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From the Editor's,

Dear Readers,

My Warm Greetings !!

We all are aware that the world is suffering from second phase of Corona virus (COVID-19) pandemic. The severity of infection is so strong and rapid that it is once again spreading at a rapid speed in almost all parts of the country. A pandemic situation has arrived in everywhere. The team of researchers, medical staff administration, policemen and security staff along with health workers are working day and night to save the lives. We appreciate their kind efforts and contribution in the hard times.

In April issue, we recount the articles published from authors from diverse field to. This issue includes Annual awards by Academy for its members actively involved in their field or events and activities organised by the Academy. NESA is well known for its environmental awareness activities.

The month of April witnessed for special days i.e. 4th April, International Day for Mine Awareness; 7th April, World Health Day; 14th April, B.R. Ambedkar Remembrance Day, 17th April, World Haemophilia Day; 22nd April, World Earth Day; 25th April, World Malaria Day; 28th April, World Veterinary Day and 30th April, Ayushman Bharat Diwas. These were the days which reminded us their importance for existence. The theme for Earth Day 2020 is restore earth. The enormous challenge but also holds vast opportunities to take action on climate change.

I express my sincere and huge thank to all the persons who contributed writing the wonderful and inspiring articles, without which there wouldn't have been this newsletter issue. Please continue sharing such articles and share with your friends also.

I would like to thank President and General Secretary, NESA, New Delhi, and the Editorial team including Print, Designer and Publication committee for their nonstop support and efforts throughout this edition.

We hope this edition makes an interesting read. Please feel free to offer any suggestions for improvement.

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National Environmental Science Academy, NESA

is going to celebrate its

38th Foundation Day on 4th June, 2021 and World Environment Day on 5th June, 2021

**As all the readers and members are requested to participate in
two days virtual event and share your abstracts and articles.**

Editor in Chief, NESA NEWSLETTER

EARTH DAY: RESTORE OUR EARTH

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Almost 50 years ago, Earth Day was celebrated for the first time on April 22, 1970. Today, it has become a global affair that is observed by millions across the globe. But more than a gimmick, Earth Day aims to help raise awareness about environmental issues and protection. The idea was incepted after an oil spill in Santa Barbara, California in 1969. Former US Senator Gaylord Nelson wanted to raise awareness on air and water pollution and so created Earth Day, which eventually led to the creation of the US Environmental Protection Agency (EPA) and the passage of the Clean Air Act and passage of the Endangered Species Act, among others. The Earth day is also known as birth of the modern environmental movement. Today (22 April, 2021), it is not only meant to increase awareness of environmental problems, but also popular in many communities to clean up litter, plant trees, and simply reflect on the beauty of nature.



On April 22, 2021, the Earth Day was celebrated by College of Horticulture and Forestry (CoH&F), Rani Lakshmi Bai Central Agricultural University (RLBCAU), Jhansi. The theme of earth day for the year 2021 is "Restore Our Earth". Hon'ble Vice Chancellor, Prof. Arvind Kumar, Rani Lakshmi Bai Central Agricultural University (RLBCAU), Jhansi celebrated Earth Day and delivered a talk and expressed his concerns to preserve Earth. Dr. A. K. Pandey, Dean of CoH&F, delivered a very good and informative lecture laying emphasis on earth and the importance of the day to celebrate Earth Day (Fig. 1). Dr. Pandey explained how we have exploited the natural resources of our earth. This earth is not only our habitat but it has been given the status of mother in Indian culture. In fact, the earth is a very broad term, which includes water, forest, wildlife, pollution and other factors related to it. The cordial balance of all these factors makes this earth as "Vasundhara". Interrelationship of various factors like food and environment, major challenges for sustainable agriculture, impact of climate change on vegetable cultivation, problem of obesity, micronutrient deficiency and climate change, biodiversity, the living planet index, effect of ocean acidification on aquaculture, happy planet index, climate smart agriculture, reliance on green energy, solar energy, climate-smart agriculture techniques, maintaining wetlands were addressed.



Fig. 1: Dr. A. K. Pandey, Dean, College of Horticulture and Forestry, Rani Lakshmi Bai Central Agricultural University delivering Earth Day lecture.

All faculty members of College of Horticulture and Forestry RLBCAU actively participated in this event maintaining Covid-19 safety protocols and guidelines. The importance of biodiversity in our food and agriculture system across the globe was very well explained. It includes plants' genetic resources: crops, wild plants harvested and managed for food, trees on farms, pastures and rangeland species, medicinal plants and ornamental plants of aesthetic value. Animal genetic resources include domesticated animals, wild animals hunted for food, wild and farmed fish and other aquatic organisms, insect pollinators and microbial and

fungal genetic resources. He also said that we should adopt climate smart agriculture to deal with the current climate change scenario. Climate smart agriculture includes multiple cropping, mulching, rain water harvesting, agroforestry and livestock. Dr. Pavan Kumar and Dr. Garima Gupta organized this event and Dr. R. S. Tomar gave the vote of thanks to dignitaries and all the faculty members (Fig. 2). The Earth Day 2021, was successfully organized by College of Horticulture and Forestry, Rani Lakshmi Bai Central Agricultural University, Jhansi.



Fig. 2: Dr. Garima Gupta, addressing the audience & Dr. R. S. Tomar giving Vote of Thanks to the dignitaries and the faculty members for Earth Day 2021 celebrations.

ENCOUNTERING, EXPERIENCING AND EXPLORING NATURE IN EDUCATIONAL EXCURSIONS PROGRAMME AT BHARATPUR BIRD SANCTUARY

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Two days educational tour of Forestry students (IV Semester), College of Horticulture and Forestry, Rani Lakshmi Bai Central Agricultural University (RLBCAU), Jhansi was organised to Bharatpur Bird Sanctuary, Bharatpur and adjacent areas. The tour was under the leadership of Dr. Pavan Kumar College of Horticulture and Forestry and accompanied by another faculty member Dr. Anjana Kholia to supervise 26 students. The tour was conducted for field based practical's and exposure of students. Miss Pooja Kumari Chourasia and Mr. Krishn Ballav Singh (B.Sc-

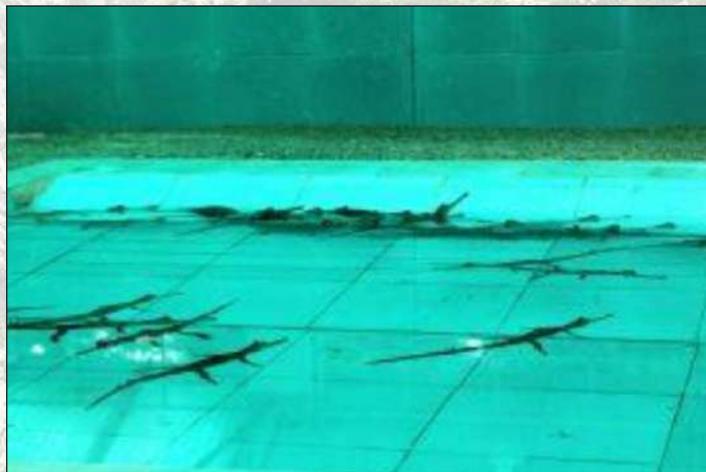
IV semester student) were student leaders in educational tour programme. Educational excursions not only enhance the knowledge of the students but also broaden their outlook towards the outside world. It is for this reason University conduct educational excursions to educate the students about things that are beyond the text books. The Bharatpur Bird Sanctuary make us aware about the bird's richness in terms of biodiversity, culture and tradition. Two days started on 2nd April, 2021 from the RLBCAU, Jhansi by bus and reached ICAR-Directorate of Rapeseed-Mustard Research, Bharatpur in the evening on same day. On the way, we reached at Gharial Eco-Park, Morena, where the In-charge of the Park shared the knowledge on the history, importance and management practices. The Ghariyal Centre at Deori, Morena (Fig. 1) nearby is the only one of its kind in the entire state of Madhya Pradesh and gives chance to the public to experience the life cycle of aquatic reptiles. Eco-Centre, Deori is a part of National Chambal Sanctuary. As we know, because of various reasons like climatic change, pollution, and smuggling, various species of aquatic or amphibians are on the brink of extinction. The center helps breed and rehabilitate Gharials in the Eco-Park (Fig. 2). Because of active efforts, Eco-Park boost the population and tried to save the endangered species and protect them. The students had recorded the information about the park and the species.



Fig. 1: B.Sc (IV Semester) students during visit to Gharial Eco-Park, Morena, Madhya Pradesh.



Preserved Egg of Ghariyal.



Ghariyal of 2-4 months age.



More than 6 months old.



Ghariyal of more than one year of age.

Fig. 2: Life cycle of Ghariyal in Ghariyal Eco-Park.

We reached in the evening at ICAR-Directorate of Rapeseed-Mustard Research, Bharatpur (Fig. 3). We especially enjoyed our evening conversations around pond. I sincerely thank to Dr. P.K. Rai (Director, ICAR-DRMR, Bharatpur) and other staff members for their warm hospitality. The ICAR-DRMR is preliminary great institutions serving in the nation in developing high yielding and improved Rapeseed and Mustard varieties every year. The DRMR has the responsibility of planning, coordination and execution of research programmes through wide network across the country to augment the production and productivity of rapeseed-mustard.



Fig. 3: ICAR-Directorate of Rapeseed-Mustard Research, Bharatpur, Rajasthan

The Bharatpur Bird Sanctuary, is situated on the other side of Bharatpur. We managed to see some deer and birds under a nearby bush with the help of our binoculars. In the field tour, experts delivered a series of lectures, hands-on experience on various instruments, and conducted a number of field based excursion visits. The students had hands-on experience with various birds watching instruments and forestry learning in respective subjects that has enhanced their scopes and knowledge of forestry (Fig. 4).

Bharatpur Bird Sanctuary is one of the oldest wild reserves in India and was created 250 years ago when it was named after the Keoladeo (Shiva) temple within its boundaries. Earlier, in around 1850, the park was a traditional hunting spot for the Maharajas of Bharatpur. It was a tradition to shoot many ducks in the lake of the reserve in the honor of the British viceroys. In 1938, over 4273 birds including mallards and teals were killed by Lord Linlith grow, then Governor General of India. After independence, the royal beings were allowed to shoot here but in the year 1982, every such activity was completely banned and resulted in the clashes between the local farmers & Gujjar communities and the Government. It was declared as the world heritage site in December, 1985. The park is also known as Ghana National Park since 'Ghana' means dense referring to thick forest that covers Bharatpur district.



Fig. 4: Students and faculty performing field experiments in Bharatpur Bird Sanctuary, Bharatpur.

The numerous bird species are the major site of attraction for the tourists in Bharatpur. These species fly through distant places like Siberia and Central Asia specifically in winters. Migratory birds include several species of Cranes, Pelicans, Geese, Ducks, Eagles, Hawks, Shanks, Stints, Wagtails, Warblers, Wheatears, Flycatchers, Buntings, Larks and Pipits, etc. (Fig. 5). Along with these, some major counts of Sambal, Chital, Nilgai and Boar can also be seen in the sanctuary. In Bharatpur, the macro invertebrates like worms, insects and mollusks can be found in abundance in aquatic marine. These insects are the common

foods of the birds and the fishes of the marine world. Land insects are in abundance and have a positive effect on the breeding of birds. Basically, the Bharatpur Sanctuary is a bird paradise boasts almost 370 bird species. This sanctuary is an ideal host for so many bird species because of its strategic location to attract migratory waterfowl in the Indian subcontinent before dispersing to various regions. In addition, the wetland is an area for massive congregations of waterfowl. It is the only regular wintering area in India for the Critically Endangered Siberian Crane.



Yellow footed green pigeon



Common king fisher



Black-headed Ibis



Purple heron

Fig. 5: Some common birds in Bharatpur Sanctuary, Bharatpur

The purpose of the educational tour includes:

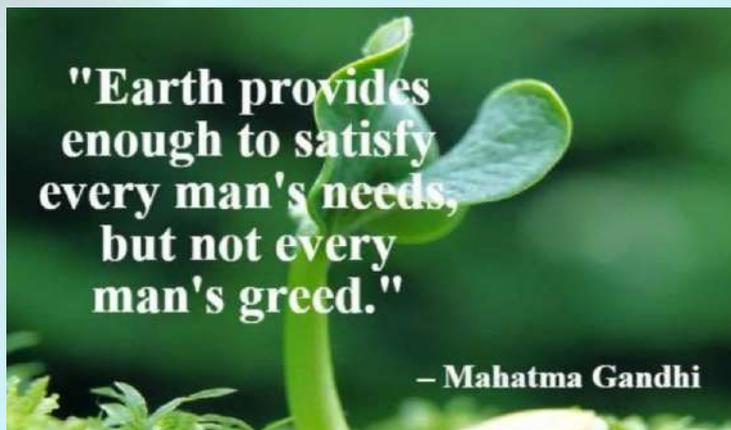
1. It has improved students practical knowledge on forestry. Moreover, this educational tour has enhanced their theoretical knowledge, interpersonal skills and improved their skills and knowledge to conduct the field practical's (as part of their course), observation and documentation.
2. It has enhanced students' skills and knowledge on various birds and their family which could be useful for their forestry career and future endeavor (Fig. 6).



Fig. 6: Students in Bharatpur Bird Sanctuary, Bharatpur.

The educational tour was successfully completed and we returned back to RLBCAU, Jhansi on 3rd April, 2021. This excursion was really informative and taught students about the beauty and importance of silence. It also taught us to love and care

for nature. We are thankful to Hon'ble Vice Chancellor Dr. Arvind Kumar, RLBCAU, Jhansi for his immense support, cooperation and valuable suggestions.



RETURN OF COVID-19: AGRICULTURAL SUSTAINABILITY AND ENVIRONMENT

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After the first origin of COVID-19 in 2020, it has again returned in 2021. The fatalities are now even more than the previous wave. We are still facing the aftermaths of previous lockdown and health effects of this pandemic. But it seems that the reset button has been pressed and time has come for the revival of the nature and environment. The human is continuously using natural resources without looking at the disturbances to the nature. Now the effects of this are appearing as climate change, global warming, pandemic and many others to come. The attack of COVID-19 on global population has caused some positive effects such as reduction of air, water, land and noise pollution. But simultaneously the negative effects can also be seen. The food crisis for the poor and undernourished have increased. The food security and sustainability chain has been broken due to

disturbances in demand and supply. Except the marginal increase in the prices of wheat and rice in international markets, the prices of most of the foods during the pandemic declined due to decreased demand and staggered supply. This disturbance in the supply chain will further prevail through the current wave of this pandemic also. Due to decrease in the food prices internationally the global food security concerns will also

attenuate. Not only the quantity and prices are affected, but the quality of food has also affected. Food prices for the cereals and meat are differently affected.

Further, the people have started creating huge stocks of various important food commodities due to uprising demands and scenario of the global markets. But the important role of food stocks is in smoothing consumption and contribution to food security. The food storage smooth out the fluctuations in prices arising out due to huge harvest and less buying or selling high. The storage of food and important agricultural produce reduces the risks of future shortages and may increase or decrease the future prices. But the stocks should be controlled properly and should not be misused for earning illegal benefits. At the beginning of 2020 crisis, the cereal stocks were high about 850 million metric tons (FAO 2020). These high stocks have potential of providing buffer against 2021 and future adverse situations. But the equal important is the proper distribution of stocks all over the globe. Although these initial conditions in world

agriculture seems to be supportive and eliminates any risk to global food crisis, but there is need to relook the proper utilization, distribution and avoid any losses of food stocks. The other impacts of COVID-19 related health issues and other restrictions imposed is found to be on movement of workers, labours, and rural workers. Workers and labours moved to their home states during this pandemic due to instability of jobs and availability of food and other necessary items. Where COVID-19 emerges amid other crises such a pest and disease outbreaks, adverse weather conditions, or compromised security, the impacts on local food security can rise significantly. Many already food insecure countries face such challenges. Due to 2021 wave in many countries especially India, the whole food supply chain is getting affected. The suppliers are now not able to sell their products due to frequently imposed restrictions and likewise the buyers and consumers have restrictions except on utmost essential items. The seafood and meat sector is badly affected due to insecurity among people on consumption of these foods and restrictions. Moreover, the perishable agricultural produce and foods are getting deteriorated in the fields and industries due to staggered supply chain. This will further cause economical loss to the farmers, producers and stakeholders. Food demand and thus food security are greatly affected due to mobility restrictions, reduced purchasing power, and with a greater impact on the most vulnerable population groups. Due to disturbances in the food

supply chain, people who experience chronic hunger and do not consume enough caloric energy are greatly affected. The people who are living by hand to mouth are the worst sufferers. Due to loss of jobs and non-availability of sufficient funds to pay for their daily necessities, they are incapable of getting enough energy and nutrition. Thus, ultimately affecting the sustainability goals in agriculture. Farmers cannot move to their fields frequently and easily. Moreover, they cannot

move to local markets for selling their farm produce. Farmers are facing problems in buying seeds for the sowing in their fields. At present the wheat is still pending at farmers site for further reaching to local markets and sell. Moreover there is need to provide more door step facilities to farmers for their day to day needs in life and agriculture related activities. Since the pandemic time and duration uncertainties, we need to rethink in perspectives of changed situations to adapt farming strategies and sustaining farmers income so that they should not suffer adversely.

Now in view of the present and future problems, there should be contactless delivery services for supplying necessary items to consumers. For examples drones can be used for the delivery. Since drones are now widely used for agricultural monitoring and assessment studies, time has come when the application area of drones should be widened technologically to contactless delivery of agricultural inputs, foods, various necessary items at various locations during this pandemic times.

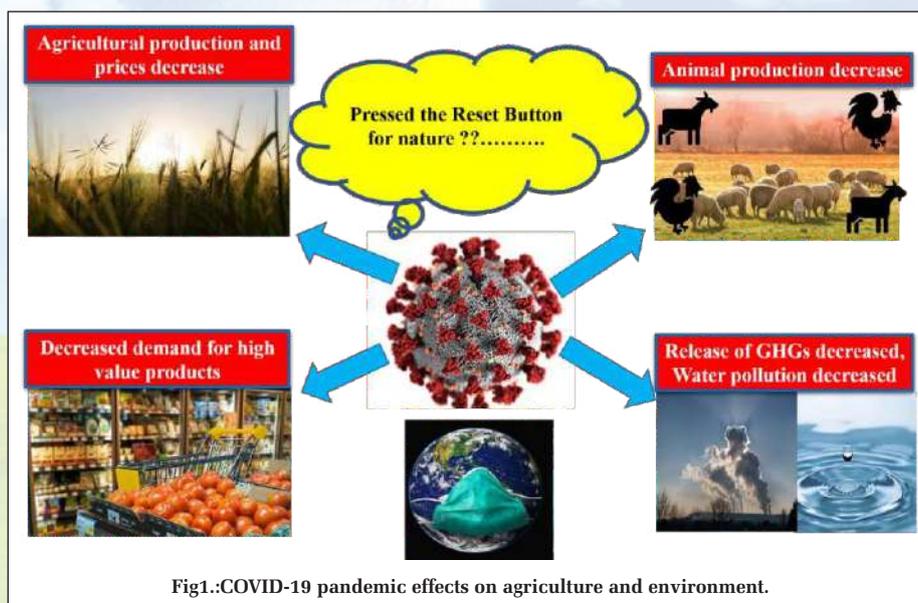


Fig1.:COVID-19 pandemic effects on agriculture and environment.

Listed Glycemic index of foods:

- i) **Fruits**-Apple 36, Strawberries 41, Dates 42, Oranges 43, Banana 51, Mango 51, Blue berries 53, Pine apple 53, Water melons 76
- ii) **Vegetables boiled**-Carrot 39, Plantains 66, Sweet Potatoes 63, Pumpkin 74, Potatoes 78
- iii) **Grains**-Barley 28, Quinoa 53, Rolled Oats 55, Couscous 65, Popcorn 65, Brown rice 68, White rice 73, Whole wheat bread 74, White bread 75
- iv) **Legumes**-Soybean 16, Kidney beans 24, Chickpea 28, Lentils 32
- v) **Diary products and Dairy alternatives**-Soymilk 34, Skim milk 37, Whole milk 39, Ice cream 51, Rice milk 86
- vi) **Sweeteners**-Fructose 15, Coconut sugar 54, Maple syrup 54, Honey 61, Table sugar 65

The High GI foods should be replaced with foods that have lower GI wherever possible.

Several factors influence the GI of a food including its nutrient composition, ripeness, cooking method, type of sugar it contains and amount of processing it has undergone. Fried foods tend to contain a high amount of fat which can slow the absorption of sugar in the blood stream and decrease the GI. Roasting and baking can breakdown resistant starch that resists digestion and is commonly found in foods like legumes, potatoes and oats, thus increasing GI. Boiling is thought to help retain more of resistant starch and lead to a lower GI in foods compared to other cooking methods. When food is cooked starch or carbohydrates start to breakdown. The longer foods like pasta or rice is cooked the greater is the digestibility of their starch content and thus higher GI. They have to be cooked till being still firm when biting into them. Ripeness of some fruits including bananas may also lead to higher GI because the amount of resistant starch decrease during the ripening process. GI of fully ripened banana is 51 and that of under ripe banana is 30. Foods highly acidic like pickles have lower GI. Bread made with lactic acid have lower GI than white bread. Food high in fiber content have lower GI.

Low glycemic safer fruits for Diabetes - Cherries, Grapefruit, Dried Apricots, Pears, Apples, Oranges, Plums, Strawberries, Peaches and Grapes.

People with type 1 diabetes can't produce sufficient quantities of insulin and those with type 2 diabetes are resistant to insulin. With both types of diabetes faster glucose release from high GI foods lead to spike in sugar levels. The slow and steady release of glucose in low glycemic foods helps to maintain good glucose control.

Low glycemic diet may offer several health benefits including:

- i) **Improved blood sugar regulation**- Many studies have found that following a low GI diet may reduce blood sugar levels and improve blood sugar management in people with type 2 diabetes. It gradually raises blood sugar and does not spike insulin level because it is digested and absorbed more slowly than high GI foods and thus recommended for people with diabetes.
- ii) **Increased weight loss**- Some studies have shown that following a low GI diet may increase short term weight loss. However, more studies are needed to determine how it effects long term weight management.

- iii) **Reduced cholesterol levels**- following a low GI diet may help lower levels of both total and LDL (bad) cholesterol, both of which are risk factors for heart diseases.

How to calculate GI of food from food label:

- i) **Carbohydrate content of food**-It includes sugars and starches in food. The fiber content is not included because it is not broken during digestion. Foods made with sugar and flour tend to have higher glycemic index than ones made with whole grains intact.
- ii) **Protein and fat content**-Fat and protein have little effect on blood glucose, therefore foods high in ratio of fat and protein to carbohydrates tend to be lower in glycemic index score. When high glycemic index foods are eaten along with a source of fat or protein, overall glycemic index can be reduced.
- iii) **Fiber content**-Compared to foods with no or little fiber, the foods rich in fiber tend to have a lower glycemic index, especially if it is soluble fiber. Fiber is digested slowly and slows down the digestion process of food resulting in slower release of sugars in the blood stream. Such foods have lower GI.

Determine carbohydrate content of each portion of meal.

Example if breakfast includes 8 ounces of orange juice and instant oatmeal. The carbohydrate content of instant oatmeal is 22 g and in 8 ounces of orange juice it is 26 g.

Proportion of carbohydrate each component of meal i) oatmeal 22 divided by 48 equal to 0.46 ii) Orange juice 26 divided by 48 equals to 0.54

Multiply the proportions for the components by the standard GI of the components from database values

Oatmeal 0.46X83=38.18 Orange juice 0.54 X46=24.84

Total GI 38.18+24.84 = 63.02 in breakfast

A more useful estimation of food blood glucose effect is **glycemic load GL**. Glycemic Index GI does not take into account the amount of food eaten. Glycemic load calculation takes into account the GI plus the g of carbohydrates per serving of the food. GL has more narrow categories of low 0-10, medium 11-19 and high 20 and above. GL better estimates the possible real life impact when someone eats a particular food. Glycemic load of a food is a number that estimates how much the food will raise person's blood glucose level after eating it. One unit of glycemic load approximates the effect of eating one g of glucose. The glycemic load GL is obtained by multiplying the quality of carbohydrate in a given food GI by the amount of carbohydrate (g) in a serving of that food divided by 100. It is important to take both the glycemic index and glycemic load into consideration while selecting foods to help support healthy blood sugar levels.

Glycemic index and Glycemic load of some fruits

Cherries GI 20 GL 6, Grape fruit GI 25 GL 3, Dried Apricots GI 32 GL 9, Pear GI 38 GL 4, Apple GI 39 GL 5, Oranges GI 40 GL 5, Plums GI 40 GL 2 (9 for prunes), Strawberries GI 41 GL 3, Peach GI 42 GL 5, Grapes GI 53 GL 5.

More details on International values of Glycemic Index and Glycemic Load values refer Diabetes Care 2008 12 : 2281-2283

REFERENCES

- i) www.healthline.com
- ii) www.medicalnewstoday.com

SCSP SCHEME FOR THE WELFARE OF THE FARMERS OF BUNDELKHAND REGION

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The Government of India has started SCSP Program (Scheduled Caste Sub Plan) to benefit the farmers of scheduled caste (SC) communities of the country. The Rani Lakshmi Bai Central Agricultural University, Jhansi, U.P. implemented the SCSP plan on 25th March 2021 to benefit the farmers of the SC community in different parts of Bundelkhand region. The event proceeded under the guidance of Hon'ble Vice Chancellor, Dr. Arvind Kumar, RLBCAU, Jhansi. The program included training, guidance and agricultural inputs distributions benefitting more than 150 farmers under the SCSP plan. Under the supervision of Dr. S. S. Singh, Director Extension Education, RLBCAU, Jhansi and support of Dr. Amit Tomer (Plant Breeder) several teams were made which included faculty expertise in the broad areas of research and crop improvement. The team of interdisciplinary scientists included Team A. Dr. Shrawan Kumar Shukla (Biochemistry discipline), Dr. R. S. Tomar (Biotechnology), Dr. Bharat Lal (Soil Science) and Dr. M. Sonia (Entomology) whereas Team B. included Dr. Arjun Lal Ola (Vegetable Science), Dr. Pavan Kumar (Environment Science), Dr. Anil Rai (Agronomy) and Dr. Sanjeev Kumar (Agriculture Extension). The team of scientists successfully organized one day event at two villages Dhovankheri

and Pachoni in Lalitpur, Uttar Pradesh. Each member of the team shared their views on cultivation practices, solution to problems faced by farmers in the region, cultivation of medicinal plants like ginger and other cereal crops suitable in the rain-fed areas of Bundelkhand region. Scientists urged the farmers for adopting the advanced technology for cereals cultivation in order to get better yield along with the quality produce. Scientists laid emphasis on the cultivation of improved varieties in accordance with the season and availability of resources. The importance of new improved varieties developed with the help of advanced tools and techniques suitable in region were very well explained to the farmers. Also the importance of multiple agri-enterprises in the same piece of land with increase cropping intensity, farm productivity and farm income was explained. Farmers were informed about the importance of soil testing, procedure of soil collection for testing. Farmers were informed about the organic farming, minimum use of chemical fertilizers and excessive use of FYM and vermicompost. Use of insect trappers instead of using insecticides in crops was also suggested as easy technique. Farmers were encouraged to take the advantage of improved technologies developed by ICAR (Indian Council of Agricultural Research) and make their agricultural production systems more sustainable. The resource persons during the programme emphasized on practicing improved and scientific agriculture, keeping an eye on commercial production, value-addition of the products with special reference to the organic agriculture. The programme was organized for enabling farmers to develop their skills and improve their livelihood condition by adopting relevant enterprises.





THE PANDEMIC SECOND WAVE AND ENVIRONMENT-WHERE DO WE STAND?

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The COVID-19 pandemic has hit us all significantly across the planet throughout 2020. It has challenged us on all fronts from medical preparedness to economy and education; and from politics to psychology. People across the board in both hemispheres have suffered unbearable pain and difficulty in coping with their lives and livelihood. Unfortunate deaths and severe economic disasters have compelled many to face one of the harshest period of their lives undoubtedly.

The first global wave of COVID-19 pandemic has made lasting negative impacts globally. Sanitization, decontamination, containment, lockdowns, vaccination, economic meltdowns, comorbidity deaths and Covid victims have turned into household vocabulary across the globe. Even school going kids have learnt so much about the pandemic and its impact. Online education platform has transformed the global education platform completely.

However, out of all these debacle one positive change that came up was the case of global environmental health. It transformed dramatically in several countries as reported on the media. The long periods of lockdowns and containment of human population to home in both urban and rural areas together with shutting down of major polluting industrial and agricultural activities restricted anthropogenic activities significantly. As a consequence there has been widespread reports of cleaner ecosystem and environment across the planet. Wildlife sightings in the towns and cities, increased visibility and better air quality due to reduction of pollutants and particulate matters in the air has even quite sensational and dramatic.

Large number of bird species mostly not seen in the cityscapes has been reported to frequent local parks, gardens, lawns, ponds and adjoining waterbodies like never seen before. Furthermore, due to travel restrictions peace and tranquility returned to the urban environment in an unbelievable manner. Thus in spite of the grave medical and economic concerns and news of death and destruction; the positive impact on global ecosystems and environment has been a welcome news for all restricted to the four walls of our homes.

In spite of sporadic reports of flattening the rate of COVID-19 infections globally- second, third and fourth waves of the pandemic hitting various countries is an alarming news! Several lethal variants and even double mutants with higher virulence are being reported. New lethal strains of the virus have been reported from several countries. India is also not immune to these challenges so far; but it is a welcoming news that vaccination in the country has also been implemented quite successfully and spearheading the immunization process rapidly. In case of a densely populated, developing country like India this is indeed a monumental success and deserve to serve as a global model. In spite of all odds, limitations and restrictions, the nation has been able to keep the infection under control and implemented a robust immunization program nationwide.

Only a very few dedicated non-government organizations and field level environmental organizations has been demanding the political parties to come up with some assurance or guidelines for

protecting our environment. Unfortunately, this is not an isolated case of India alone; this has been a global phenomenon. Informant is hardly given an opportunity to show up in credible election campaigns. Very few celebrities across the nation has been voicing for the cause of the environment. The issue of environmental protection is suppressed under the pressure of economic reforms, job promises, employment opportunities and

other relevant as well as irrelevant socio-cultural and socio-political rigours of political parties. However, any true concerns for the environment are completely missing in these elaborate election campaigns. Only crocodile tears are being noted as environmental concerns with no true underlying sympathy or empathy for the cause.

Our future will be determined at this trying time of the resurgence of the COVID-19 pandemic through our ongoing election process as a celebration of our cherished democratic dreams! But it is quite sad to note that environment has very little concern on these major platforms both in India and abroad. No television debates highlight the focus of any candidate(s) or major and minor political parties at the prime time. We are all moving towards an uncertain future politically as well as socially and economically; and lack of apathy for our immediate environment has the risk of jeopardizing the future of our next generation- when are we going to wake up and ask pertinent questions from our councillors, legislators, parliamentarians ?



INTERPLAY OF ENVIRONMENTAL FACTORS AND CANCER

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Cancer as we all are aware is the second leading cause of death. It is a disease that involves the abnormal cell growth with the potential to invade or spread to other parts of the body. According to GLOBOCAN, there were about 14.1 million new cancer cases, 8.2 million cancer deaths and 32.6 million people living with cancer within 5 years of diagnosis worldwide (GLOBOCAN, 2020). Thus, it is the high time where we need new therapeutic strategies to reduce cancer related deaths. Cancer is a multifactorial disease. Many factors come up to cause the disease. Factors like genetic or chemical contribute to it. 10-15% cancers

are thought to be related to heredity, as for the rest 85-90% of the cancers have their roots in the environment and lifestyle (GLOBOCAN, 2020). It is known approximately by 25-30% of tobacco, 30-35% of diet and 15-20% of infections, and the remaining percentage of other factors like radiation, stress, physical activity, environmental pollutants etc, cause cancer related mortality. In terms of genetic factors, the mutation in multiple genes, including oncogenes, tumor suppressor genes and DNA repair genes

can lead to cancer formation rather than single gene. For this purpose, the aim of this study is to discuss the interaction of genetic factors with various environment factors including diet, lifestyle, metabolic alterations and various environmental exposures (Fig 1).

Cancer and air pollution

Emission from motor vehicles, industrial processes, power generations, the household combustion of solid fuel and other source pollute the ambient air across have global effect in the world. There are specific chemicals in the air and are known to be carcinogenic to humans. In 1971, the US clean air act was established and ozone, particulate, sulfur dioxide, carbon monoxide and lead were identified. Exposure to ambient air particles has estimated to have contributed 3.2 million premature deaths worldwide in 2010, due to largely increased cases of cardiovascular disease and 223,000 deaths from lung cancer. These air pollutants cause to acute illness such as vomiting, chronic disease such as cancer, as well as immunogenic, neurologic, reproductive, developmental and respiratory diseases. Exposure to these chemicals increases the risk of pleural and peritoneal tumors and lung cancer incidence.

Factors outside the body (environmental factors)

Exposure to wide variety of natural and man-made substances in the environment accounts for atleast two-thirds of all cases of cancer in the United States. The environmental factors include lifestyle choices like cigarette smoking, excessive alcohol consumption, poor diet, lack of exercise, excessive sunlight exposure and sexual behavior that increase the risk of certain viruses. Other factors include the environmental chemicals that may be present in the air, water, food and workplace. The cancer risk associated with many environmental chemicals has been identified through studies of occupational groups that have higher exposures to these chemicals than the general population. The importance of the environment can be seen in the differences in cancer rates throughout the world and the change in cancer rates when group of people move from one country to another. For example, when Asians who have low rates of prostate and breast cancer and high rate of stomach cancer in their native countries immigrate to united states, their prostate and breast cancer rates rises over time until they are nearly equal to or greater than the

higher levels of these cancers in united states. Likewise their rates of stomach cancer fall becoming nearly equal to their lower U.S. rates. Different environmental exposures are linked to specific kinds of cancer. For example, exposure to asbestos is linked primarily to lung cancer. Whereas exposure to benzidine, a chemical found in certain dyes is associated with bladder cancer. In contrast smoking is linked to cancers of the lung, bladder, mouth, colon, kidney, throat, voice box, esophagus, lip, stomach, cervix, liver and pancreas.

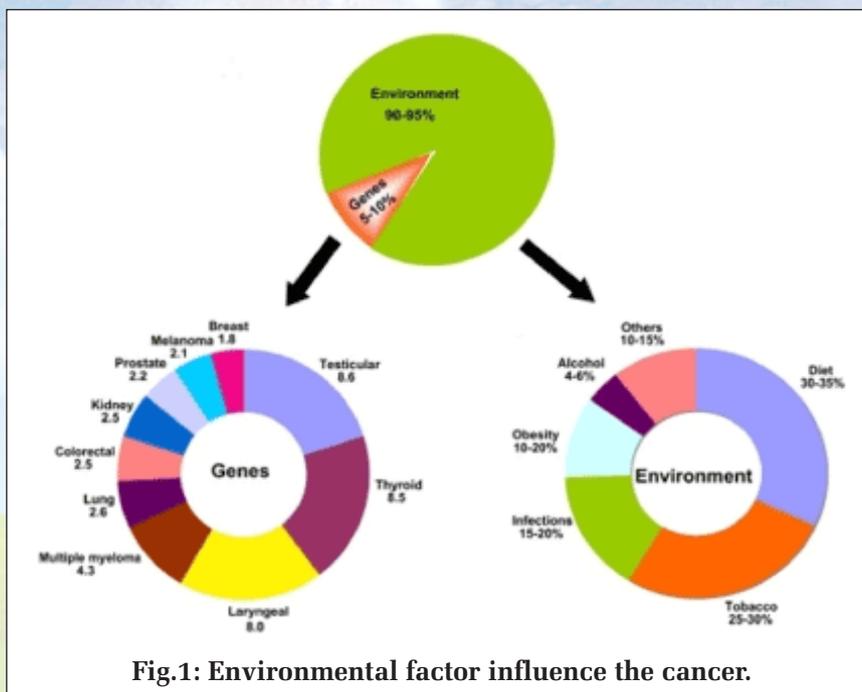


Fig.1: Environmental factor influence the cancer.

Interaction of environmental factors and genes

Environmental factors such as viruses, bacteria, sunlight and chemicals interact with cells throughout our lives. Mechanism to repair damage to our genes and healthy lifestyle choices help to protect us from harmful exposures. However, over time, substances in the environment may cause gene alterations, which accumulate inside the cells. While many alterations have no effect on a person's health. Permanent changes in certain genes can lead to cancer. The chance that an individual will develop cancer due to these environmental conditions depends on several factors- how low and how often a person is exposed to a particular substance, his/her exposure to other agents, genetic factors, diets, lifestyle, health, age, and gender. For example, diet, alcohol consumption and certain medications can affect the levels of chemicals in the body that break down cancer causing substances. Because of the specific interplay of many factors. It is not possible to predict whether a specific environmental exposure will cause a particular person to develop cancer. We know that certain genetic and environmental factors increase the risk of developing cancer, but we rarely know which combination of the factors is responsible for the person's specific cancer. This also means that we usually don't know why one person gets cancer and other person does not.

ACTIVITIES AND SPECIAL DAYS AT A GLANCE IN THE MONTH OF APRIL 2021

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4th April: International Day of Mine Awareness

Every year on April 4th, the International Day for Mine Awareness and Assistance in Mine Action is commemorated to raise awareness about the dangers that landmines pose to civilian communities' protection, health, and lives, and to urge state governments to develop mine-clearing programs. The United Nations General Assembly proclaimed 4 April each year as International Day for Mine Awareness and Assistance in Mine Action on December 8, 2005.

It urged States to continue their efforts, with the help of the UN and other related organizations, to promote the establishment and creation of national mine-action capacities in countries where mines and explosive remnants of war pose a serious threat to the defense, health, and lives of civilians, or are a hindrance to national social and economic development.

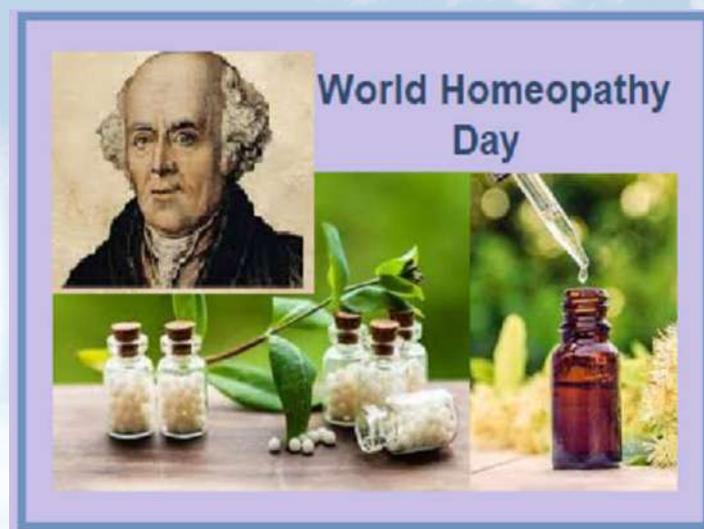


7th April: World Health Day

"Health is wealth". As we all know, hence, every year on April 7th, World Health Day is observed all over the world. The World Health Organization is in charge of a number of services and agreements. In 1950, it was the first time it was commemorated. Since 1950, the 7th of April has been designated as World Health Day. This day is intended to raise awareness about a particular health topic as well as to highlight a World Health Organization priority area of concern (WHO). Another goal of the day is to

recognize healthcare workers' contributions and the WHO's progress. This year's World Health Day theme is ensuring universal access to healthcare services all over the world. In 1948, the World Health Organization (WHO) convened the first World Health Assembly, which called for the establishment of a "World Health Day."

World Health Day 2021 theme is "building a fairer, healthier world". This is a priority area of concern for the WHO as the COVID-19 crisis put the spotlight back on the inequity in healthcare system and how some people are able to stay healthier simply because of where they are born and their economic conditions.



10th April: World Homeopathy Day (WHD)

WHD is observed every year on 10 April to pay tribute to the founder and father of the Homeopathy system of medicine Dr. Christian Friedrich Samuel Hahnemann. The main aim of this day is to spread knowledge about Homeopathic medicine in public health. In fact from 10 April to 16 April World Homeopathy Week is celebrated annually which is organised by the World Homeopathy Awareness Organisation.



11th April: National Safe Motherhood Day (NSMD)

NSMD is observed on 11 April every year to create awareness about maternity facilities, lactating women, and also for proper health care given to women. The day also focuses on reducing cases of anaemia among women, giving the facility of institutional delivery and better pre and post-natal health care facilities. Every woman has a right to antenatal care during pregnancy and skilled care during childbirth. World Health Organisation (WHO) guidelines say that all births should be assisted by skilled health

professionals. The timely management and treatment during childbirth can make the difference between life and death for both the mother and the baby.



13th April: Ugadi

On Tuesday, April 13, Ugadi will be celebrated. The people of Andhra Pradesh, Telangana and Karnataka celebrate Ugadi, also known as Yugadi, as their New Year's Day. on the first day of the Hindu lunisolar calendar month of Chaitra. Ugadi is celebrated in these areas as festival.

14th April: B.R. Ambedkar Remembrance Day

B.R. Ambedkar Remembrance Day is also known as Ambedkar Jayanti or Bhim Jayanti which is observed on 14 April to commemorate the memory of B.R Ambedkar. This day celebrates the birthday of Baba Saheb Bhimrao Ambedkar, an Indian politician, and social rights activist.



18th April: World Heritage Day

This day is observed every year on 18 April to preserve the human heritage and recognise the efforts of all the relevant organisations in the field. This day was announced by the International Council on Monuments and Sites (ICOMOS) in 1982 and was approved by the General Assembly of UNESCO in 1983.

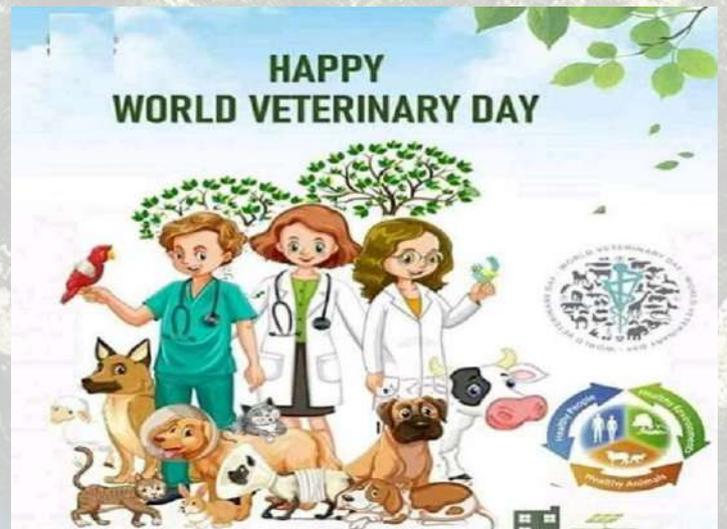


22nd April: World Earth Day

This day is observed every year on 22 April to mark the anniversary of the birth of the modern environmental movement in 1970 and to show appreciation for environmental conservation. In the Universe Earth is the only planet where life is possible and so it is necessary to maintain this natural asset. World Earth Day is celebrated to increase awareness about the importance of the planet. It encompass a diverse variety of activities organized internationally by EARTHDAY.ORG (formerly Earth Day Network) involving over a billion people in over 193 countries.



The United States was the subject on the first Earth Day. Denis Hayes, the 1970 national organizer, took it international in 1990, organizing activities in 141 countries. As the climate emergency deepens, each successive Earth Day takes on a greater urgency in the fight against the global crisis. Theme for Earth Day 2021 is **Restore Our Earth**, which focuses on natural processes, emerging green technologies, and innovative thinking that can restore the world's ecosystems. The international day of environmental action draws in an estimated one billion people - making it the largest secular observance in the world.



24th April: World Veterinary Day

Every last Saturday in April, the world celebrates World Veterinary Day to raise public awareness of the vital role veterinarian's play. This day is designated by the World Organization for Animal Health and the World Veterinary Association.

25th April: World Malaria Day

Every year on April 25th, World Malaria Day is commemorated to raise awareness about the disease malaria, how to manage it, and how to fully eradicate it. The first Malaria Day was observed in



2008, and it evolved from Africa Malaria Day, which has been observed by African governments since 2001. During the World Health Assembly's 60th session in 2007, it was suggested that Africa Malaria Day be renamed World Malaria Day.



28th April: World Day for Safety and Health at Work

Since 2003, the International Labour Organization (ILO) has commemorated this day every year on April 28. This day commemorates how to improve workplace safety and health, and it looks forward to continuing these efforts as technology, demographics, and climate change evolve. This day is observed on 28 April every year by the International Labour Organisation (ILO) since 2003. This day marks how to improve occupational safety, health and looks for continuing these efforts through several changes like technology, demographics, climate change, etc.

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