant influence on the appearance of fruiting bodies. The oxygen range should around be around 0.6-21% and the carbon-di-oxide range should be around 0.10- 0.15%.

7. Nutrition:

Nutrition is probably the most important single factor in the control of growth and reproduction in mushrooms. Pure culture studies have shown that the elements required for reproduction are the same as those necessary for vegetative growth but the quantities required and the form in which the various elements must be present are not necessarily the same for both phases. The nutrients may be included in the culture medium as required and included in the substrate.



Suitable growing space:

The following space requirements are necessary for the successful production of mushroom_

- a) The location should be easily accessible so that the manure and other materials (casing soil) can be removed with ease.
- b) The room should be well ventilated.
- c) No direct sunlight should fall on the mushroom bed or substrate. Diffuse light, however, will not harm mushroom growth.
- d) The room temperature should not exceed 20°C during the growing period.
- e) Heating facilities should be provided so that the room may be heated when the temperature drops

f) The location should have sufficient protection so that it is not subject to sudden fluctuation in temperature, since mushrooms cannot withstand sudden temperature changes.

g) Locations for growing mushrooms should not be too moist. The idea has gained ground that mushrooms should be grown in humid, badly ventilated rooms. This is an entirely wrong notion. Mushrooms do not develop well in too high humidity and will not develop at all with insufficient ventilation.

Indeed, there will be a quantum leap in mushroom popularity when the public realizes that the mushroom_

- Stimulates the immune system, helping the human body resist and fight viral disease and cancer.
- Nutritious and delicious diet.
- Lower cholesterol levels.
- Represents a pesticide-free alternative to traditional crop production if proper management is done.
- Are instrumental in the recycling of wood and agricultural by-products.



Unsplash

h) The best way would be if each unit is filled at one time and is arranged so that it can be closed up tightly and completely isolated from its surroundings, to facilitate the fumigation and disinfection of the beds or substrates of mushrooms.

i) Near the location of mushroom growing, there should be a good freshwater supply, availability of fertilizers for making compost, and a good market for the disposal of mushrooms.

- Can easily be grown by everyone-outdoors in your garden or yard (mycological landscaping) or indoor.
- A good job for women and disabled people.
- Foreign currency earning sector for the economic development of the country





"Everything is never as it seems" so as the ocean. The tranquil and serene waves that we see from the ground it's not all about the ocean. The ocean is beyond our imagination. We can say there is another tiny dynasty below the water. That dynasty consists of various species of corals, fish, marine resources, and mostly thousands of mysteries. Full of mystery, the ocean is the world's largest ecosystem, containing the vast indecisive potential for scientific discovery.

Ocean has a great impact on climate change as it absorbs around 23% of annual CO₂ emissions generated by various sources. Besides, the ocean plays an important role in the world economy through fisheries and other marine resources. Considering these facts, "Life below water" is one of the most important Sustainable Development Goals (SDG). The goal is to conserve and sustainably use the world's ocean, seas, and marine resources.

Over three billion people depend on marine and coastal biodiversity for their livelihood. And this, directly and indirectly, this dependency is the barrier to achieve the goal.

So, to achieve SDG on life below water the first and foremost step is to change our minds and we have to realize the importance of the ocean. After that, we will be able to reduce pollution. We should eliminate the usage of plastics, ending harmful fishing practices, making ocean-friendly choices like using nature-friendly fuel, stopping coral Minnie, reducing sedimentation, and last but not least promoting sustainable tourism will help to achieve the goal.

If we don't want to turn our future bleak, it's high time to turn over a new leaf by conserving our planet's life support "Ocean".



Sharif Maheria
Faculty of Agriculture
Sylhet Agricultural University

40% of oceans are the victim of overfishing, poor fishing, and also the coral reefs which provide a home to 25% of all marine life are being destroyed by humans.



First of all, every year almost 5-12 million metric tonnes of plastic enter the ocean. About 89% of plastic litter found on the ocean floor are single-use items like plastic bags, polyethylene. This is one of the biggest threats to the ocean. Secondly, about 80% of all tourism takes place in coastal areas and it poses a major threat to natural resources. Thirdly water pollution through the fuel from ships and vessels also threatens the home of thousands of living organisms. Lastly, 40% of oceans are the victim of overfishing, poor fishing, and also the coral reefs which provide a home to 25% of all marine life are being destroyed by humans.

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ZOOM



"Explore the Fairest Fungi"

WORKSHOP TO AMELIORATE PRACTICE ON MUSHROOM CULTIVATION

12th-15th
NOVEMBER

Hosted By : IAAS Bangladesh, ExCo



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IAAS Bangladesh

দৈনিক
ইত্তেফাক
THE DAILY ITTEFAQ

WORKSHOP TO AMELIORATE PRACTICE ON MUSHROOM CULTIVATION

To take out some productivity despite the pandemic, IAAS Bangladesh arranged an auspicious program. Mushroom, an outstanding Fungi, is occupying our demand list day by day. The government of Bangladesh is highly emphasizing its cultivation and concentrating to enlarge this sector. So, that's why IAAS Bangladesh arranged an opportune workshop regarding the topic - "Workshop to Ameliorate Practice on Mushroom Cultivation", titled "Explore the Fairest Fungi".

Some of the most proficient personalities of related sectors were lighted up the speaker panel. Participants enjoyed a dynamic discussion phase that broadened their outlook & develops their knowledge for an oncoming career. And every participant got E-certificate.

Speakers:

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HOW WE EAT: MISCONCEPTION ABOUT NUTRITION

Umme Saida

Nutrition & Food Science

Patuakhali Science & Technology University



You may not realize it but every day you make unconscious decisions about how you eat. Some healthy and some not-so-healthy.

A misconception may be defined as *"a belief commonly held as true but which is not in accord with scientific evidence to date. This would include fallacies, fads, and half-truths"* (Wang, 1971). Misconceptions may arise from wrong learning or misinformation as well as inadequate e-learning or insufficient information (Heflin and Pangle, 1966).

A lot of people have access to the right nutrients, but some actually think that we are providing their bodies with all the nutrients they require, when in actual reality, they are not.

Here are revealing the top nutrition misconceptions people have and the truth behind the myths:



Myth: Carbs make you fat.

Fact: Just because a food is not rich in micronutrients and minerals does not automatically mean it is "bad" food. Carbohydrates make up the backbone of our DNA. The power our cells, store energy for later and feed our good bacteria. With that said, we need carbs to perform and feel our best.

Carbs are the main source of energy for our bodies and brain. What matters most is the quality of carbs you eat, not necessarily the quantity. Stick to complex carbs such as quinoa, sweet potatoes, squash, and

legumes. Not only do these types of carbs have a higher fibre ratio, but they also take longer for the body to digest and break down.

Tip: *No single macronutrient alone causes obesity or weight gain. Many factors including sleep, stress, metabolic rate, and lifestyle all work together to contribute to weight gain. If you want to look and feel your best, eat carbs!*



Myth: *Skipping meals is a good way to lose weight.*

Fact: Studies show that people who skip breakfast and eat fewer times during the day tend to be heavier than people who eat a healthy breakfast and eat four or five times a day. This may be because people who skip meals tend to feel hungrier later on, and eat more than they normally would. It may also be that eating many small meals throughout the day helps people control their appetites.

Tip: *Eat small meals throughout the day that include a variety of healthy, low-fat, low-calorie foods.*



Myth: *you can never eat "junk" food.*

Fact: Some religiously stay away from all chocolate bars, chips, candy, cookies, cakes, and other foods that are categorized as "junk". They'll skip the slice of birthday cake or a trip to the ice cream store with their kids. But food is part of our social nature and should be enjoyed. These types of food can be part of a healthy eating plan.

Tip: *Knowing how to stay in control of your cravings and eating this food sensibly is the trick.*



Myth: *You must drink 8 cups of water each day.*

Fact: Stop worrying about the numbers and listen to your body! Some folks may need more than 8 cups while others may need less. Many forget that foods like fruits and vegetables also contribute to our overall fluids needs (as does juice, soda, and even coffee). All fluids and foods contribute to our hydration, but a good ordinary level of water is still the best choice. Drink fluids with meals and throughout the day (and some extra if you exercise) to make sure you are getting enough.

Tip: *Find out more about how much water you really need. legumes. Not only do these types of carbs have a higher fibre ratio, but they also take longer for the body to digest and break down.*





Myth: Genetics cause obesity.

Fact: Although 25-70 percent of the difference in weight between individuals may be related to genetics, genetic factors only predispose an individual to obesity – they do not cause obesity.



Myth: Natural Means Healthy.

Fact: The term natural is so loosely defined by the government that you'll find it on everything from cereal boxes to soda to packages of meat. Don't be fooled into believing that natural means healthy. Just as a low-fat level does not automatically signal a healthy snack, neither does an "organic" or "natural" one. Although organic foods may be healthier than non-organic versions of the same snack, being organic or natural does not exclude foods from being loaded with salt, sugar, or saturated fats.

A fruit flavoured product, for example, may claim it contains real fruit, but this doesn't mean there is any substantial amount in the product or indicate the rest of the ingredients are.

Don't be fooled into believing that natural means healthy.

Tip: It is good to eat naturally and organically where possible, it is also important to read through the ingredients and nutrition information to make sure "natural" products are really as healthy as they seem.



Myth: Natural or herbal weight-loss products are safe and effective.

Fact: A weight-loss product that claims to be natural or herbal is not necessarily safe. These products are not usually scientifically tested to prove that they are safe or that they work. For example, herbal products containing ephedra (now banned by the U.S. Government) have caused serious health problems and even death. Newer products that claim to be ephedra-free are not necessarily danger-free, because they may contain ingredients similar to ephedra.

Tip: Talk with your health care provider before using any weight-loss product. Some natural or herbal weight-loss products can be harmful.





Myth: *If you exercise, you can eat whatever you want.*

Fact: Think you can indulge in a super high-in-fat treat after hitting the gym? In order to "make up" for an order of large fries, you would never swim laps for an hour. I have your guilty pleasure is a slice of pepperoni pizza? Let's hope you jog for 30 minutes at a medium pace.

Tip: To keep your weight in check, balance out physical activity with your calorie intake.



Myth: *You must take a multivitamin everyday.*

A

B₅

D

B₆

B₉

K

B₂

A

E

C

B₁

D

B₁₂

PP

B₆

Fact: Taking supplements can be a slippery slope if you don't do your research. One of the most common supplements that folks think is a must is a multivitamin. Although it may seem harmless, you need to look at the inter picture- how much of each vitamin is present? Does the multivitamin contain herbs too? Do you take other medications or supplements?

Tip: Talking to your doctor, or registered dietitians, a smart idea to be sure multivitamin is right for you.



Myth: *Sweet Potatoes Are Healthier Than White Potatoes.*

Fact: The humble white potato gets the short stick but shouldn't. People demonize potatoes over sweet potatoes, but the nutrient composition is quite similar. Sweet potatoes have more vitamin A and an additional gram of fibre, but white potatoes have more potassium (Essential for helping regulate blood sugar). Nutrition info from the U.S. The Department of Agriculture on sweet and white potatoes backs up these details.

Tip: Include a combination of sweet and white taters in your diet.



Both types of potatoes are rich in fiber, carbs, & vitamins B₆ and C. White potatoes are high in potassium, whereas sweet potatoes contain more vitamin A.



Myth: *Brown sugar is healthier than white sugar.*

Fact: With many people longing for a way to indulge their sweet tooth and stay healthy at the same time, sugar is a common cause of misconceptions. One theory that many buy into is the idea that brown sugar (in the way of brown bread and rice) is healthier than the white variety, however, this is not true.

Although brown sugar contains small traces of minerals (due to the presence of molasses), in reality, they are such small traces that they are no real benefit to our health.

Tip: *At the end of the day, brown sugar is still sugar, and it brings with it all the same calories and health risks of white sugar, including increased risk of heart disease, tooth decay, and obesity.*



Myth: *You can't eat late at night.*

Fact: Making the blanket statement that "I can't eat after 8 p.m." isn't always the smartest choice. You may have had a hectic day and not enough time to eat your dinner at 8 p.m., does that mean you should skip it completely? The blanket statement doesn't really apply to all people, schedules, and lifestyles.

Tip: *If you do find yourself hungry at night, here are a few healthy snack options you may want to consider.*



Myth: *If you eat late at night, you will gain weight.*

Fact: Physiologically, calories don't count for more at night. You will not gain weight by merely eating later in the day or at night, as long as you are eating within your caloric maintenance. So, in other words, as long as you are not overeating for the amount of energy you are burning off throughout the day, it does not matter whether you eat in the morning or before bed.

Studies have shown though those night-time eaters typically make poorer decisions and eat more calories at night, which can obviously lead to weight gain.

Tip: Eating late at night does not affect weight gain as long as you are staying within your caloric maintenance.



Myth: You should eat smaller, more frequent meals throughout the day.

Fact: The optimal timing and size of your meals depends on various factors that are totally unique to you. When you eat and how much you eat has to coincide with you, your lifestyle, and your schedule. It does not matter whether you have one big meal a day or six smaller meals. The difference will have no effect on your metabolic rate and eating one way over the other will have no effect on fat loss progress.

Tip: As long as you are staying with your caloric maintenance, meal frequency has no part in weight loss or gain.



Myth: Diabetes caused by eating too much sugar.

Fact: Diabetes is caused by a variety of factors, and while consuming high amounts of sugar isn't the healthiest choice, sugar consumption alone does not cause diabetes.

The main risk factors for developing type 2 diabetes are:

Eating a high-calorie, high-fat diet

Being overweight

Having a family history of diabetes

Being over 45

Leading a sedentary lifestyle

Tip: Eating late at night does not affect weight gain as long as you are staying within your caloric maintenance.



Myth: Following a very low-calorie diet is the best way to lose weight.

Fact: While reducing calorie intake can indeed boost weight loss, cutting calories too low can lead to metabolic adaptations and long-term health consequences.

Though going on a very low-calorie diet will likely promote rapid weight loss in the short term, long-term adherence to very low-calorie diets lead to a reduction in metabolic rate, increased feelings of hunger, and alterations in fullness hormones. This makes long-term weight maintenance difficult.

This is why studies have shown that low-calorie dieters rarely succeed in keeping excess weight off in the long term.

Tip: Very low-calorie diets lead to metabolic adaptations that make long-term weight maintenance difficult.



Myth: High cholesterol foods are unhealthy.

Fact: Cholesterol-rich foods have gotten a bad rap thanks to misconceptions about how dietary cholesterol affects heart health. While some people are more sensitive to dietary cholesterol than others, overall, nutrient-dense, cholesterol-rich foods can be included in a healthy diet. In fact, including cholesterol-rich, nutritious foods like eggs and full-fat yogurt in your diet may boost health by enhancing feelings of fullness and providing important nutrients that other foods lack.



Tip: All the genetic factors make some people more sensitive to dietary cholesterol, for most people, high cholesterol foods can be included as part of a healthy diet.



The World Health Organization (WHO) defines “nutrition” as the intake of food, considered in relation to the body’s dietary needs. Good nutrition, which is characterized by a well-balanced diet, is a cornerstone of good health, especially when combined with regular physical activities. That means two things – eat healthy and get exercising!

References:

1. Diet & Nutrition /EVERYDAY HEALTH/ Jessica Migala / September 10, 2020
2. Top 10 Nutrition Misconceptions/ Food Network's Healthy Eats/ Healthy Tips/Toby Amidor, M.S., R.D., C.D.N., July 2011
3. Myths and Misconceptions about Nutrition/diseases prevention/lumen learning / Common Misconceptions About Nutrition/pbim/ April 25, 2019
4. Diet myths debunked does eating late cause weight gain/ healthy eats / food network/ 08 June 2010
5. THE TRUTH ABOUT NUTRITION - DON'T FALL FOR THESE MISCONCEPTIONS/Raleigh Medical Group/igh Medical Group, PA/ Division of Raleigh Medical Group/ 12 April, 2018
6. 10 High-Fat Foods That Are Actually Super Healthy/ Healthline/ Nutrition Kris Gunnars, BSc/June 4, 2017

"Get Back Your Food Security during Covid-19 Pandemic"



NATIONAL AGRI-SCIENTIFIC CONFERENCE 2020

Theme: "Impact of Covid-19 on the Food Security of Bangladesh"

EVENT OUTLINE :

- Policy Making Completion
- Panel Discussion
- Scientific Paper Presentation
- Online Quiz Competition
- Gala Day



NATIONAL AGRI-SCIENTIFIC CONFERENCE 2020

We, all over the world are passing through a very horrible situation and that is "COVID-19". This pandemic not only taking life by the virus attacking but also by falling down people in a food crisis, especially the poor people are the greatest sufferer. COVID-19 has created a global-wide as well as national wide food crisis and the long-term impact of the pandemic is predicted to reach far beyond nowadays. In a lower-middle-income country with upward economic growth, such as Bangladesh, it is an essential step first to understand the present situation in order to create a proper recovery plan. Our target is to develop a common understanding among farmers, students, professors, researchers, and organizers so on about the issue. So, keeping in mind all of these sufferings, IAAS Bangladesh arranged a conference which would be happened totally virtually. Participants would try to figure out the problems and their exact solutions at this conference.

Conference Details :

The conference was held on 17th-20th December 2020. It was long for 4 days on a virtual platform via zoom.

Event Outline:

- 1) Policy-Making Competition
- 2) Panel Discussion
- 3) Scientific Paper Presentation
- 4) Q/A session
- 5) Online Quiz Competition
- 6) Gala day

FARMED TILAPIA: NOT FOUND TO BE HARMFUL FOR HUMAN CONSUMPTION

"A Reliable Nutritious Food Source for Bangladesh!"



Md. Atique Ashab

Faculty of Fisheries
Sylhet Agricultural University

Bangladesh ranks fourth in the world in tilapia fish production, and third in Asia.

Aquaculture is the world's fastest expanding food production sector, accounting for nearly half of the worldwide fish supply. Aquaculture production is expected to increase by 40% by 2030 to meet world fish demand. Tilapia, the world's second most farmed fish, has played a significant part in the expansion of aquaculture and will continue to do so in the future. It is in high demand all around the world because of its excellent nutritional value and low cost, and Bangladesh is no exception.

According to a United Nations Food and Agriculture Organization report, Bangladesh ranks fourth in the world in tilapia fish production, and third in Asia. According to Bangladesh's fisheries statistical yearbook, the production of tilapia fish in the financial year 2018-19 was

3,90,559 metric tons, contributing approximately 10.49 % of the country's total fish production.

But it is a matter of great sorrow that from time to time, unfavorable news about tilapia fish has been broadcasted in many news outlets around the country, leading to widespread beliefs that tilapia fish intake is hazardous to one's health. American researchers conducted tilapia fish research, which focused on Chinese tilapia fish aquaculture. The majority of tilapia is farmed in China, from which more fish are transported to the United States. Chicken, pig, and beef are utilized as food in this fish aquaculture in China. As a result, American researchers advised individuals not to consume it. Suspicion is also present in the thoughts of common people, as the hormone use in tilapia production poses a danger to human health.

However, consumption of tilapia fish in Bangladesh are safe. Although there is some debate regarding the use of hormones in fish, no health risks have been proven so far for consuming this species. The use of the androgen 17-Methyl Testosterone (MT) in tilapia



The study involved the GIFT strain of Nile tilapia | © WorldFish

farming is the most convenient and effective method of producing all-male tilapia stocks that continuously develop to a larger/more uniform size than mixed-sex or all-female tilapias. It is extremely effective on Nile tilapia, *Oreochromis niloticus*, the most common species farmed economically throughout the world. MT is a synthetic male hormone that closely resembles the naturally occurring hormone testosterone. As a result, it is widely utilized in

human medicine as a hormone supplement and in agriculture to enhance weight increase in animals.

Tilapias excrete ingested hormone quickly, with MT levels dropping to less than 1% within 100 hours of withdrawing MT. As a result, MT is not detectable in mature tilapias, which take at least five months to achieve international marketable size. The most noteworthy finding is that the amounts of

MT eaten by tilapias during the fry treatment period (equal to 0.1-0.2 mg MT/fish on average) constitute less than 0.001% of the normal daily MT dosage given in human medicine (20-40mg) and that even this minute amount drops to less than 0.00001 percent of the daily human dose following one week of ending tilapia MT therapy. It should also be emphasized that dairy and meat products provide far more hormones to the human diet than MT-treated tilapia could ever do, yet even these hormone-rich foods account for less than 0.1 percent of the endogenous sex hormone generated by humans.

This fish is safe to eat since it contains no hazardous ingredients. Various government and non-government groups, notably the Bangladesh Fisheries Research Institute, have conducted research to demonstrate this. If a suitable environment, proper water quality, high bio-security is maintained,



proper hormone dosages are applied with caution, and nutritious and safe food is ensured, there is no possibility of harmful substances in various fish including tilapia produced from farm. Tilapia is used in a wide variety of food dishes and can be boiled, smoked, or grilled.

According to WorldFish research, tilapia is beneficial to pregnant and lactating women, children, and the elderly. It promotes healthy growth and development, protects against heart disease, and aids with cognitive function. This fish is high in nutrients such as vitamin B12, vitamin B6, vitamin D, and omega-3 fatty acids, Potassium, Phosphorus, Selenium etc.

Furthermore, a recent study in Brazil discovered promising results in the treatment of burns using the skin of tilapia fish following disinfection. Several antiviral peptides (AVPs) derived from aquatic creatures be efficient in interfering with the activities of infectious viruses such as Human Immunodeficiency Virus-1 and 2. Tilapia is the source of numerous peptides (Tilapia hepcidin (TH) 1-5, Hepcidin 1-5, and so on) that can target viruses such as IPNV, Grouper NNV, JEV, and NNV. Positive regulation of interleukin, annexin and other antiviral gene expressions, Agglutination of virions from clumps to block their entrance into host cells, disruption or digesting of viral capsid proteins, modulation of immune sensitive gene expression are their actions against the target virus. Tilapia AVPs should be

evaluated as prospective treatments for the COVID-19 pandemic produced by SARS-CoV-2 (severe acute respiratory syndrome coronavirus 2), as no therapeutic medicines are currently available.

So, including modest amounts of tilapia fish in our daily intake can be a smart way to satisfy protein demands and maintains our body healthier.

References:

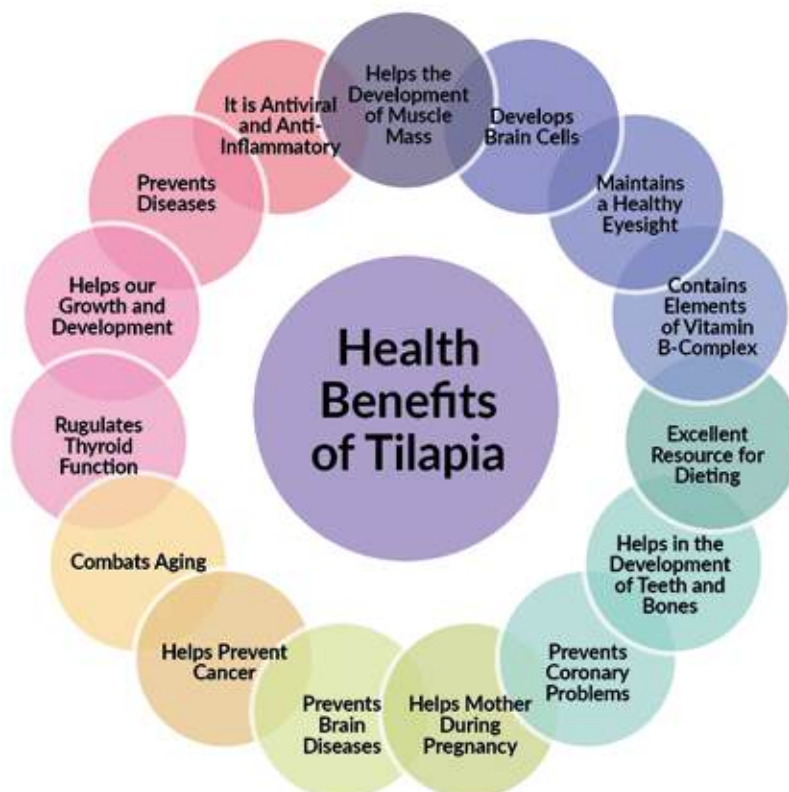
1. DOF. Yearbook of Fisheries Statistics of Bangladesh 2018-19. s.l.: Department of Fisheries, Bangladesh:Ministry of Fisheries and Livestock., 2020.
2. FAO. The State of World Fisheries and Aquaculture (SOFIA). Rome, Italy : FAO, 2020. p. #244 p.
3. Sumon, Tofael & Hussain, Md & Hasan, Mahmudul & Rashid, Aminur & Abualreesh, Muyassar & Jang, Won Je & Sharifuzzaman, Sm & Brown, Christopher & Lee, Eun-Woo & Hasan, Md Tawheed.

(2021). Antiviral peptides from aquatic organisms: Functionality and potential inhibitory effect on SARS-CoV-2. *Aquaculture*. 541. 736783.10.1016/j.aquaculture.2021.736783.

4. WorldFish. News and updates.-Multimedia.Timor Leste PADTL Project Nutrition Poster. CGIAR Research Program on Fish Led by WorldFish. [Online] <https://fish.cgiar.org/news-and-updates/multimedia/timor-leste-padtl-project-nutrition-poster>.

5. Johnstone R., Macintosh D.J. and Wright R.S., 1983. Elimination of orally administered 17a Methyl-testosterone by *Oreochromis mossambicus* (tilapia) and *Salmo gairdneri* (rainbow trout) juveniles *Aquaculture* 35 249-257.

6. Velle, W., 1982. The Use of Hormones in Animal Production. *FAP Animal Production and Health Papers* 31: 53pp.



LIFE ON TITAN

27 JUNE, 4022

The Saturn was about to fall when Adam was hurrying through the plastic culvert. A cold wind blew which gave Adam a jolt. Below the culvert the shimmering methane lake was reflecting the orange haze from the sky above. The distant mega agro-capsules are now out of sight. Dione and Enceladus rose in the North sky a while ago. But dark clouds covered the bright Rhea today. It may rain soon and Adam don't want to get drenched in methane again. So, he rushed towards his home. On the way he saw uncle Solomon holding a gene-gun in his right-hand hurrying to his office. Too busy to exchange greetings, Adam threw a smile and Solomon nodded & hurried off towards the culvert that Adam crossed a while ago.

It took him ten more minutes to reach his stone house. A delicate aroma of baked quiche came inside the house that reminded him how hungry he was. "Mom!" he shouted. The door was already opened. It started drizzling just before Adam entered inside. "Surprise!" Adam's Mother, siblings, grandmother and the house robot-Nile screamed so loud that almost gave him a hurt attack. The strings of lights were hung from the iron ceiling that lighted up the stone walls. Mycena mushrooms have been placed in the vessels to decorate the house today. Must be the work of grandmother who is the most famous mycologist of her age in satellite Titan of planet Saturn and also built deep emotional tie with mushroom species of Titan. Apart from the light strings and mycena, the genetically modified angler fishes from the aquarium also added lights in the living room. "We've got the news. Congratulations!", Adam's mother said grinning cheerfully.

Adam has been selected as a plant language decoder for the mission Methuselah Space Colonization Mission. Methuselah Spaceship will be boarding for Kepler 452B three years later, the assumed cousin of planet Earth. Adam's family has already been selected and Adam's selection was in process and now it is done. Life on Titan has been easier than that on Mars but yet it has so many difficulties. Thanks to Adam's ancestors, who made revolution in Titan by culturing phytoplankton massively which was a better solution than extracting oxygen beneath the icy crust of methane. As phytoplankton produces oxygen on a large scale. Before the population booms, the Titanians planned to search for new homes which will be closer to Earth in





nature. Among thousands of habitable planets, Kepler 452B was closest to earth if not better than it. As the space colonization age began, it was important to produce more promising agriculturists along with spaceship pilots and tons other engineers. to ensure sustainability of these new planets. Adam's family has been serving in this field inheritably. His mother is a genetic engineer and has offered numerous GMO flora and fauna that are suitable here in Titan. She works day and night with her brother Solomon. Adam's father was a soil scientist and served Titan greatly until when he left for Enceladus for analyzing soil components there but died in a space-accident seven years ago. The family has proved fertile to the Titan government and chosen for mission Kepler. Today grandmother gave a feast for their new path.

Life has never been easy here. The farmer robots plough and add plant nutrition to the barren soil. An intense research is being carried out to grow genetically modified agricultural and horticultural crops. Yet crop yields are not that satisfying. Adam is studying on the language that plant use to communicate with other plants and even with animals. His research companion is the artificial intelligent Noah with whom he has developed an amplifier that amplifies electric signals that plant emits.

The rain stopped in the dawn. A gentle breeze came through the windows. Adam woke and found Grandmother was in a hurry towards the garage with robot Nile. "Are you free this morning?" "Yes grandma, may I come with you?" With a happy grin in her face, she said, "I will be happy! Let's collect some penicillin" Together they rode on their flying drone capsule. The capsule rose high above the stony village. Dione, Enceladus and Rhea are still visible in the south sky. Saturn was about to rise in the orange sky. They flew across the zigzagging green rice field which are breathing in methane and excreting oxygen as a byproduct of photosynthesis. The artificial fusion has been set on Dione which now provide essential UV light to the plants. They flew across the new amazon towards the forest of mushroom as they noticed some mutant of locusts approaching the fields.



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MENTOR



Tarun Kanti Bose

Professor

Business Administration Discipline, Khulna University

PhD

International Business (Management)

University of Glasgow Adam Smith Business School

Workshop on

CV and Motivation Letter Writing

Date: October 8, 2020 (7.30-8.30 PM)

 Registration
Deadline
October 6, 2020
#GoFurther
#GoIAAS

CV AND MOTIVATION LETTER WRITING

On 8th October 2020, IAAS Bangladesh arranged a program about CV and Motivation Letter Writing instruction session. Actually, It was meant to happen in National Congress 2020!! Due to some difficulties that couldn't happen. The workshop on CV and Motivational Letter Writing was finally arranged on 8th October with the live instructions of the honorable mentor Professor Tarun Kanti Bose. He is the professor of Business Administration Discipline at Khulna University and he completed his Ph.D. from International Business (Management) University of Glasgow Adam Smith Business School.

Mentor:

Tarun Kanti Bose

Professor

Business Administration Discipline,
Khulna University

PhD

International Business (Management)
University of Glasgow Adam Smith
Business School

A GREAT SCIENTIST

ABED CHAUDHURY

Head of Research Innovation
Soil Carbon Company
Former Director
VitaGrain and VitaRice
Former Principal Scientist
Syngenta Australia and New Zealand

THE INTERVIEW WAS RECORDED BY:

Md. Tangimul Islam (Former National Director),
Saleha Khatun ripta (National Director 2020/21)
Plabon Saha (Vice President of Communication 2020/21)



Question: Would you please share some memories of your childhood? Which fields/subjects charmed you most in school/college life?

When I was small my main interest was in poetry. So, I was quite even in childhood I could write poetry. Poetry was my main interest. Because of poetry, I came to science slowly by describing nature. That is my entry point which is very unusual. I was not good at Mathematics and all kinds of typical scientific things that you think of, I was not interested. I was simply interested in poetry. Even now my way of doing science is almost like poetry. I think of science in a particular way. I can imagine certain things and then I go for it and I find it's to be true. So, I do science in a kind of a poetic imaginative way.

Question: What inspired you to study chemistry? How was the journey ahead after admission?

Yeh! So when the time came for me to which to do I think class 6 or class 7 something like that you know our time, you guys to ask for science terms, for Commerce terms, or Arts terms. When the time came I took the science terms and out of the science terms I was not interested in Physics. It was too dry. Math and Physics I thought to dry but chemistry I immediately like because I was already thinking about nature and which to put like, which to collect flowers

and make them change their color. So, I was doing a little Chemistry experiment anyway as a part of my growing up in the village so when I looked into all the subjects I didn't know a lot of background. No one in my family advised me. We didn't have this kind of science in the family or anything but I made my own decision. I decided on Chemistry that was a very good decision because Chemistry taught me a lot of things that related became Biology because later I shifted to Biology when I went to America.

03.Question- Would you please tell us about your Ph.D. life in the USA? What is your motivation to shift your study area to biological science?

Ans: I was a Chemistry honors student at Dhaka University and I was studying all our subjects was Chemistry. We had a bitter Physics and Maths as subsidy. In our time there were not a lot of exams, there was only the honors exam and the passing from year 1 to year 2 to year 3 was automatic. There was no exam. So I actually, initially was interested in Chemistry but when Chemistry became hard in detail I was not interested in that much. This was the time when Bangladesh was changing, I entered Dhaka University in 1975, and as you know Bangabandhu got assassinated in 1975. So there was a big instability. I studied at Dhaka University during the

period of instability and I was mostly thinking of going away. So I took the GRE exam and I qualified to get a scholarship in the USA and I very quickly went in 1979. When I went they had an institute called the Institute of Molecular Biology where you can study Biology independent of what you studied before, they didn't care. So in Bangladesh you know, if you study History no one lets meet you in the Physics department, right? It doesn't happen. But in America there are certain departments, they will let you study Biology irrespective what you studied before. So, I had no Biology course, work nothing. But they still allow me to get into the Biology department. In fact, they allow me to start working on a Biology research problem, and then it was my job to learn everything in the background. So that really and this was done by people who are major players in Molecular Biology like Franklin Stahl who discovered DNA replicates. Another guy called George Streisinger, who is the father of the whole Zebrafish Developmental and genetic Research. He actually took Zebrafish from one of our rivers. He was traveling in this part of the world. He took a Zebrafish in a little container. He took it to America and he established the whole Zebrafish genetics. If you now search in google Zebrafish genetics you will see his name George Streisinger. He was my teacher and he was doing it while I was his student. He was doing it in front of me. He made some containers which he located and Zebrafish thought that it was in a river. He made all these little devices. So, this is really my way of discovering Biology that was in America from very very recognizable people and I knew them very closely. In America or many western countries, there is no division between teachers and students that you see in our country. So this is another problem that inhibits learning because you don't have enough access to your teacher. The teacher kind of locks himself in a room and he has a very nice room and he is sitting there, he is talking to other professors. But he is not talking to students enough. He is maybe just come into the class and finishing. This is a very serious problem in our education system. I think it only by mixing with the teacher and sharing with the teacher, discovering with the teacher. This is how you learn things.



Question: As a Bangladeshi scientist, what kinds of challenges you have faced during research in the USA, France, Australia, and how did you solve it?

Science is very established in Europe, America, and Australia for a very long period. But people of Asian background like our kind of background, we are new in science. So we don't have family members in the previous generation in science. So, I was the first person in my family in science. So we are not used to this culture of science, the culture of investigation, the culture of intellectual curiosity. This is most of our family don't have it. So when I went there I was exposed to people who have been doing science for many generations. So It's not like that they don't like me because I am from Bangladesh. It's not like it at all. In more has to do with what you comfortable with. So I think for our part of the world Indians, Bangladeshis and so on, we have to do more work, we have to show our value by work. There is no other way. We have to be better than other people. We have to be noticed. If we are just average like other people is not good enough. So I think it means you have to study more, you have to put your mind to it completely. You can't see it as a way of just learning from books. You have to

become that person. You have to kind of have Biology get into you. You have to think of yourself as a biological organism and you have to connect with nature in a complete way. Then you will automatically become very successful. I solved this kind of problem by becoming interested. I was already very interested. So I didn't have to work hard at it. By very nature, I was very interested in it. So I was immediately like within few months I was taken it very seriously. Because people know that I already know everything, I read everything, I could even discuss with the teacher just because I have made it my business to read everything. So I think you just have to don't take it in a shallow way, you are doing Physics or Biology but on the side, you are also spending 3 hours on Facebook and so on. Then it will not happen. Every waking hour that you have, you have to deploy in your subject matter. Then you will become an expert. No one can stop you, I mean in the world now if you are talented you will be noticed. No one is stopping any talent from coming up. People who complain, I am from that country! This is not true, doesn't matter where you are from. If you are good, you will be recognized. Important thing is to deploy enough time to be good and everybody can be good. It's not like some talented people will be good and others will not be good. That's not true. The only thing that matters how many hours you are deploying in it. If you want to be a serious scientist, you have to deploy your time. You have to cut back on your recreation. If you look into the musical geniuses like Pandit Ravi Shankar, Allauddin Khan who was born in Brahmanbaria. He went to Maihar and became the major musician in all of the Indian sub-continent. Just because for everyday sixteen hours he was practicing music. Every waking hour he was practicing music. So things can come only if you are practicing. It is not enough to do just enough. You have to do more than enough. You have to become obsessed with it. Only then you will make a mark in the world. Then people will see you. So that is the only way I think. There is no other way.

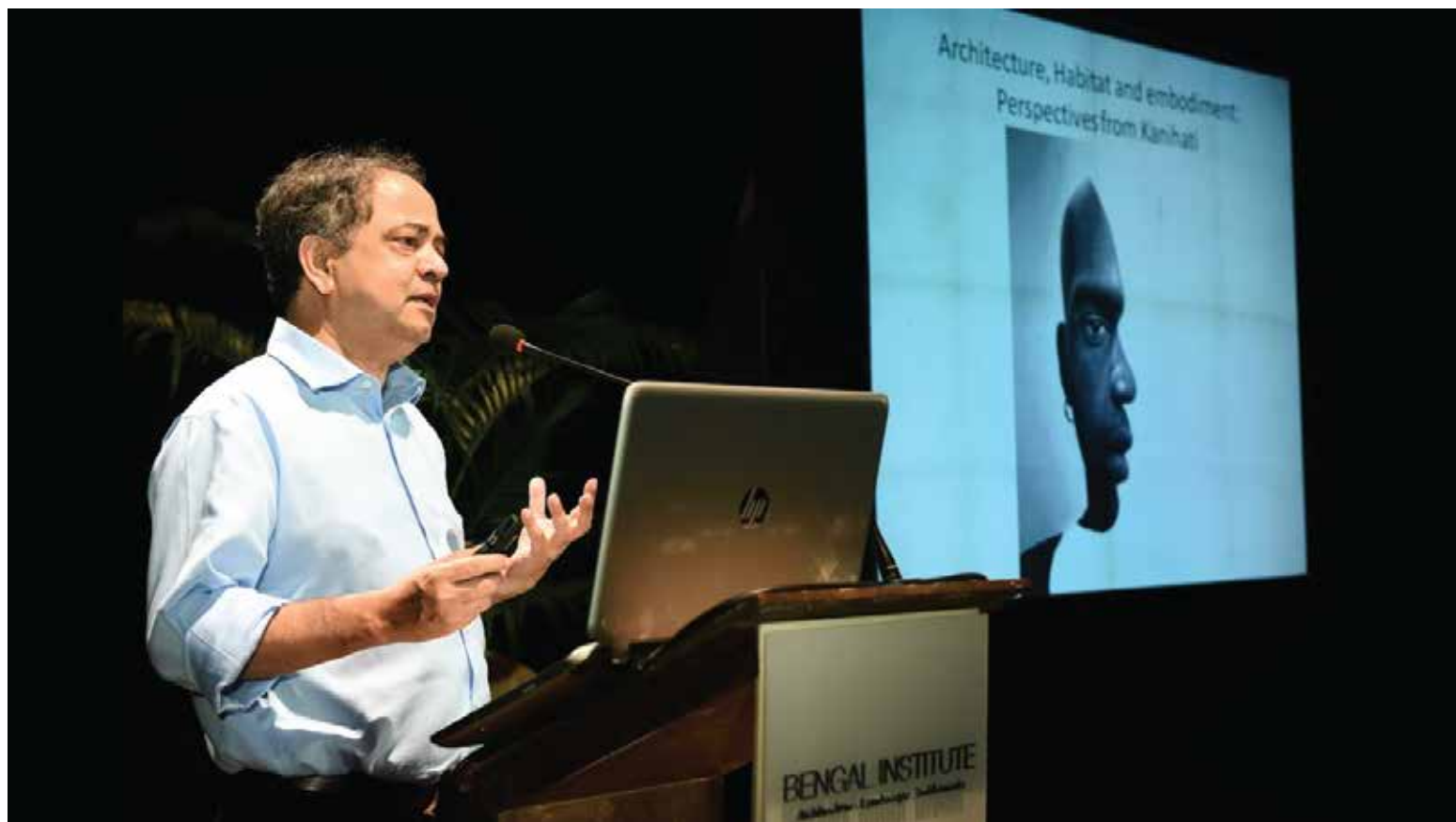
Question: Please tell us about FIS (fertilization-independent seed) genes? What inspired you to initiate this great work?

I always like to think about something that's different. Everybody took it for granted. The seed requires pollen & other parts & that's how you get the seed. Kind of male & female producing a baby. That's the conventional thing. I started to think that is that really true? Can you do something to produce seed without pollen? That was my kind of a poetic idea that is it possible? In order to see it can you do an experiment?

So, I set up an experiment. First, I remove all the pollen from a mutation. To that plant, I mutagenized heavily where there is no pollen & I demanded seed production. I got mutants that were from seed without any pollination. It happened very quickly. I kind of knew it was going to be that case & I did it & it happened.

Then everyone was so surprised. People said I'm trying to re-write the rules of biology. But we clone the gene, we showed how it happens. We showed them that the pollen comes to the seed & does not have a really huge essential role. Actually, females can make babies by themselves. There is a process. But the process was kept silent normally cause, there is a sexual process. But a woman/a female plant/any female organism has the hidden competence to make other females. So, this is kind of an area of biology which is still a margin. But I was happy to play a simple experiment in clone all the responsible genes in this pathway which is now cited by everyone & now a huge area of science actually. Hundreds of people call over the world that they are studying it. But they always know that I was the first person to do it.

This is a good thing in science cause, you probably share paper, your ideas forward & there is no one who can wipe it out.



Question: Would you please talk about the prospect of Rice Twice Development in Bangladesh?

This is again the fertilization-independent seed idea. In Sylheti songs, there is a song like from my childhood that goes like,

“Puber bonde poismer bonde
jomin kotokhan
Radi betiya khet khore
daiya nera dhan.”

In Sylheti language, “Radi” means widow woman. “Puber bonde Poismer bonde” means there was a few lands. “near dhan” means that part comes from straw. You probably heard the song “Nawa Dama” in which there is a line like “Bichana bichaiya dimw, Shail dhaner near”. In Sylhet, we have a tradition during Aman season that people let their guests, seat on this “near dhan” or straw. From the straw, we get another rice plant but the amount of this very low like 5%-2%. But poor people collect those for their grain.

What I did was fermented this growth of straw through genetics. I don’t have enough time to describe the whole process but, in my experiment, I am getting the 1st & 2nd varieties the same. After 40 days of cutting the 1st yield, I’m getting the same yield again. Now I have discovered a system that will it grow 3rd,4th,5th, or limitless time. Science is energy. There is a transformation of energy but no destruction of it as we know from Physics. So, every new discovery is energy. By our discovery, many people will perform or transform those experiments. Maybe one day we won’t find our names also on that. When we perform the experiment first, we’ll know as the big boss. After that, if thousands of people perform or transform the same experiment, then you’re not the big boss anymore, now you’ve become one of them. We need to understand this.

So, all I did was empowered this energy which was performed by our elderly women several times in ancient times. It’s nothing new. I performed the task in such a way that will help it grow more on 2nd time but with more quantity. Now I’m trying to make the quantity thrice or fourth time or limitless times actually. I want to take it to a great extent caused, then we won’t have to cultivate it several times in a year.

This is hopefully going to be an extremely important phenomenon in climate change where you're getting the crops without plowing 2nd, 3rd or more times. In this process, you can get rid of Aus completely. Because all your crops can come from extended growth.

So, some people call it "Extended Life Rice". If you google it, you'll get a lot of information about it. Even from 12-13 years back there was a story written about me on this. We named "Jibon Bordhito Dhan" or "Jibodha", "Rice Twice" is another name.

Now my mission is to apply this experiment to every crop so that we don't have to plow 2-3 times every time. I preferably also call it "Crop Twice" cause, you can also perform it on sorghum & other crops.

Question: Please tell us the story behind Sonali Rice's discoveries and colorful corn research project.

This (Sonali Rice) is the rice that actually reduces blood sugar. So, I have been doing research on this for a long time. My idea is that can rice reduce blood sugar and we did it by human trial feeding it to people so we finally found Sonali Rice. Sonali Rice is now available in the market in Bangladesh. If you rise Sonali Rice google it there is a Facebook page and we kept it very simple you just have to ring up some number and they will send it over to you. So, people who have diabetes problem, weight problem, obesity problem they can start eating this rice and the problem should go away. So, it is like my idea of using food as medicine.

Color corn has always been there in America and they are grown in the lab as you know about Barbara McClintock worked on color corn and that's how she discovered the jumping gene. So, I knew because I was in America during that time. So, I collected over a long period collect corn and I crossed with hybrid corn and make the collected corn extremely high yielding variety (HYV). So I have revealed a large number of those varieties. I gave it away to my farmers in my area. I go it myself if any else wants to grow its grains. You can collect from in the colored substances which are really good for health. You can crush it and mix it with normal "Atta" which will be count as "Lal Atta" for a very good reason. Because normally the colored red wheat is not normally

genuine. Someone is adding color to it. But if you do it with great corn then it is very very important, it is very helpful. So this is something that I have already done. Varieties are available whoever wants it I will give it, Yeah! So another thing my work is not a business it is something I am doing for Bangladesh and making it available to everyone.

Question: Rice production requires a lot of water which is a big obstacle in the way of sustainable development. How can we grow rice in less water?

You have to go to genetics. You have to select rice in drought conditions. There is genetics and there is also epigenetics. So if you continuously grow rice in water limiting conditions, drought conditions they will give some grain but when you plant those grains they will do better next generation in drought conditions. So there is a method and people are not doing this method, unfortunately. People are not thinking in a direct way. So just like you know I thought of seed without fertilization and I got it. Similarly, I can but I can't do everything I need your help. I have a protocol procedure for rapidly developing drought resistance rice. Somebody has to do it I can show you how to do it and very soon we are going to have drought resistance rice. I think it's in the genetics of the crop. The crop is doing water allocation and nothing in the genetics is fixed. You may have some condition but you can change the condition, right? Imagine at one point human beings can not

come out of Africa and they could not even count, right? Now they can do calculus and they can send a rocket to the moon is the same human rise, what happened? Because they are changed, their brain changed, they learned, it's a process which is true for anything. You have to have some director change and using the methodology I can discuss more of it. We can develop drought resistance rice.

Question: Our native varieties are constantly being lost and the cultivation of hybrid varieties is increasing. What kind of steps do you think should be taken by the government/private sector to conserve endangered native rice species and encourage farmers to cultivate?

Yeah, So. I think it's a very good question. We have 64 districts and 87000 villages. Right? In 87000 villages we should be collecting, we need 87000 collectors. Or at least we need a collector in every Upazila. And I am offering my whole village as long as I am alive I am offering my resources to grow them for one generation. We also need to have a seed bank where seeds can be saved under cold conditions, where there will be always electricity. I have gone to reach people, you know people do not want to pay money for this kind of job. Rich people want to make more money. They don't give you any of their money. So I have had this dialogue with them, they want to make money so they gave their money and They want to make more money, so some money they gave to me and they asking their money back. They are saying I am personally responsible for it. So Bangladesh is full of this kind of people. And what are they going to do with their money, they have thousands of cores in the bank and their children have become drug-addicted, they sit in a room and they don't do any productive work. This is typically the case for super-rich people. And yet if you ask from them, 'for the country you give one lakh taka 'they won't. They are obsessed. They have a disease state of mind. They are obsessed with getting even more money than for what purpose it would be. This is the reality in the

country. If you can get together some of your fathers and uncles who are rich, I would say to put together a fund for conservation. Though even if one goes around collecting varieties, money is needed that person has to be employed, that person has to eat. I have made all my money whatever I have earned, I have deployed for this purpose and I don't have any more money. So I have to go work again so that I can save enough money to survive. This is my history and this is what I have done. And people tell me, 'Oh! You are not very clever. You did not set up a business and look at you know this group or that group and you know they have a big tower in their name. And you don't have anything and I said fine, this is the road I have chosen, the road I am traveling and I am still alive and still doing science. So Sukur-Al-hamdulliah for that. I am not complaining.

Question: In the era of the Fourth Industrial Revolution, what role do you think Genetic Engineering will play in Agricultural sciences?

Yeah, I think you know if you take rice and cut its chromosomal DNA and put new DNA in it. This what people are saying genetic engineering. But that is not very important. The important thing to me is another technology which is called Gene editing where you can go and targeted way change. So you can make a rice drought resistant by making targeted changes by gene editing, a lot of people call it Crisper, in our time we used to call it homologous recombination. So this is Crisper case 9. There are many names for it. That's very important. The second important thing is Computational Bio-Informatics, to device computational program to suggest what should be done. So Tasfia asked me about drought-resistant rice, I have a way, kind of poetic way to doing it which I can suggest. But there is also a more technical way of doing it. It depends on computation biology. Just some experiments for you. So, I would say Gene editing Or Crisper then Computation Biology, saving the heritage of old germplasm, finding ways of growing them in 80700 thousand villages. These are like the major work that we need to

do. If possible we can start doing it right tomorrow. If you tell me something, you want tomorrow; I am ready to jump into it tomorrow. Because I don't believe in waiting, waiting for reports, making a commitment, and going away for two months, we don't have time to do it. If we want to do it, we need to jump in and do it.

Question: What is your observation regarding the Agricultural Research system and its limitations in Bangladesh through the last three decades? Which issues should be addressed for better scope and development in the Agricultural Research area?

It's a good question. I think Bangladesh can do a lot better. Bangladeshi people are very bright, very smart. I have worked in many countries and I now consider the whole world is my country. So at the end of the day I obviously, because I am from Bangladesh, I have landed there. I have the greatest commitment to Bangladesh but that doesn't mean that. I am also excited about the potential of Australia, France, or whatever. I think every country -the earth is where we live and every country is valuable to me but obviously, my own country is most valuable to me because of my history and my childhood being spent there. So, what needs to happen Bangladesh has 10 million ha of agricultural land and roughly we make 4 tons per ha. We need 40 million tons of rice. We are just the fourth largest in the world. After China, India, Indonesia Bangladesh is fourth. So Bangladesh is the fourth boy in the whole community of the country. it's great! it's wonderful! Imagine, so little land and we are fourth-largest. So, we are doing very well but our villages are not. Where people are suffering. If you go to a village you see people are still very poor. So, we haven't deployed on the force of agriculture properly. The government is trying but the government really can't do it. I think we have to wake up individually like each one of you. You have from this organization but you should think of what you can actually do in the 87000 villages or in an Upazila or 64 districts. You should know



that statistic what are our major crops, what crop can we grow and sell. We have the land. The land is now very precious. We can be a major player in some things that we are not doing yet and so I think Bangladesh can do a lot better. Bangladesh has very capable people what is not happening is a lot of activity in the private business sector in startups so I am very much in favor of small business startups bringing the economy up. I am not so happy about the huge amounts of money being owned by individuals and not using that money because even for their own sake what are they even do with the money. They have taken money from the banks. Thousands of crores you know they are richer than Bill Gates. Bangladeshi own rich people are richer than American billionaires. People will laugh about it but that is the truth. So if you can somehow convince those people to dish out some money so that Bangladesh can have a very International standard research University. Our University is not doing lot of researchers. Dhaka University hardly doing any research. In my area, the activity should be about a hundred times more than what it is now. So we are doing only about 1% of what we can do.

Question: What is your inspiration as a writer?

Yah! Inspiration is always nature because I study nature. I am very interested in early human history. How did human beings discover music? how did they discover language? That is my inspiration. My curiosity is my inspiration. So, every day I am thinking about something new and I am not physically able to write a book every day but at last, I mentally about to think of any idea every day. Inspiration is no external inspiration. I don't. We are inspired by another person, another individual. I get inspired by nature itself.

Question: What is your message to young scientists? Is there any opportunity to work on your research work/projects?

Ans: Yes, of course. There is a lot of opportunities. So, if we are together, we think of some idea if you link up with me by this WhatsApp messages. I put up in there then we can think of some proposal I want to try my varieties in a different part of the country. Because there are so many of yours in each of your districts there could be a startup company using our materials. There is no entreat. I have a lot of people I know in Bangladesh, outside Bangladesh. There is so much opportunity for you outside Bangladesh in the world. You know Canada wants to take a lot of people for agriculture. I went to Canada twice. So the Agricultural minister, wanted me to start rice farming in Canada then covid-19 became a problem. So If you are interested, contact me, I will line up with you with good people.

Question: Where do you want to see our country in the next 10 years? Or, what are your aspirations for next-generation Agricultural Research in Bangladesh?

We have many millions of hectares of land in Bangladesh that would become the breadbasket in the rest of the world. If we organize our villages, we don't have to live in this particular way where we are thinking above the land of the village for making houses, we can maybe confined people in an apartment that sort of multistorey building eventually and use our precious land to do new things. Bangladesh is having to do a developed country in 2041. I think we are in a very good spot. We are actually mentality-wise, education-wise, history-wise, culture-wise we are a developed country. We have been stepped down because of colonial experience is another problem. I think our people are extremely talented. I am a big believer in the success of Bangladesh. I myself spend all my life working for the success of Bangladesh.

Dr. Abed Chaudhury serves as Chief Scientist and Director of Vita Grain Pte. Ltd. Prior to joining Vita Grain Pte. Ltd., he spent 19 years with the Commonwealth Scientific and Industrial Research Organization (CSIRO) in Australia rising to the distinguished rank of Senior Principal Scientist (Plant Biology).





Bangladesh set a Guinness World Record with the largest crop field portrait of its founder, Sheikh Mujibur Rahman, on Tuesday. (Photo by National Agri Care)

**“Let there not be an inch of land left without farming”
- Prime Minister Sheikh Hasina**



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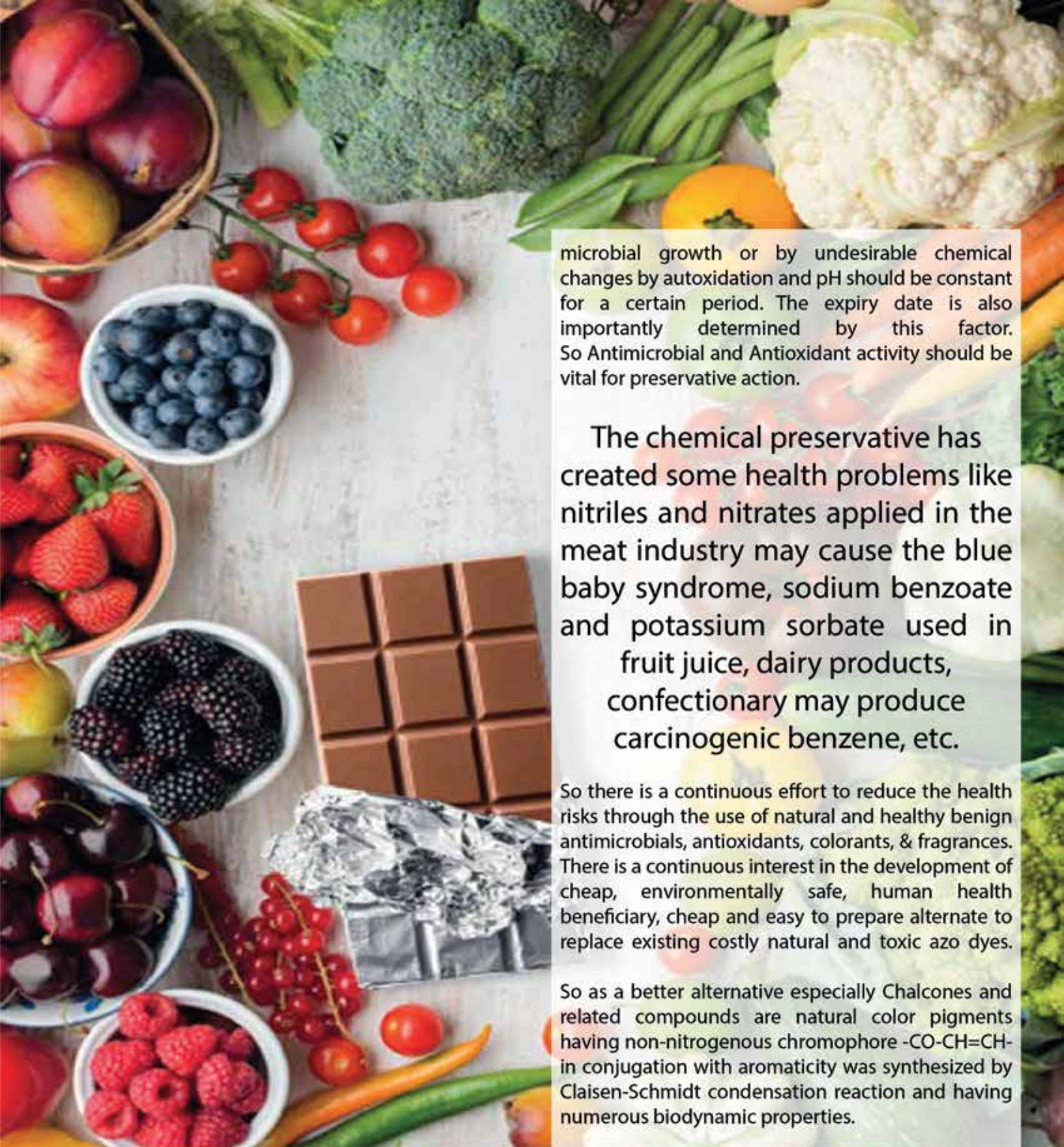
EFFICACY OF SOME SYNTHESIZED SUBSTITUTED CHALCONES THROUGH THEIR BIOACTIVITY

An Environment-Friendly Green Chemical Additives as Health Benign Preservative and Dye

Bangladesh is advancing in science and technology especially to facilitate the newly growing industries and also seriously concerning about environmental issues. Coloring agents and dyes have wide application in the growing industries of textile, leather, food, and cosmetics in Bangladesh. Synthetic dyes mainly azo ($-N=N-$) dyes are in wide industrial application. The color of dyes arise mostly from nitrogenous chromophore like azo ($-N=N-$) group. Azo dyes are toxic, allergic, and sometimes carcinogenic. Safe and hygienic food,

beverage, cosmetics, etc. are a requirement for a healthy and green society.

The chemical preservative has created some health problems in foods, so the recent trend is towards the use of natural antimicrobials, antioxidants, and colorants in foods and others. The preservative is a substance or a chemical that is added to products such as food, beverages, pharmaceutical drugs, paints, biological samples, cosmetics, wood, and many other products to prevent decomposition by



microbial growth or by undesirable chemical changes by autoxidation and pH should be constant for a certain period. The expiry date is also importantly determined by this factor. So Antimicrobial and Antioxidant activity should be vital for preservative action.

The chemical preservative has created some health problems like nitriles and nitrates applied in the meat industry may cause the blue baby syndrome, sodium benzoate and potassium sorbate used in fruit juice, dairy products, confectionary may produce carcinogenic benzene, etc.

So there is a continuous effort to reduce the health risks through the use of natural and healthy benign antimicrobials, antioxidants, colorants, & fragrances. There is a continuous interest in the development of cheap, environmentally safe, human health beneficiary, cheap and easy to prepare alternate to replace existing costly natural and toxic azo dyes.

So as a better alternative especially Chalcones and related compounds are natural color pigments having non-nitrogenous chromophore $-CO-CH=CH-$ in conjugation with aromaticity was synthesized by Claisen-Schmidt condensation reaction and having numerous biodynamic properties.

Eating flavonoid-rich foods such as vegetables, fruits, herbs & spices can offer amazing health benefits

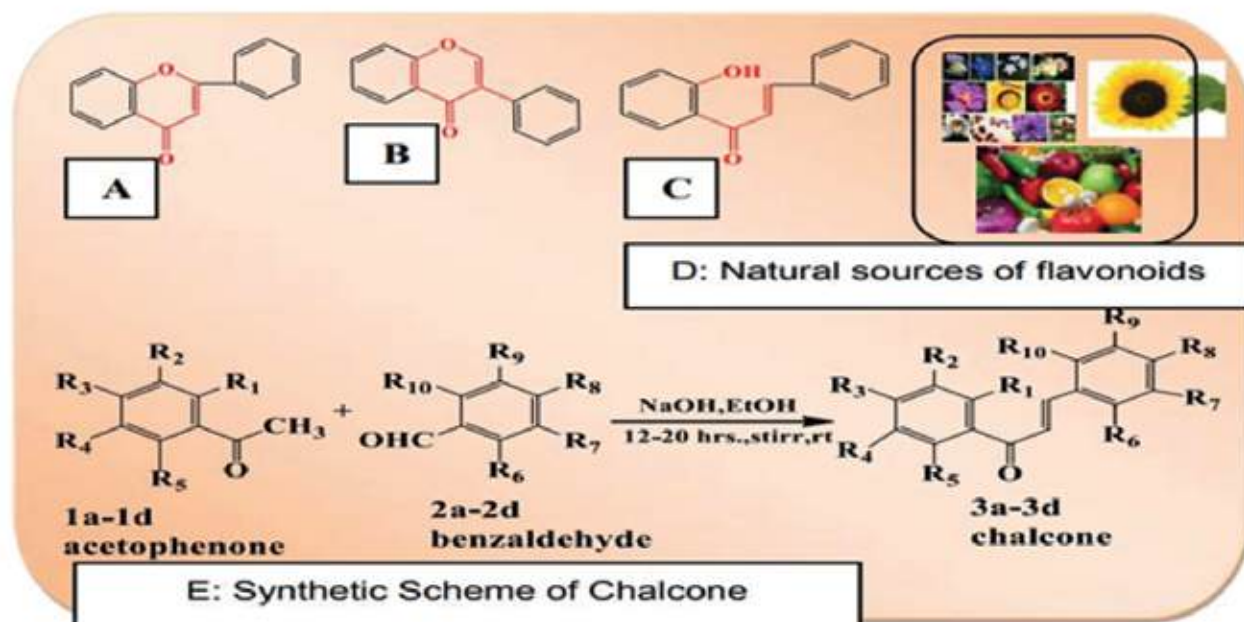


Figure 1.

Classification of flavonoids, flavones (A), isoflavones (B), Chalcone (C), Natural sources of Flavonoids (D), and general synthetic scheme for chalcones (E)

Flavonoids:

important bio compounds may be used as food additives to improve health beneficial effects and increase their amount in humans.

Chalcone, a distinct subclass of flavonoid, natural color pigments are safe for food, and dyes were reported to exert antimicrobial, antioxidant, and radical scavenging activities because of polyphenolic groups and have been recently recommended for use as food colorants and preservatives.

Chemically chalcones are

1, 3-diphenyl-2-propene-1-one, in which two aromatic rings are linked by a three-carbon α, β -unsaturated carbonyl system ($-\text{CO}-\text{CH}=\text{CH}-$) and a non-nitrogenous class of chromophore. During the last sixty years, synthetic as well as isolation works on the chalcones are being done throughout the world.

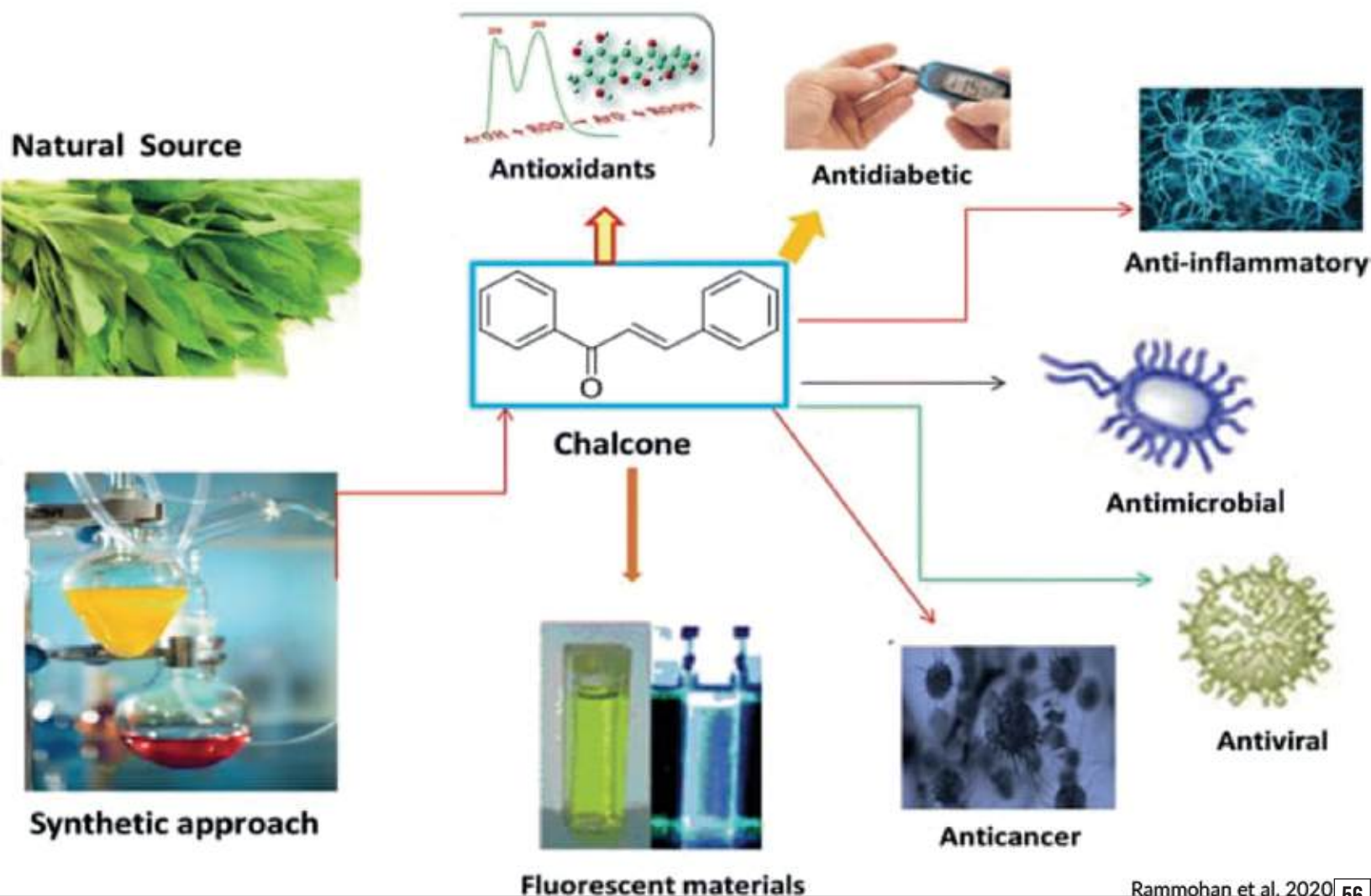
Chalcones and its derivatives are still an object of sustained interest thus the present study has been extended by synthesizing four substituted chalcones: 2'-hydroxy-3, 4-methylenedioxy chalcone (3a), 3', 4'-methylenedioxy-2, 4, 5-trimethoxy chalcone (3b), 4'-benzyloxy-2', 4'-dihydroxy chalcone (3c), 2', 4'-dihydroxy chalcone (3d) using Claisen-Schmidt condensation method, a classical, very simple, inexpensive and easy to conduct synthetic strategy.

The structures of the above compounds were assigned based on spectral data; UV, IR, ^1H , & ^{13}C NMR. The effect of number and position of hydroxyl, methoxy, methylenedioxy, benzyloxy, methyl groups on coloration and preservative effect of the compounds being observed through pH effect, Antimicrobial and Antioxidant activity.

The compound 3a-3d can be used as color additives as these were applied on emulsion or gel and the state remains undisturbed. Especially 3b shows a very attractive transparent and appealing lemon color with carbomer gel which is the main ingredient of ultrasonic gel, ECG gel, and several cosmetics items. These may have a good preservative potency because of no change in pH and unwanted odor being generated even after months of their application indicating no oxidation or side reaction takes place. All the compounds were employed as test chemicals for in vitro antibacterial potentiality test against four pathogenic bacteria viz. *Bacillus cereus* (G+, B1), *Staphylococcus aureus* (G+, B2), *Escherichia coli* (G-, B3), *Pseudomonas* (G-, B4). The primary assay was performed by disc diffusion technique to classify the microorganism susceptible as well as resistant towards particular compounds. The bioactivity is

expressed by the diameter of the zone of inhibition in mm.

Azithromycin-30 (Az-30, 30 μ g/disc) was used as standard is used as standard drug. It is found that *Staphylococcus aureus* microorganism is resistant to Azithromycin antibiotic. Some bacteria have developed resistance to antibiotics that were once commonly used to treat them. Antibiotic resistance is one of the biggest threats to global health, food security, and development today. Antibiotic resistance occurs when bacteria change in response to the use of these medicines. Very interestingly 3c (10 mm) and 3b (8 mm) exhibited fairly good potentialities against this drug-resistant bacteria *Staphylococcus aureus*. Most of the compounds show moderately good antibacterial activity against both G+ and G- pathogens. This led us to conclude that the presence of electron releasing hydroxyl



(-OH), benzyloxy, and methyl groups in 3c and methoxy group (-OCH₃) in 3b are responsible for the better antimicrobial effects.

So some intensive focus should be given to these compounds as a better option for Antibiotic-resistant microorganisms.

In addition, the synthesized chalcones (3a-3d) were evaluated for in vitro antioxidant activity using the diphenylpicrylhydrazyl (DPPH) model. Observation for antioxidant activity is expressed in terms of percent scavenging or inhibition of DPPH radical. Generally smaller the I_{c50} value or higher the percent inhibition, the higher the antioxidant activity. At 5 µg/mL concentration percent inhibition, shows the following trend.

3d (83.79%) > 3c (74.30%) > 3b (72.20%) at DPPH conc. 0.032% The compound 3d contains two phenolic -OH groups and suppose to produce phenoxide-free radicals easily. Compound 3c has two phenolic groups -OH radical can be stabilized by the benzyloxy group. The absence of -OH group in 3b and 3a (% inhibition 76.65 at 15 µg /mL) cause less activity.

Compounds 3', 4'- methylenedioxy-2, 4, 5 - trimethoxy chalcone (3b) and 4'- benzyloxy-2', 4 - dihydroxy, 3-methyl chalcone (3c) showed high potency as preservative and dye. These two compounds showed good activity against selected four pathogenic bacteria. Even against *Staphylococcus aureus* (G+, B2), it has activity whereas this organism showed resistance to the standard drug, Azithromycin.

Numerous polar functional groups in 3b and 3c provide more binding sites to act as good dye.

So chalcones have a high potential to be applied as the safe dye in place of toxic azo dyes and others as well as a health-friendly preservative.

References:

- Sabrina Mymuna. 2019." Efficacy Study of Newly Synthesized Substituted Chalcones as Preservative through Antimicrobial and Antioxidant Screening" M.Sc Thesis-Department of Chemistry, Rajshahi University.
- Sabrina Mymuna , Siddika. M. S, Islam M. Azizul , Lumbiny B. Jahan.2021. Dye and Preservative Efficacy Screening of Some Synthesized Substituted Chalcones through their Bioactivity Journal of Multidisciplinary Engineering Science and Technology (JMEST).8(4) ISSN: 2458-9403
- M. M. Khatun, S. Dey, M. E. Islam, M. A. Islam and B. J. Lumbiny.2020. "Health-Benign Preservative Potency of Synthesized Flavonoids through Antimicrobial, Antioxidant and Cytotoxic Activity." TEST Engineering and Management. 83: 5352 – 5361

Pictures:

- 1.Freepik.
2. Rammohan, A., Reddy, J.S., Sravya, G. et al.2020 Chalcone synthesis, properties and medicinal applications: a review. Environ Chem Lett 18, 433–458.
3. medindia.net



THREE FRUITS OUR GENERATION SHOULD LOVE

Fruits are a great source of vitamins, minerals, antioxidants & a lot more essential nutrients that our body needs. They act as bodybuilding as well as body protective elements. Our elders always suggest that we should eat as much fruit as we can to be healthier. We often see from our generation; many youngsters don't understand the value of fruits & don't want to eat them. Especially, specific fruits like papaya, jackfruit, etc. Today we're going to talk about some of those.

Jackfruit (*Artocarpus heterophyllus*) is the national fruit of Bangladesh & Sri Lanka. Its local name is "kathal" in Bangladesh. It's a popular fruit in Bangladesh. It is originated from southern India, all of Sri Lanka, and the rainforests of Malaysia. It is the largest fruit of all plants, reaching as much as 55 kg in weight. The jackfruit is multiple fruits composed of hundreds to thousands of individual flowers, and the fleshy petals of the unripe fruit are eaten. Both ripe and unripe fruits are consumed.



It tastes naturally sweet when it's ripped with subtle pineapple or banana-like flavor. The edible pulp carries 74% water, 23% carbohydrates, 2% protein, and 1% fat. The carbohydrate component



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is primarily sugars. In a 100g portion, raw jackfruit provides 400 kJ energy and is a rich source of vitamin B6. It contains moderate levels of vitamin C and potassium.

The jackfruit ranks 3rd in the area under cultivation and 2nd in production among the fruits of Bangladesh.

There is 25,110 ha of land under jackfruit having an annual production of 4,69,500 tons (BBS, 2000-2007). It accounts for about 22% of total fruit production in the country. In 2019-20, the total production of jackfruit was 10,01,756 M tons.

Melon (*Cucumis melo*) is also a popular fruit in Bangladesh. It's commonly known as "banggi" in most areas. Melons are originated in Africa & Southwest Asia, especially Iran and India from where they gradually began to appear in Europe toward the end of the Western Roman Empire. Melons are known to have been grown by the ancient Egyptians.

A cup (177g) serving of melon provides 64 Kcal, 16g carbs, 1.4g fiber, 1g protein, 0g fat, 53% vitamin C, 8% vitamin B6, 8% folate, 6% vitamin K, 12% potassium, 4% magnesium of the reference daily intake (RDI).

The honeydew fruit and seeds also contain compounds with strong antioxidant capacity, including beta-carotene (pro-vitamin A), phytoene, quercetin, and caffeic acid.



In 2019-20, the total production of melon was 40,824 M tons. In 2016-17, in around 9114 acres of the area, we had 40,959 M tones production. Day by day this number is increasing. In 2018, the world production of melons was 27 M tones, led by China with 46% of the total.

Papaya (*Carica papaya*) is such a fruit that we can eat ripe or unripe in both stages. Locally it's called "pepe". It's another popular fruit in Bangladesh. By origination, native to Mexico and northern South America papaya has become naturalized throughout the Caribbean Islands, Florida, Texas, California, Hawaii, and other tropical and subtropical regions of the world.

Papayas are an excellent source of vitamin C, and one single medium fruit provides 224% of recommended daily intake, 120 calories, 30g of carbohydrate including 5g of fiber and 18g of sugar, 2g of protein. Papayas are also a good source of folate, vitamin A, magnesium, copper, pantothenic acid, fiber. They also have vitamin B, E, K, alpha

and beta-carotene, lutein and, calcium, potassium, and lycopene, the powerful antioxidant most commonly associated with tomatoes. Raw papaya pulp contains 88% water, 11% carbohydrates, and negligible fat and protein. In a 100g amount, papaya fruit provides 43 kcals and is a significant source of vitamin C (75% of the Daily Value, DV) and a moderate source of folate (10% DV).

It is said that papaya is the ultimate medicine for all kinds of diseases. In traditional medicine, papaya leaves have been used as a treatment for malaria, abortifacient, purgative, or smoked to relieve asthma.

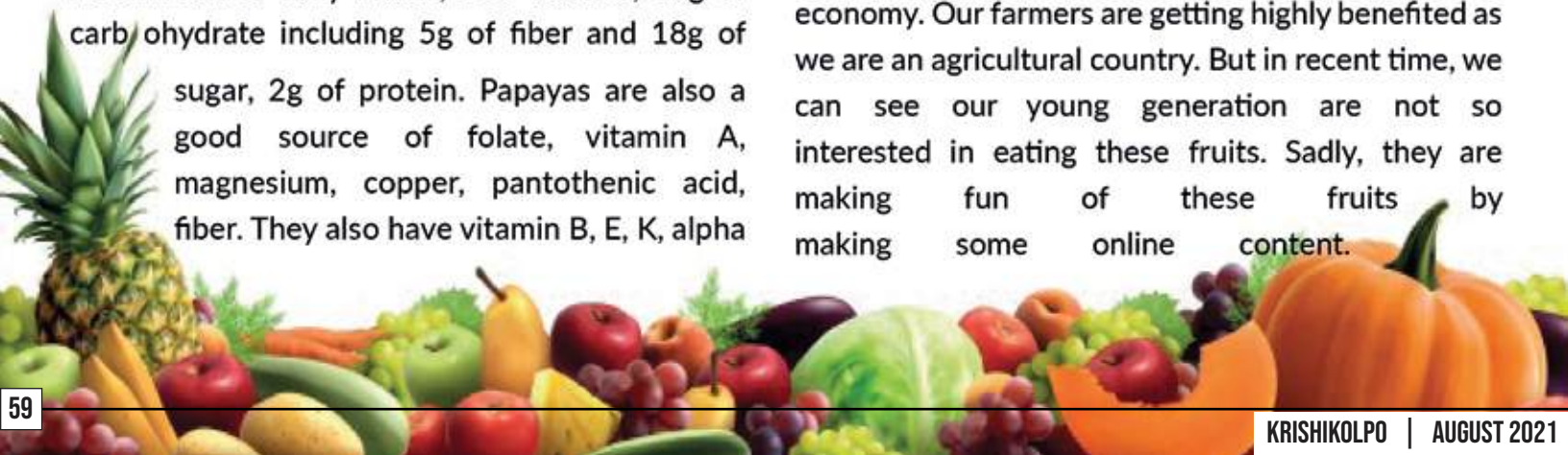
It is also used for diseases like cancer, bone health, diabetes, digestion, heart disease, inflammation, skin and healing, hair health, etc.

In 2019-20, the total production of papaya was 1,30,679 M tons. In 2018, the global production of papayas was 13.3 million tons, led



by India with 45% of the world total. Global papaya production grew significantly over the early 21st century, mainly as a result of increased production in India and demand by the United States.

These fruits have great demand & value in our economy. Our farmers are getting highly benefited as we are an agricultural country. But in recent time, we can see our young generation are not so interested in eating these fruits. Sadly, they are making fun of these fruits by making some online content.





It seems like not eating these fruits and laughing at people who eat these are making them popular. It's nothing but some sort of stupidity they are showing to be "cool" on the internet.

If we think from a religious point of view, then we will surely know that what kind of mistake we're doing by making fun of them. From a social viewpoint, we're discouraging people from buying these fruits & as a result, our farmers become unable to earn. Our economy is getting encumbered. Every year hundreds of fruits are getting wasted just because people are not willing to buy fruits making assumptions like it can make them the matter of fun! We may get some likes & comments by posting those but in the meantime, we're hampering our national economy knowingly or unknowingly. So, we need to be aware of our actions & think about our health & future to a greater extent.

Source: Wikipedia, Banglapedia, Year Book of Agricultural Statistics-2020, Medicinal News Today & Internet.



THE STORY OF BEING AN AGRICULTURAL-ENTREPRENEUR

During The Long Period of University Closure Due to Covid-19 Pandemic

17th March 2020; All schools, colleges, and universities in the country were closed under the direction of the government of Bangladesh. But the night before, how many events, how much excitement, joyful environment on the university campus! Centenary of the birth ceremony Father of the Nation Bangabandhu Sheikh Mujibur Rahman, the leader of the country's independence.

In front of the clock counting those desired moments with the seniors on my campus with festive atmosphere. When that clock will show the desired time! Everyone was so eager for it. Finally came that moment. The clock then shows the day 00:00:00 (00 hours 00 minutes 00 seconds). The beginning was very exciting. Everyone got busy in the photo session.

I also took a lot of pictures. It was a great moment of joy. Those who study at the university will understand how joyful the campus is on any small occasion. And this was the birth centenary of the father of the nation.

Everyone came back to their room around 1:00 AM rejoicing like everyone else.

When I woke up the next morning on 18th March and came to the campus, I couldn't believe my eyes. Everyone is going home with their bags wearing a mask on their face. Everything seems to hang on. The night scene and the morning scene are like the difference between the sky and the ground.



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Suddenly I'd not understand anything. Shortly after that, I heard that all the educational institutions of the country have been declared closed for 13 days under the direction of the UGC. Hearing the news, my mind became a little bad. I have only been admitted to the university for a month & a half.

So I could not accept the matter very easily. What else to do after that, like everyone else, I also left Sylhet to Rangpur. I reached home on 19th March, 2020. As far as I remember, a severe lockdown was given across the country within 2/1 days.



And we all became somewhat captive, in our own home. Ramadan & Eid-ul-Fitr was gone. We're all at home. After 3 months like this, I could not keep myself still. I want to talk a little bit here, which is about myself. I have been a boy thirsting for knowledge and skills since childhood. I always have a strong desire to acquire new skills and do something. Currently being the representative of the class, the Dean of our Faculty of Agriculture, Professor Ruhul Amin was in constant contact with me. He was the first to encourage me to join the Bangladesh Military as an officer cadet. Because of this, I was fortunate enough to stay in ISSB for 4 days in the examination for the post of commissioned officer of the Bangladesh Army in 2021. But I learned a lot even though the results were unsuccessful. Anyway, when it comes to work, after 3 months at home, I think something needs to be done and that is right now which can be done at home.

Just then the idea of raising goats popped up in my mind!

I shared the idea with my father and mother and the current Dean of the Faculty of Agricultural Engineering at our university, a successful scientist, Mohammad Rashed Al Mamun Sir. Everyone encouraged me. Then I went down to work gathering all my money; Government scholarship money, money for buying a smartphone, loan money for "One house, One farm-provided" by Palli Sanchay Bank. The total amount was about 32,000 BDT.

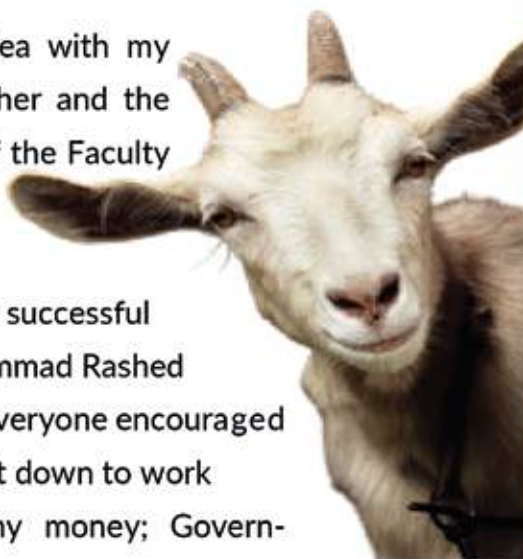


Figure: Mahdi's Farm

The story of my becoming an entrepreneur started with this 32 thousand taka. With 32,000 taka, my father and I bought 2 male and 7 female goats. I started my farming business with a total of 9 goats.

Theoretically, keeping goats seems very easy, but after buying them, I realized that it is not so easy, nor is it impossible. Since I had no previous experience in goat rearing, I had to work very hard for the first 1 month. But I have learned a lot through this hard work. Which inspires me even more. I realized that the farming business is profitable. Then in my mind creation was a new venture to further expand the firm.

Then I found out that many banks give good quality loans for the expansion of the firm. The beginning of my next mission, I roamed around the bank for a few days hoping to get a loan. But after visiting a few banks, nothing happened as expected. Maybe I couldn't make them understand my point of view in a good way. Finally, Pulin Chandra Roy, the current manager of Rajshahi Krishi Unnayan Bank, Pirgachha, Rangpur branch, understood and encouraged me.

He also promised to lend a large amount to increase the business. I was very happy and joyful that day. After a few days of following all the formalities, the desired moment finally came. Pulin Chandra Roy Sir called us to his office and lend us 5 lakh taka loan.

As a small farmer, getting loan assistance of 5 lakh taka is truly incredible as well as surprising! Then we invest most of that money directly on the farm.

What I finally learned from my small effort??

- I quit thinking about what I don't have. Instead, think of what I have and what I can do with it.

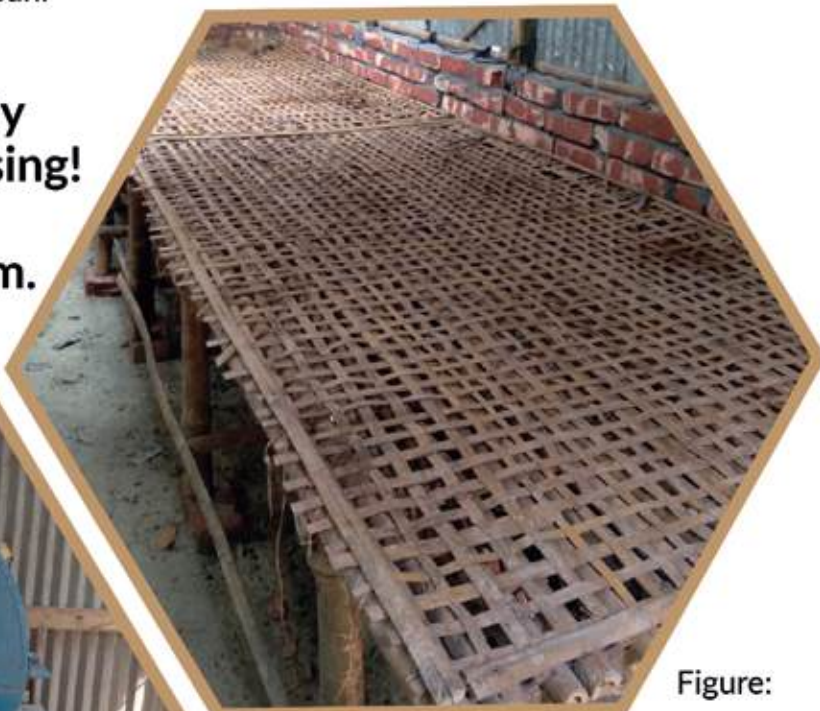


Figure:
Mahdi's
Farm.



At present, our farm has 12 cow sheds, 4 cows and, 28 goats! The total market value of which is more than 8 lakh taka. My goal is to transform the firm into an established firm of Bangladesh, which will create thousands of job opportunities for needy poor people in village as well as students who want to be independent from young age.

My goal is to transform the firm into an established firm of Bangladesh, which will create thousands of job opportunities for needy poor people in village as well as students who want to be independent from young age.

- Always find my faults out for at least 2 minutes without blaming the surroundings and convert them into good practices.
- Treat parents well and get their cooperation. In each case, they 've nailed it, despite obstacles we can scarcely imagine.



Figure: Mahdi working in his farm

- Inspire myself to use the best of my time. There is a proverb in Bengali goes like, "Vidya at 20, wealth at 30, knocking at 40", many of us need to believe this one.

We have many examples like... Incumbent US President Joe Biden took over the presidency at the age of 78, KFC founder Colonel Sanders achieved business success at the age of 65, Jack Ma, the founder of Alibaba, one of the world's famous e-commerce companies, succeeded after many failures. Apart from foreign examples, our country also has a unique personality of success. Shafiqul Alam Selim is the entrepreneur of "Karupanya" in Rangpur, Bangladesh. He has reached the pinnacle of success even in the ups and downs in life.

There are many others like us whose life philosophy can inspire us. Success needs constant hard work. But some of our ideas can easily lead us to success. Every achievement of ours is an achievement for our country to inspire & believe in ourselves.

I don't know if I was able to write anything constructive, but I hope that my story will inspire you even a little bit.

The Story Of A Young Mind
About Believeing & Living
His Dream To Be An Entrepreneur.

DIETARY DIVERSITY: DOES DIET MATTER?

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When you think back to what you ate today, yesterday, three weeks ago, or even last year, how different is the food on your plate? For many of us, it is easy to fall into a trap of eating the same foods day in and day out. Only some people naturally include a wide range of diverse food when choosing their meals.

Did you know that you are missing out on the potential for many health benefits by not consuming a diverse range of foods? No single food contains all the necessary nutrients for overall health and wellness, despite the promotion of superfoods.

Despite great progress over the last 20 years, poor nutrition is still hurting Bangladesh, its children, and its future.

Poor nutrition impacts economic outcomes, health, on education; improving nutrition can bring about positive change in the short and long term and is essential to Bangladesh's development.



Cereals, largely rice, are the principal food in Bangladesh. Here nearly two-thirds of the daily diet consisting of rice, a small number of pulses, some vegetables, and minimal quantities of protein. Milk, milk products, and meat are consumed in very small amounts and mainly occasionally. Dietary diversification is important in improving nutritional status in Bangladesh.

Nowadays, we are at a greater risk of macro and micro-nutritional deficiencies due to physiological changes, acute and chronic diseases, aging factors, and at times differences in financial and social status.

Eating a balanced diet filled with a variety of foods, or "dietary diversity", is a widely accepted concept to ensure a healthy and nutritious diet.

It is a key component of health, fitness, and overall wellness and helps to reduce the risk of major diseases like heart diseases, diabetes mellitus, metabolic syndrome, hypertension, stroke, and cancer.



Dietary diversity is a qualitative measure of food consumption that reflects household access to a variety of foods and is also a proxy for nutrient adequacy of the diet of individuals.

The diverse diet (DD) which has all the food groups (vegetables, fruits, grains, meat, and dairy products) is necessary for achieving nutrient adequacy and optimal growth and development. The World Health Organization (WHO) notes that a healthy diet contains fruits, vegetables, legumes, nuts, and whole grains.

 **The basic food groups are:**

-  bread, cereals, rice, pasta, noodles, and other grains;
-  vegetables and legumes;
-  fruit;
-  milk, yogurt, cheese, and/or alternatives;
-  lean meat, fish, poultry, eggs, nuts, and legumes.



These foods are also known as '**everyday foods**'. It is important to choose most of the foods we eat each day from these food groups.

It's unlikely that every meal will include all five, but the aim is to achieve a balance across the day, or across the week.

 **There's more you can do to ensure you are having a balanced diet:**

-  Always include a variety of fresh and vegetables in meals that are in season; eating raw fruit & vegetables as snacks. As they are the most direct and effective source of the vitamins and nutrients we need for healthy digestion and development.
-  Reducing saturated fats and trans-fats intake; replace both fats with unsaturated fats in particular, with polyunsaturated fats.
-  Limiting the consumption of baked and fried foods, and pre-packaged snacks and foods (e.g., doughnuts, cakes, pies, cookies, biscuits, and wafers) that contain industrially-produced trans-fats.
-  Limiting the consumption of foods and drinks containing high amounts of sugars.
-  Keeping salt intake to less than 5 g per day (equivalent to about one teaspoon). Salt should be iodized.

- ① Drink plenty of clean water each day; Adults 7-8 big cups, children 2 cups.
- ② Limit the amount of foods that have little nutritional value and are not essential for good health.

Diversity can be incorporated through locally available options and eating traditional dishes.



A wholesome diet need not be an expensive proposition or a luxury. Diversity can be incorporated through locally available options and eating traditional dishes. Even small changes in daily food choices can improve nutritional intake, at little or no additional cost.

A diversified, balanced, and healthy diet varies depending on individual characteristics (for instance, age, gender, lifestyle, and degree of physical activity), cultural context, locally available foods, and dietary customs; but the basic principles of what constitutes a healthy diet still remain the same - The World Health Organization (WHO).

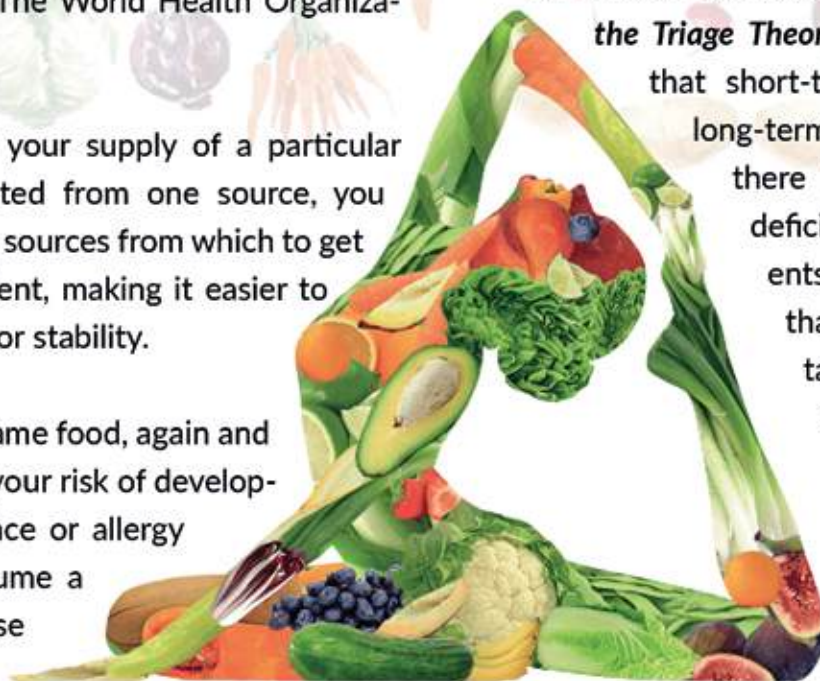
If for some reason your supply of a particular nutrient is interrupted from one source, you have plenty of other sources from which to get that particular nutrient, making it easier to retain homeostasis, or stability.

When you eat the same food, again and again, you increase your risk of developing a food intolerance or allergy to that food. Consume a diet filled with diverse

foods is the best way to achieve a varied population of a healthy microbiome in our gut is incredibly important to our health. Some unhealthy foods like artificial sugar, sweetened beverages, packed and processed foods may lead to several problems like indigestion, abnormal cholesterol levels, bloating, and high BP. Here a healthy balanced diet rich in variety keep better health and induces peaceful sleep.

As you start eating a balanced and diverse diet, you begin to have more energy, feel less stressed, and start accomplishing more in lesser time compared with when you consume an inappropriate diet. So, diet is the foundation of one's well-being. A healthy person is more productive, makes fewer visits to the doctor, and relies less on supplements in their diet. A woman with a nutritious diet is more likely to give birth to a healthy baby that paves the way to a healthy childhood. Similarly, a family with a well-rounded diet is more likely to be fit for work, happy, prosperous, and would save considerable amounts of money over time on healthcare costs.

Dr. Bruce Ames developed a theory known as **the Triage Theory**, in which he details that short-term survival out wins long-term survival. Thus, when there is an insufficiency or deficiency of essential nutrients, the body functions that are necessary for life take precedence over other, non-survival functions. Long-term insufficiency might lead to chronic disease.



If you want to jump-start your path on variety and diversity in your food choices, you may start from today.

Due to a medical condition, if you have been advised by your doctor or dietician to avoid certain food groups or types of vegetables, you should request a periodic re-evaluation and find an updated dietary advice every three months. diversity in your food choices, you may start from today.

Every day eating a well-balanced diverse diet is more fun, more interesting and of course the best way of meeting our daily essential nutrients requirement. Making your plate as colourful as possible increases the possibility of meeting proper dietary diversity.

Making your plate as colourful as possible increases the possibility of meeting proper dietary diversity.



So, make an effort to incorporate them into every meal and leads to a better and happier you.

References:

1. colourful food, dietary diversity | healthy diet, heart-friendly diet, Nutrition; Admin; March 15, 2019
2. Diverse foods| healthy foods| Uncategorized; Dminich; Sep 18, 2018
3. Healthy diet| Newsroom; World Health Organization (WHO)
4. Dietary Diversity's Importance in Nutrition Programming| GARDENS FOR HEALTH INTERNATIONAL| MEGAN BATEMAN; JANUARY 2018
5. the-five-food-groups/oneyouleeds.co.uk



IMPACT OF MEAT

PRODUCTION ON ENVIRONMENT



Protein is an important food element to our body. We get this nutrition from meat, fish, egg, milk, pulse etc. Among them meat is one of the most popular source of protein. Various types of farm animal like- Goat, Cow, Sheep, Pig, Camel, Poultry, Duck, Turkey etc are the main source of meat. Most of the people prefer to consume meat because of finding it tasty. But it's a matter of sorrow that we don't ever think about the impacts of meat production on environment.

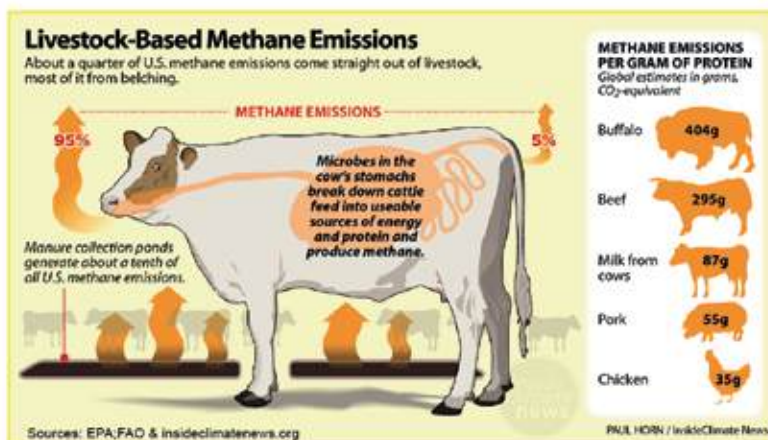
Many problems like- Pollution through Fossil Usage, Water and Land Consumption, Green House Gas Emissions, Effects on Antibiotic Resistance, Animal Methane, Effluent waste etc are increasing because of meat production and they are not suitable for the environment. But we can convert the animal waste into organic fertilizers to produce food. It is one of the environmental benefits of meat production. Actually this benefit is less than the negative impacts on environment.

Now it's necessary to use the alternative source for protein. We can use plant-based protein like- Soy Products, Lentils, Peanuts, Chickpeas Chia Seeds, Spirulina, Mycoprotein etc as our main source of protein. When it is possible to use plant-based protein in our daily life it will be good for the environment. But nowadays cultured meat is using as an alternative source of protein

Cultured meat is a form of cellular agriculture. Cultured meat is good for human health. It is also good for environment. It is generally produced by in vitro cell culture of animal cells. Cultured meat is also known as Lab-grown meat, Cell-based meat, Clean-meat, Synthetic meat, Slaughter-free meat etc.



This cultured-meat will reduce the negative environmental impacts of common meat production. The problem of cultured meat is still unaccepted to some countries. Besides many countries are now using cultured meat in various dishes and scientists are always working on the development of processing this meat.



Negative Environmental Effects of Meat Production

Most of the people prefer to consume meat because of finding it tasty. But we don't ever think about the impacts of meat production on environment.

- 1.Green House Gas Emissions
- 2.Using Huge Amount of Energy Consumption
- 3.Effect of Air Pollution on Human Respiratory Health
- 4.Effects on Aquatic System
- 5.Effects on Antibiotic
- 6.Effects on Wild Life Resistance
- 7.Using Huge Amount of Grazing & Land
- 8.Using A Lot of Water
- 9.Increasing Animal Waste

So, it's our duty to save our environment. Global warming and Climate change is now a burning issue all over the world. There are many negative impacts of meat production on environment which are directly and indirectly involving in global warming and climate change. Now it's high time to rethink about the value chain analysis of meat production for a better eco-system.

References:

1. Environmental impact of meat production - Wikipedia
2. Cultured meat - Wikipedia



We can convert the animal waste into organic fertilizers to produce food.

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CLEAN WATER AND SANITATION



We know, water is a fundamental human need. Clean water means the improvement of water quality by reducing pollution, eliminating dumping, and minimizing the release of hazards, chemicals, and materials having the proportion of untreated waste water and substantially increasing recycling and safe reuse globally. Each person on earth requires at least 20 to 50 liters of clean safe water a day for drinking, cooking, and simply keeping themselves clean. Polluted water isn't just dirty- it's deadly. About 1.8 million people die every year of diarrheal diseases like cholera.

About 1.8 million people die every year of diarrheal diseases like cholera.



Is infrastructure the only challenge?

It is definitely a part of the problem and another part of the problem is pollution. Water bodies are being increasingly polluted by human waste, industrial waste, and this means, the people might not excess to safe for drinking. It could be a billion range.

When it comes to sanitation and the sanitation carries is huge, we have made some progress but it still so far to go. We are looking for 'Approximately 2.4' billion people who lack access to safe sanitation.



Why do we need a goal on water and sanitation?

Can we imagine, waking up and not being able to use a tap to turn it on? we don't have a toilet? we don't have a medium to relieve ourselves. This is the situation for millions and billions of people around the world that they don't have infrastructures in a place to deliver water to people's homes. So, people have to leave their homes, walk long distances, go somewhere, where they need to carry water and carry it back to their home.



Does it only affect people in developing regions?

Really positive things about the new developing system about clean water and sanitation aren't just about the developing countries. There are targets and important for people in every developing country in the world. We produce a lot of wastewaters day by day. We need better technology to really clean the wastewater on a daily basis so that we could even potentially reuse wastewater for other applications.

What can we do to make a difference?

Thinking about the way we use water and it is important to remember that everything we put down even the drain has also an impact on water quality. So, it's important to think about these and I hope that new sustainable development qualities are open people's eyes to such issues.

References:

1.FAO (Food and Agriculture Organization). Unlocking the Water Potential of Agriculture. Rome: Food and Agriculture Organization; 2003.

2.Center for Environmental Research. Water for People, Water for Life: The United Nations World Water Development Report (WWDR). University of Kassel; 2002.

Water bodies are being increasingly polluted by human waste, industrial waste, and this means, the people might not excess to safe for drinking.

Iffat Sharmin Era
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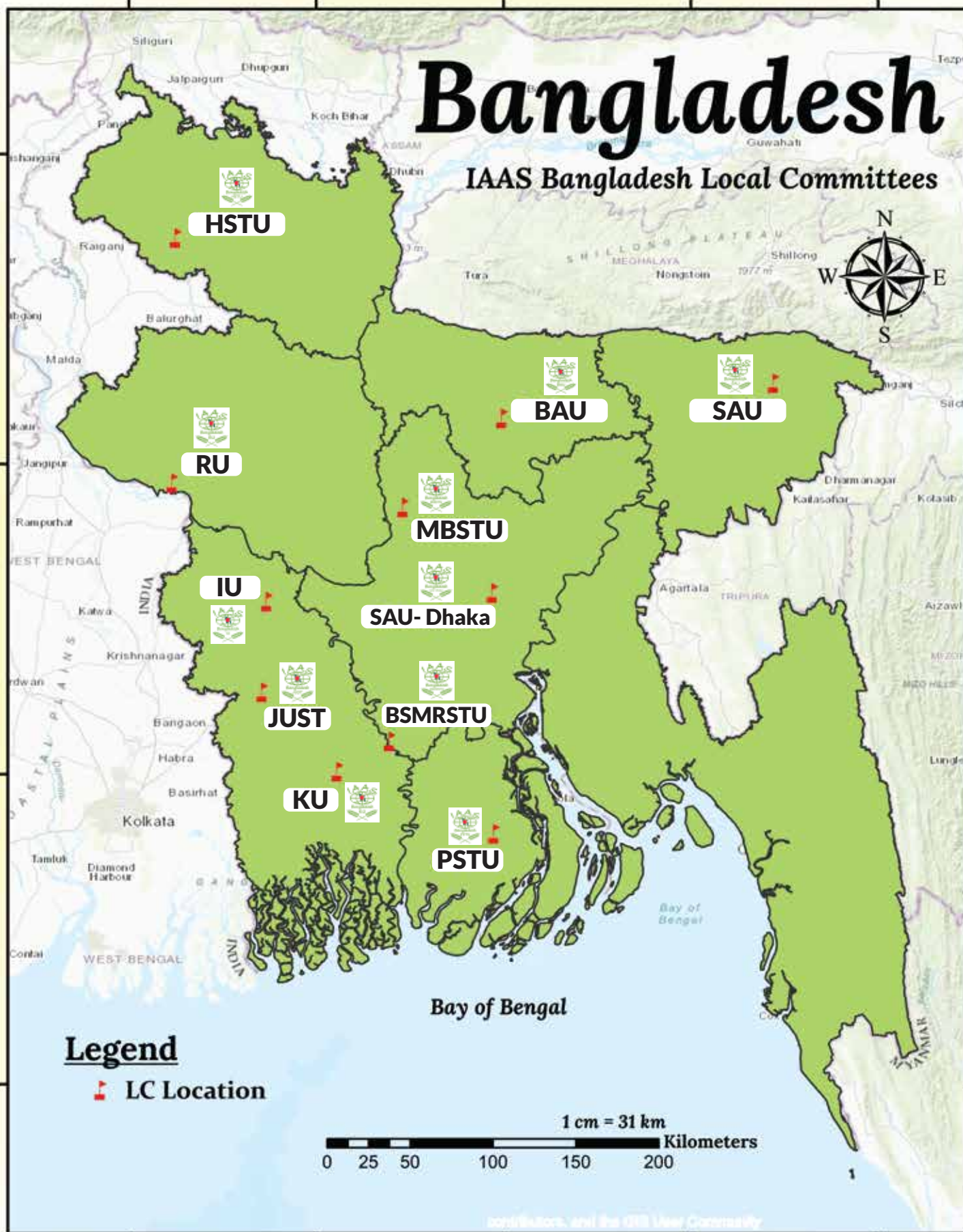
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Bangladesh

IAAS Bangladesh Local Committees



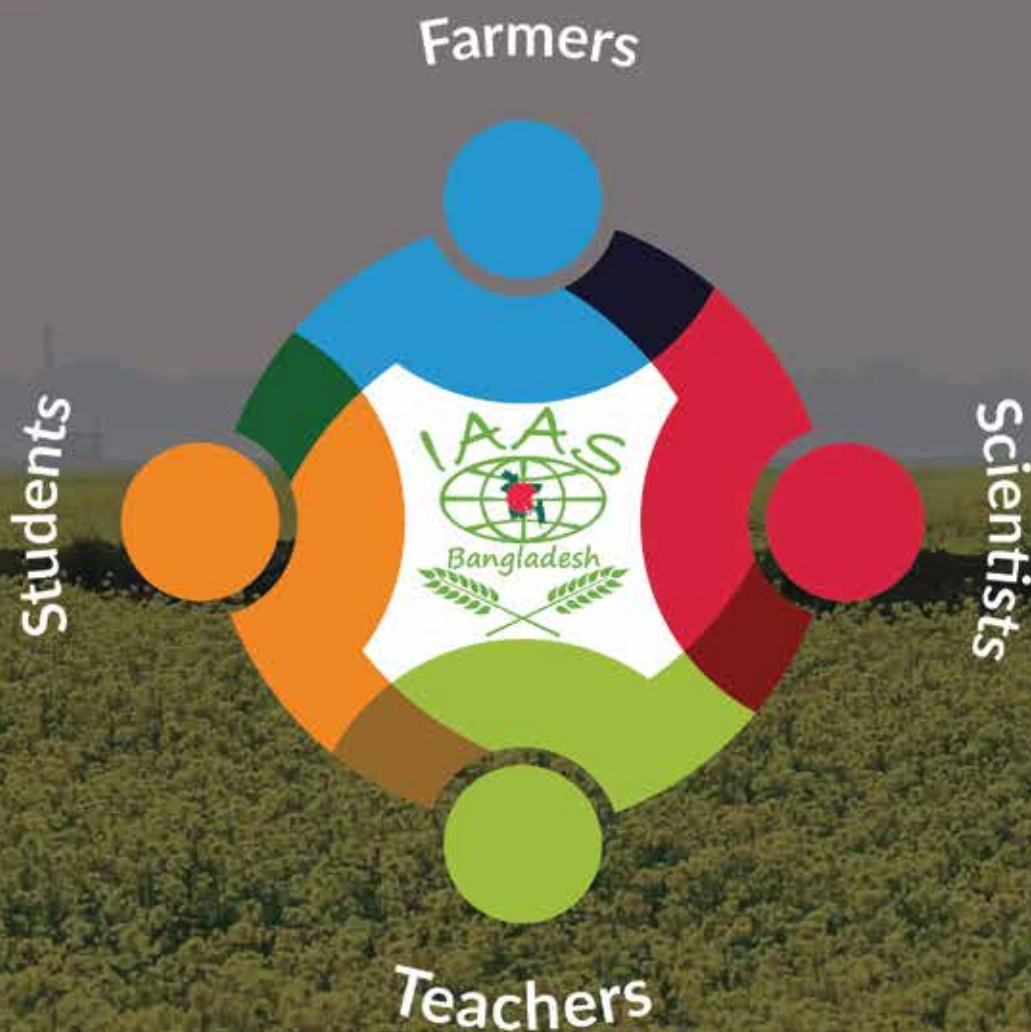
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IAAS BANGLADESH

IAAS Bangladesh is a National network of young, motivated people like students, farmers, teachers, and scientists who are interested in solving the issues that are affecting agriculture, society, and the world today and shaping it for a better tomorrow.

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