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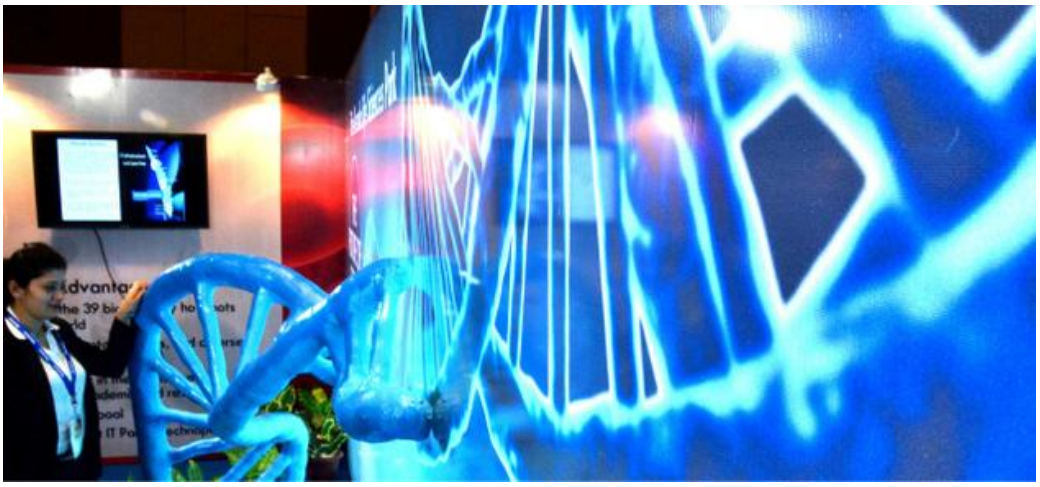
THE HINDU

The marvel of biotechnology



- Many uses:Recombinant DNA technology makes it possible to create and manipulate DNA sequences from different sources. Here, a visitor watches a model of the DNA structure at BioAsia 2015 in Hyderabad.— Photo: Nagara Gopal

Students interested in pursuing a career in Biotechnology should develop a keen interest in all branches of science.

Among the diverse branches of science, Biotechnology bids fair to influence human life most. It is technology based on Biology. It involves the use of biological processes, organisms or systems to develop products that would improve the quality of human life. It is the controlled and deliberate manipulation of biological systems for the efficient manufacturing or processing of useful products. Through the wise choice of appropriate organisms, we can produce a wide variety of substances, which can be used as food, fuel, medicines and so on. There are many other fields of application. In brief, you could say that Biotechnology caters to the requirements of a vast array of services, including industry, agriculture, medicine, and animal husbandry.

A well known definition of Biotechnology goes thus: “the application of science and technology to living organisms, as well as parts, products and models thereof, to alter living or non-living materials for the production of knowledge, goods, and services.”

This means that the study of the relatively modern science of Biotechnology is not just a bundle of academic exercises or a series of routine laboratory experiments aimed at enlarging theoretical knowledge. The core of Biotechnology is innovation and research, with a view to practical applications. We have to go on breaking new ground. Those who have an inherent aptitude for tireless scientific research may gainfully take up the study of Biotechnology. This embraces many of the conventional branches of science and technology, and uses their gifts. Microbiology, Molecular Biology, Cell Biology, Embryology, Animal Cell Cultures and Genetics give strong support to Biotechnology.

Those who desire to take up a career in Biotechnology should develop a keen interest in all branches of science, right from the school level. It may be remembered that physical and biological sciences merge in this fascinating discipline. Further, aspirants to a career in Biotechnology should be endowed with a deep passion for sustained research.

Purists may argue that Biotechnology existed even centuries ago, as in the preparation of bread, yogurt, wine, and beer. Some may even suggest that men of prehistoric times planting their own chosen crops or breeding their own favourite animals were instances of Biotechnology. But we are discussing modern Biotechnology with its targeted utilisation of Molecular Biology. Some may classify Biotechnology as red (medical), green (agricultural), white (industrial), and blue (marine and aquatic).

Biotechnology helps us combat diseases, reduce pollution, feed the starving, provide safe industry, and conceive new genera of flora and fauna. Let us consider certain examples for such help. Reduction in the spread of infectious diseases thereby saving lives, lessening of greenhouse gas emission, production of higher crop yields with less inputs, evolution of new medical therapies, preparation of effective vaccines, and discovery substitutes for fossil fuels.

With the help of gene splicing and recombinant DNA technology, we can combine the genetic elements of two or more living cells. Recombinant DNA technology makes it possible to create and manipulate DNA sequences from different sources or even different species.

We should not forget that all the possibilities of Biotechnology need not necessarily be universally acceptable. The potential for human cloning, embryonic stem-cell research, and weapons for biological warfare have led to raging controversies.

Indian scene

The Department of Biotechnology (DBT), Government of India, announced the National Biotechnology Development Strategy in September 2007. Biotechnology was then recognised as a sunrise sector that deserved focused attention. Many of the development schemes envisaged in the strategy have been achieved. For example, more than a hundred projects under Biotechnology Industry Partnership Programme were approved. More than 130 research and development projects under Small Business Innovation Research Initiative were funded. Biotechnology Industry Research Assistance Council (BIRAC) was established as a not-for-profit company. More than 55 colleges were given support for building world-class human capital.

Several schemes have been launched for supporting young scientists — Innovative Young Biotechnologist Award, Rapid Grant for Young Investigators, Biotechnology Entrepreneurship Student Teams Award, Partnership with University of Wisconsin, Indo-U.S. Science and Technology Forum to encourage young and budding scientists, and Early Career Fellowship grant for Women Bio-scientists.

Further, 15 Centres of Excellence have been supported. Six new institutions — Translational Health Science & Technology Institute, Faridabad; the Institute of Stem Cell Biology and Regenerative Medicine, Bengaluru; Regional Centre for Biotechnology, Faridabad; National Agri-food Biotechnology Institute and Food Bio processing Unit, Mohali; the National Institute of Biomedical Genomics, Kalyani; and the National Institute of Animal Biotechnology, Hyderabad, have been established.

BIRAC operates the BIG (Biotechnology Ignition Grant) scheme for supporting and encouraging biotech entrepreneurs. The scheme enables technology innovators and entrepreneurs to pursue promising technology ideas, establish and validate ‘proof of concept’ for the ideas. Academicians, researchers and graduates in medicine, biomedical engineering and so on can submit proposals for grants up to Rs.50 lakh.

What is ahead?

In order to fulfil Biotechnology Vision 2020, new strategies were formulated in 2014. The renewed mission covers objectives such as

generation of biotech products, processes and technologies for enhancing productivity, safety and cost-effectiveness of agriculture, food and nutritional security; affordable health and wellness; environmental safety

empowering human resource

strong infrastructure for research and development and commercialisation for a powerful bio-economy

making India a world class bio-manufacturing hub

Guiding principles

The guiding principles for achieving the renewed mission objectives are: Building competence in technologies relevant to the growing bio-economy; strong support for basic and inter-disciplinary sciences; encouraging use-inspired research; increased investment in R & D for improving economic and social impact; promoting connectivity in R&D; building world-class translational capacity (field trials for ensuring Good Manufacturing Practices); good regulation, validation and standards; and nurturing outstanding workforce and leadership.

Make agriculture viable, says Badal

Punjab CM Parkash Singh Badal with Prime Minister Narendra Modi in New Delhi on Sunday.- Photo: PTI

Seeking top priority for the primary sector while formulating national plans, Punjab Chief Minister Parkash Singh Badal on Sunday urged the Union government to formulate a flagship scheme, to ensure economic viability of agriculture, where the continued stagnation, increased input costs and low returns had resulted in mounting debt and suicides among the farmers across the country.

Participating in the first meeting of the Governing Council of the newly constituted NITI Aayog at the Prime Minister's residence in New Delhi, Mr. Badal advocated the continuation in procurement at minimum support price (MSP) by the Food Corporation of India (FCI) till a viable alternative was provided to the farmers. He referred to apprehensions in wake of recent media reports about proposals at the Government of India level, suggesting withdrawal of MSP as well as procurement by FCI. An official release on the occasion quoting Mr. Badal said that recommendations of CMs be sought regarding appointment of experts, specialists and practitioners in the NITI Aayog, where

officers from the States be also be accommodated in its Secretariat.

He also proposed that the PM should chair the meetings of the Regional Councils, which as was with the NITI Ayog, should meet at least once in six months. The North India Regional Council centre should be set up at Chandigarh, he demanded.

Mr. Badal also sought also sought that States should be at liberty to prepare their own annual plans, while the prevalent system of Annual Plan joint review should be done away with. He also suggested the termination of 12th Plan to make it co-terminus with the Finance Commission period.

Mr.Badal expressed concern over apathy towards the woes of the Punjab peasantry which had ensured food self sufficiency of the Nation at the cost of depletion in ground water and degradation of soil. He demanded a special onetime allocation for the restoration and rejuvenation of century old canal network in the State.

Self-reliance in food production is a myth: natural farming expert

"If we are so, why should we import wheat, edible oil, fruits"

Subash Palekar, promoter of Zero Budget Natural Farming, who was in Madurai recently toconduct a workshop.— Photo: R. Ashok

The mismatch between increasing food needs and decreasing land and water resources is a puzzle everybody is trying to solve. Subash Palekar, who was in Madurai recently to conduct a workshop on 'Zero Budget Natural Farming (ZBNF),' has some clues to solve this puzzle.

He offers not only technology but also the philosophy to get farming out of the shackles of exploitation. His model is for everyone, including traditional farmers, consumers and even IT professionals.

The current food production and consumption pattern, according to him, breeds disease among urban people and drives farmers to commit suicide. "Today, the farmer has no honour in society. In the absence of a secure future, rural people are migrating to urban areas, creating more social tension," he says.

Mr. Palekar dismisses the contention that India is self-reliant on the food front. "Food means not only rice and wheat. It includes cereals, millets, pulses, edible oils, fruits and vegetables. If we are self-reliant, why should we import wheat, edible oil and fruits," he queries.

"We have a duty to provide food for an ever-increasing population. We have to preserve the shrinking cultivable area for food production alone," he says. "In the name of development, farm lands are taken up for construction of

industries, dams and mega cities. The demand for food is going up and land availability is coming down."

Mr. Palekar is firm that there is a bright future for farming. "That is the reason why many people, including software engineers and IT professionals, are ready to leave their jobs and take up farming."

The agriculture graduate from Maharashtra is unhappy about the "development madness" prevailing all over the world. "We are not anti-development. We are for sustainable development; development without destroying natural resources."

He points out that even our routine activities pollute the environment. Unmindful use of chemicals leaves the soil barren. "Food cannot be manufactured in factories. Only the soil can give food." He is confident that there is a way out. "Everybody has a role to play in my movement. You can work to stop destruction of land by continuing with your service. We can stop use of materials that destroy the land in a non-violent way," he says.

More details about ZBNF can be found inwww.palekarzerobudgets piritualfarming.org.

Udupi Zilla Krishik Sangha to organise one-day farmers' convention on February 14

The Udupi Zilla Krishik Sangha will organise a one-day farmers' convention at the Sharada Mantapa here on February 14. Addressing presspersons here recently, Bantakal Ramakrishna Sharma, president of the Sangha, said that a farmers from different parts of the district are expected to take part.

The topics which would be discussed at the seminars include: "Need for mechanization in agriculture," "Use of technology in horticulture," "Marketing of agricultural products and their value addition," "Techniques to control pests and check diseases," Protection of various rice varieties," "Negative aspects of K. Kasturirangan Panel's Report on Conservation of Western Ghats" and "Challenges in dairy farming."

NITI Aayog: Punjab CM seeks priority on planning for agriculture

Punjab Chief Minister Parkash Singh Badal

Seeking priority for the primary sector while formulating national plans, Punjab Chief Minister, Parkash Singh Badal, on Sunday urged the Union government to formulate a flagship scheme, to ensure economic viability of Agriculture, where the continued stagnation, increased input costs and low returns had resulted in mounting debt and suicides among the farmers across the country.

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Though he appreciated Prime Minister Narendra Modi's 'Make in India' to promote small and cottage industries across the country, Mr. Badal cautioned that this "out of the box initiative" must ensure level playing field for the industry in States like Punjab, which need to be compensated for the losses suffered due to incentives given to neighbouring hill States. Vying for allocation of Central sector projects in Punjab besides restoration of freight equalisation, Mr. Badal said that the State's efforts for industrialisation would not fructify without Centre's unstinted support and cooperation.

Punjab had taken various steps to reform its laws and various regulatory apparatus, which was evident from congenial industry-labour relations. He demanded that all the central labour laws should be compiled into a single comprehensive. The Chief Minister sought the setting up of a separate ministry of skill development, which should ensure adequate operational flexibility to the States. He apprised that Punjab State Skill Development Mission has already been set up and skill gaps identified. On the lines of Sagar Mala project aimed at ensuring holistic development of the coastal areas, he sought introduction of 'Border Mala' project for the border areas, especially in land locked States. While trade with Pakistan through Attari-Wagah border should be brought at par with Mumbai-Karachi port, Mr. Badal also demanded opening of the Hussainiwala and Fazilka borders routes for trade, while the industrial corridor and dedicated freight corridor should be extended up to the Attari border in Amritsar.

Mr. Badal said that national-level schemes should include the initiatives by individual States. Like ‘Beti Bachao, Beti Padhao’ scheme, the Centre should also adopt Punjab’s successful initiatives including the ‘shagun scheme’, Nanhi Chhan project and Mai Bhago scheme. He said that under the ‘Jan Dhan Yojna’ Punjab had covered all unbanked families. The State government had provided all required support

including the Right of Way, while pursuing the ‘Digital India’ programme, where more than 2000 sewa kendras had begun providing 200 citizen-centric services. He suggested that urbanisation level of every State should be evaluated before determining the number of cities to be taken up in the ‘Smart Cities Mission,’ while parity be mandated in financing patterns in the rural and urban areas under the ‘Housing for all’ mission.

Declare Cauvery delta as protected farm zone: Medha

A farmer, whose land was polluted by the oil spill, shows the soil sample to activist Medha Patkar near ONGC's plant in Erakkattur village on Sunday.- Photo: R.M. Rajarathinam

Visits farmers affected by oil spill from facilities maintained by ONGC

The Tamil Nadu government must declare the Cauvery delta as a protected agricultural zone, banning any non-sustainable industrial activity that adversely impacts the life of the farmers, said social activist Medha Patkar here on Sunday.

On a day-long visit covering Nagapattinam, Tiruvarur and Thanjavur districts in the Cauvery delta where people are up against a mega project to harness subsurface methane, the National Alliance of People's Movements leader interacted with the people and farmers affected by the oil spill from the facilities maintained by the Oil and Natural Gas Corporation (ONGC) in Nagapattinam and Tiruvarur districts.

Ms. Patkar expressed solidarity with farmers and called upon the governments to consider the plight of the people who have lost their means of livelihood.

Farmers affected by the oil spill at Erukkattur in Tiruvarur district told her that pipelines had burst several times in the past two decades spewing poisonous chemical-mixed oil on to their fields. Both standing crop and the fields had been damaged irrevocably, they said.

At Vellakudi, people residing near the ONGC oil processing facility alleged that they have been suffering from many diseases – all due to the proximity to the facility.

Ms. Patkar, after gaining first-hand information of the adverse effect of the oil and natural gas exploration works in the region, said that the governments must immediately stop projects that deprived the people of their livelihood. Claiming that the exploration works have left the groundwater in the area contaminated, she wanted the authorities to look into the oil leakages that have affected the soil fertility.

ONGC that had already sunk bores to a depth of 2,000 metres was planning to go deeper and that would threaten all agricultural activities in the Cauvery delta, the farmers said.

Interacting with the media, she said that the methane extraction project must be withdrawn and the State government must not renew the Memorandum of Understanding with the Great Eastern Energy Corporation Limited to explore methane in the Cauvery delta.

TNCSC to procure five lakh tonnes of paddy

Mobile DPCs to purchase paddy at farmers' doorsteps

Harvest in tail-end areas of the delta region has been going in full swing and the Tamil Nadu Civil Supply Corporation (TNCSC) has fixed a paddy procurement target of five lakh tonnes during the current samba season.

Official sources told *The Hindu* that farmers have raised samba crop on an area of 70,000 acres. The TNCSC has established 126 Direct Purchase Centres (DPC) in Nagapattinam division and 149 DPCs in Mayiladuthurai division.

Besides, TNCSC has also set up mobile direct purchase centres in all the eight taluks in the district in order to help farmers, who have more than 300 bags of paddy, to purchase paddy at their doorsteps.

M.Radhakrishnan, Senior Regional Manager, TNCSC, said that mobile procurement centres helped farmers sell their produce without any hassle. Farmers in Keezvelur, Thirukuvalai, Mayiladuthurai, Kuttalam, Semabanarkovil and surrounding areas have been working overtime in harvesting their paddy. The SRM said that DPCs would function till April to facilitate delayed harvest.

Steps have been taken to construct 40 additional DPCs in the district to cater the needs of the farmers. Modern direct purchase centres have been set up at Kovilpathu and Manikkapanku with a storage capacity of 1 lakh tons of paddy each.

A total of 2,000 tonnes of paddy have been transported to the modern rice mills at Rayapuram in Chennai and Dharmapuri and another 10,000 tonnes of paddy to private modern rice mills in other parts of the State.

The TNCSC had procured 2.17 lakh tonnes of paddy against the target of three lakh tonnes last year, and 88,000 tonnes had been procured so far this year against the target of five lakh tonnes.

Expert: biodiversity being destroyed in border areas

Speakers at a seminar on 'Conservation of biodiversity' here on Saturday drew attention to the rapid destruction of biodiversity in boundary areas of the State. It was organised by J.E. Society's K.A. Lokapur Arts, Science, and Commerce College, Athani, and Vriksha Laksha Andolan, an environmental organisation headed by Ananth Hegde Ashisar.

Delivering the keynote address, Mr. Ashisar said nearly 1,40,000 sq. km of the 1,92,204 sq. km of Karnataka's geographical area was along the boundary, where the annual average rainfall was spread over 50 days. Certain areas were chronically drought prone, which directly affected not only the biodiversity but also food production and economic empowerment of farmers and the local people. He stressed the need for launching a programme with the involvement of government departments and the local people to arrest further destruction and to rejuvenate natural resources.

The seminar was organised to take a fresh look at the impact of rapid urbanisation and horizontal expansion of cities and towns on biodiversity and to evolve concrete measures to protect it on a sustainable basis with the cooperation of government agencies, social organisations, educational institutions, industry, farmers and the people.

The focus was on the north Karnataka districts of Vijayapura, Bagalkot, Dharwad, Gadag and Belagavi.

India to deploy global calculator to study climate impact

Nearly 20 nations, including India, will deploy a global calculator, similar to those launched in London and Beijing last week, to calculate climate impact scenarios in their territories. Some have already developed the calculator and others are in the process of creating their own versions of it.

Showcasing the calculator at the Delhi Sustainable Development Summit on Wednesday, Laura Aylett of the U.K. Department of Energy and Climate Change (DECC) said it was a free, open-source interactive tool to help assess climate change scenarios over a period and make changes in lifestyle.

The calculator could illustrate climate impacts based on different choices and was linked to the latest Intergovernmental Panel on Climate Change (IPCC) reports.

Three principles

She said the idea was to introduce three main principles in calculating the impacts of climate change: transparency, collaboration and simplicity. The calculator could look at transport efficiency, renewable energy, crop yields and forests, but the world obviously needed to change the way it powered its lifestyle.

Radical move

She said the world could have good living standards if green technology was taken seriously. “We need a radical move to low-carbon electricity and should allow forests to regenerate. Businesses and government, apart from schools and universities, are using this tool [calculator], and some countries and cities are developing their own specific tools as well.”

While experts had access to climate models, the general public found it difficult to use them to envisage scenarios. The calculator opened up possibilities for a larger audience. A team, which included the DECC, developed the online tool at a little under £1 million. Ms. Aylett said the calculator in Excel format could be used by policymakers, companies, governments and even schoolchildren.She said India was among the first countries to develop its own tool to assess energy security under the aegis of the former Planning Commission, which was launched last year.

New version for India

A newer version of the Indian Energy Security Scenarios (IESS) would be out soon. The tool was an improved version, which looked at all options in India, including emissions while calculating scenarios.

Colombia had developed a country calculator to present its Intended Nationally Determined Contributions (INDC) later this year before the climate change talks at Paris. The calculator allowed for the use of temperature as a factor, but could not, however, make calculations based on how much developed countries needed to do or pay. However, it could be a reference point for country-level calculations and was a flexible tool, said Ritu Mathur, from The Energy and Resources Institute. Eleven countries, including India, were using this tool and nine more were preparing their own versions.

Climate change ‘Terminator’

The Hindu

Former Governor of California and Founding Chair, R20 Regions of Climate Action, Arnold Schwarzenegger at the Delhi Sustainable Development Summit in New Delhi. Photo: R.V. Moorthy

Visiting New Delhi as an environment crusader, Arnold Schwarzenegger highlights the need to come together to fight pollution

While playing his favourite on-screen character of*The Terminator* in Hollywood blockbusters, he wiped off the face of earth the baddest and the meanest persons. And now, as an environment crusader, Arnold Schwarzenegger seeks to “terminate” pollution from our towns and cities and mitigate climate change.

When the visiting Hollywood actor says with seriousness and intent, “I am here to terminate climate change once and for all but you have to think

differently to win this battle," you have to lend belief to every word he utters. He weighs his words carefully and smiles occasionally, like when he is proudly referred to as Terminator by the host or his unimpeachable track record of creating sustainable green environment in California are spoken in adulatory terms. The former Governor of California was the cynosure of all eyes at the 15th edition of Delhi Sustainable Development Summit.

"I have the ability to step out of the fantasy world into the real. I have just finished *Terminator 5* but climate change is not science fiction. It is impacting us right now." Referring to India, which is one of the most polluted countries, Arnold says during an interaction with the media, "It is easy for the outside world to make statements but when people are dying because of pollution, something urgently has to be done. It is good that R.K. Pachauri (of TERI) has started introducing solar lanterns in India."

"In California, we have left no stone unturned to ensure that pollution is reduced. Even Jerry Brown, the current Governor of California, has said that he would reduce fuel consumption by 50 per cent. It might sound outrageous but Californians meet such goals." Arnold says while he was at the helm of affairs in California, the Republicans and the Democrats put their differences aside to come together to fight pollution and create sustainable solutions.

"Republicans and Democrats drink the same water, drive down the same road. So why not work together to make clean and green environment?"

Asserting that fighting against global warming and working for the betterment of the economy had to be worked methodically, Arnold says it was also important to create livelihood opportunities. "When you work for the environment, like I was doing as Governor, it improves the economy. As a result, it leads to creation of jobs, stimulates economy. Meeting environmental goals protect the economy. Economy of the U.S., particularly California, has picked up due to work in environmental solutions."

Reeling off alarming statistics, Arnold says, "Seven million people are dying due to pollution-related illnesses. This is more than the rate of suicides and other causes of deaths. In India, a million lives are snuffed out. So we have to communicate facts and work together. We have to create our own energy. Solar and wind energies are God's gift."

Asked whether he would be collaborating with Shankar, director of *I*, in future projects as he had appreciated his filmmaking ability during his

Chennai visit, he remains tight lipped. But one cannot blame him when media people were more interested in taking his autographs and selfies with him than engaging him in a conversation or perhaps a light banter.

‘Global warming is causing temperatures to rise’

Impacts of climate change due to the human-caused trend of global warming are now becoming evident, and these impacts are only a faint rumbling of future climate impacts if substantial mitigating action is not taken soon. While impacts due to natural climate change have always occurred, global warming accentuates these impacts. For the earth as a whole, these extra impacts will be overwhelmingly negative. Regionally and temporarily, there will be variations. Glaciers and snow packs that now provide water to many millions of people are melting, foreshadowing severe regional water shortages in the future. Disruption of food supplies, agriculture, and fisheries will occur drastically for many hundreds of millions, conservatively, by 2100. ***-Adwait Bhostekar, Class IX, St Francis High School, Vasai***

It’s nearly impossible to overstate the threat of climate change. Greenhouse gas emissions are rising more rapidly than predicted and consequently the world is warming more quickly. Global warming will have catastrophic effects such as accelerating sea-level rise, droughts, floods, storms and heat waves. These will impact some of the world’s poorest and most vulnerable people, disrupting food production, and threatening vitally important species, habitats and ecosystems. Despite compelling scientific evidence, governments and businesses have responded very slowly. As we work to reduce emissions, we must simultaneously begin to adapt to the increasing impacts of climate change. Human beings are exposed to climate change through changing weather patterns and indirectly through changes in water,

air and food quality and changes in ecosystems, agriculture, industry and settlements and the economy. According to an assessment of science, the effects of climate change to date have been small, but are projected to progressively increase in all countries and regions. ***-Gokul Nair, Class IX,St Francis High School, Vasai***

Global warming is caused primarily by human activity such as burning fossil fuels, chemicals and other pollutants that are later released into the earth's atmosphere. This warming trend disturbs the balance of a natural system that has taken billions of years to develop. This delicate balance exists in a complex interaction between the atmosphere and the oceans, land surfaces, and their vegetation, and snow and ice-cover, which is driven by the energy from the sun. The earth receives energy from the sun that heats the earth and causes our weather; in turn, the earth's surface radiates energy back into space. Thus, naturally occurring atmospheric greenhouse gases such as water vapour, carbondioxide, including other gases serve to trap some of the outgoing energy and to retain heat in earth's surface. This natural "greenhouse effect" is important in keeping our atmosphere in a balanced state. ***-Hemant, Class IX, St Xavier's High School, Kashigaon***

Global warming is a big problem in today's society. Global warming also known as the greenhouse effect is a problem everyone will soon have to face. The people of the younger generations should be educated about what global warming is and that it is caused due to the way people are treating the environment. We are now entering the greenhouse century as we know it. Planet earth is estimated to be 4.5 billion years old, and life on earth has existed for more than 3.5 billion years. Humans have been on earth for 2 to 3 million years. It is only been in the past 200 years people have been affected by global warming. The last 40 years have been the most damaging.As the impacts of human influences have grown, so have the risks associated with those impacts. New technologies carry increasing risks, and the scale,

frequency, and impacts of disaster caused or influenced by human activity are growing tremendously. The risks to the Earth's natural systems are becoming significantly concerning. In my conclusion, global warming should be stopped as soon as possible. ***-Imran Khan, Class IX, St Xavier's High School, Kashigaon***

The effects of global warming are the environmental and social changes caused directly or indirectly by human emissions of greenhouse gases. There is a scientific consensus that climate change is occurring, and that human activities are the primary driver. Many impacts of climate change have already been observed, including glacier retreat changes in the timing of seasonal events and changes in agricultural productivity. There is strong evidence that global sea level rose gradually over the 20th century. With high confidence, authors of IPCC AR4 SYR (2007)were uncertain whether the increase in rate from 1993 to 2003 was due to natural variations in sea level over the time period, or whether it reflected an increase in the underlying long-term trend. ***-Jyeshtha Bhatt, Class IX, St Francis High School, Vasai***

Global warming is something that has been going on now for a long time. Over the years scientist have been telling people, that all the pollutants that we put in the air was doing damage to the earth and the ozone. Global Warming causes many problems to the local life of common people. Some of the health problems that can occur that are not as drastic as malaria and death are, sever skin burns which could lead into skin cancer and in some cases lung problems. The scientist have figured out the chemical that does this damage, it is carbon dioxide which is the primary greenhouse gas, and all most all of the carbon dioxide comes from fossil fuels like coal, oil and gas which are used to make our lives easier. ***-Mukul, Class IX, St. Mary's High School, Mira Road***

Globalwarming is threat to the world. There has been awareness about the dangers of global warming, unfortunately nothing substantial is done to

check, prevent it. Global warming led to unexpected devastations, in various parts of the world. During the 1990s Europe, America, etc have experienced the worst type of storms, hurricanes & tornadoes. Because of global warming temperatures rise, oceans & seas become warmer, & release more energy in the atmosphere which leads to violent storms & very huge losses in terms of man & material. Due to global warming the temperature of the earth rising results into storms, cyclones, droughts, floods and forest fire havocs. ***-Shivangi Pandey, Class IX, St Joseph High School, New panvel***

For many years now, the subject of global warming has been the cause of heated debates throughout the world. The theory is based on the idea that greenhouse gasses are accumulating in Earth's atmosphere as a result of human activities, causing surface air temperatures and sub-surface ocean temperatures to rise. Debates have covered its causes and effects, and whether or not it actually exists and is a true threat to the planet. One of the most popular theories being debated is the "greenhouse effect" which is caused by greenhouse gases — naturally occurring gases such as water vapour, methane, oxygen and carbon dioxide. Plate tectonics continue to change the face of the planet. The sea floor is still spreading, and we still have earthquakes and volcanoes. Convection currents created by the tremendous heat and pressure at the core of the Earth move the plates. These processes release tremendous amounts of carbon dioxide and water vapor. We know that these processes have been taking place since the beginning of time and, according to the geologic record, there have been numerous greenhouse and icehouse ages. ***-Rahul Nair, Class IX, St Mary's High School, Mira Road***

Carbon dioxide plays a major part of impacting the earth's climate. Carbon dioxide traps heat from the Sun. This effect is considered global warming, which is often referred to as the greenhouse effect. The greenhouse effect traps solar heat, like a greenhouse for plants, which causes the solar energy from being released. Global warming or the greenhouse effect is believed to

have been causing our temperatures to rise. If global warming persists, many problems will begin to occur in the coming decades. Global warming has caused some speculation. The earth's climate has been changing for millions of years, making global warming a reality. Human activities contribute to global warming. Some of these activities include, the burning of fossil fuels, deforestations, anything that produces methane gas, fertilizers, and other chemicals. So, in my conclusion I would like to say that global warming has a diverse effect on the environment of Earth. ***-Shruti Asgaonkar, IX, St. Mary's High School, Mira***

Global warming will have serious impacts on the environment and on society. Higher temperature will cause melting of ice in Greenland, Antarctica. This will accelerate the rise of sea level. Global warming is expected to occur in the 21st century faster, most plant and animal species will be able to cope with. Some will adapt but others will suffer and many will extinct. Global warming will also affect human health. There may be more heat-related illness in hotter summers and increased breathing problems as higher temperatures increase air pollution in cities, reducing air quality. The malaria mosquito may also be able to other regions of the world where it is currently too cold to survive and breed. More extreme weather, for example storms, floods and droughts will have severe impacts on society. ***-Divya chonkar, Class IX, St. Joseph's High School, New*** Panvel

A new menu

While the world has changed, our food policy is stuck in a 50-year-old mindset.

ONE of the late R.K. Laxman's best cartoons from the mid-1960's portrays a smiling food minister looking out of a window at a heavy monsoon

downpour saying, “This year we can tell the Americans to go to hell.” Fifty years ago, a good monsoon meant that that year, India was not dependent on food aid and wouldn’t have to go hat in hand to the Americans for food under the PL-480 programme. What a different world we are in today. Our agriculture is not as vulnerable to the monsoon and we have mountains of grain — we maintain costly buffer stocks of more than twice our needs.

But while the world has changed, our food policy is stuck in a 50-year-old mindset. Back in the day, we set up the Food Corporation of India (FCI) to procure grain from farmers at prices set by the Commission for Agricultural Costs and Prices in order to encourage production, subsidised agricultural inputs such as fertiliser, pesticide, water and electricity, and provided cheap food to consumers through fair price shops. This helped India get rid of its dependence on food aid, made it self-sufficient in grain production and brought about a Green Revolution. But today, our needs are different and the world has moved on.

Yet we continue with that same policy, in an extremely inefficient manner and at a very high cost. This was brought home by the report of a special panel on the FCI, headed by former Food Minister Shanta Kumar. The report recommends sensible, practical, partial reforms and should be adopted. The proposed reforms would make our food policy more consistent with the rest of the world and avoid unnecessary wrangles at the WTO.

After the Bali meeting, India had three options: continue with the current system but try to reduce leakages through e-monitoring, undertake comprehensive reforms by shifting entirely to direct benefit transfers (DBTs) and shrink the FCI into a tiny buffer stock-holding agency, or effect partial reforms by introducing DBTs in major urban areas and allowing private traders to purchase and supply grain to the FCI for the remaining requirements. The panel has opted for partial reform but has gone further by suggesting revisions to the National Food Security Act (NFSA).

The report makes five sensible and practical suggestions. First, get the FCI out of the business of procurement in grain-surplus states like Punjab, Haryana, Madhya Pradesh, Chhattisgarh, Andhra Pradesh and Odisha, and shift its focus to eastern Uttar Pradesh, Bihar, Assam and West Bengal. The FCI can purchase grain above its NFSA needs from surplus states, but the actual purchasing should be handled by the states themselves. Getting the FCI out of direct procurement is a good idea and it's not clear why pushing it into procurement in the eastern states is desirable. It would be better to build procurement capacity in eastern states and help fuel another green revolution.

Second, the report pushes for a national warehousing system under a PPP model to reduce wasteful storage and transport costs. Farmers can deposit their produce at these warehouses and receive up to 80 per cent of the MSP value of this produce from banks — and then sell it later at market prices. This will be a major improvement as it would reduce storage costs and wastage.

Third, the panel suggests that state bonuses be the responsibility of the states and levies be made uniform at 3 per cent. This would help avoid the costs of huge bonuses paid by the states and financed by the levies they charge the FCI to procure from their farmers.

Fourth, the panel moots shifting to cash payments for inputs like fertilisers and rationalising the price of urea so that the NPK mix, which has been distorted by urea pricing, is reversed. Smuggling to neighbouring countries and other distortions caused by urea pricing would also be removed. Huge productive investments in the fertiliser sector are needed but have been held back by the absurd pricing system, which has made India even more dependent on fertiliser imports.

Fifth, the panel suggests amending the NFSA and reducing the subsidised population to 40 per cent instead of the current 67 per cent. It also suggests BPL consumers get more subsidised grain — 7 kg vs 5 kg — but that the

issue price be linked to MSPs, except for the very poor. Further, in cities that have a population of more than one million, fair price shops should be replaced by DBTs.

If implemented, these recommendations would provide more food for the poorest population, reduce FCI costs, bring private trade back into the system and give poor urban consumers greater choice in their food basket. It will hurt labour unions that are gaming the FCI system and states that use bonuses as a political handout, which they get the Centre to pay for through levies. This would hugely reduce the massive leakages and corruption in the food chain.

If India can implement these reforms in the coming years, it would also avoid unnecessary battles at the WTO. It's time to begin reforming a system that may have served us well 50 years ago but is now benefiting a few at a huge cost.

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Recipe: Chicken stew

Ingredients: One potato, one carrot, one capsicum, one onion, one tomato, one kg chicken, half tbsp black pepper powder, one tbsp olive oil and salt to taste.

Method:

1. Cut all the vegetables in cubes.

2. Put one tbsp olive in the big pressure cooker, then add onion and fry them till they turn brown.

3. Then add all the vegetables except capsicum and tomato, fry them for five minutes.

4. At last, add the capsicum and tomato and fry them for five minutes.

5. Then add the chicken, fry them and stir them for five minutes.

6. Add the black pepper and salt and mix them well.

7. Add two cups of water and close the lid of the pressure cooker.

8. Wait for four whistles and then switch off the gas.

Recipe: Banana pakodas

Bananas are an all time favorite fruit and surprisingly one of the most accommodating fruit as well. Here's a tasty banana dish that you can try at home.

Ingredients:

Oil, for frying
2-3 ripe medium bananas, chopped
1/2 cup flour
1/2 cup corn flour
1/4 cup coconut, shredded
2 tbsp sugar powder
1/8 tsp salt
2 egg yolks
1/4 cup milk, plus more as needed
1/4 tsp vanilla essence

Method:

-In a deep pan heat the oil to fry.
-In a large bowl make a batter of the bananas, flour, corn flour, coconut,

sugar, baking powder, and salt, followed by the egg yolks, milk, and vanilla (you can add more milk if required).
-Once the batter is made make small balls and fry the batter taking care of the heat. Continue with the remaining batches and let them cool on a paper towel for the excess oil to be absorbed by the paper towel.
-Serve hot accompanied with green chutney or sauce.

Masala chai recipe

Nothing beats masala chai when you have to refresh yourself in a daily routine

Tea is the most essential beverage most of us indulge into. And when you need an extra zing to your 'chai', brew a masala chai. This is an ever-green recipe and never fails to work wonders to your mood. Not only will it refresh your senses but will also give a strong immunity against common cold, relief from headache and cure cough. Here's the quick recipe

Ingredients:

1 cup milk
1 and half cup water
2 teaspoons tea leaves
3 spoon sugar
Half inch ginger crushed
2-3 mint leaves
4-5 tulsi leaves
1 pod of cardamom

Recipe

In a tea pan, boil water and add tea leaves, ginger, tulsi leaves and sugar. Allow it to boil. Now, add milk, mint leaves and cardamom crushed in it. Bring it to boil. Strain it into tea-mugs and serve with some snacks.

Foods you must avoid during pregnancy

During pregnancy it is advisable to eat natural foods, but there are certain food groups you should avoid.

These foods can harm the baby or lead to miscarriage. Here are the food groups your must avoid during pregnancy.

Seafood

Seafood is a great source for Omega 3 which is beneficial for the baby. But you must avoid seafood with high mercury that can damage the baby's brain. Avoid shark, king mackerel, crabs, prawns and salmon - seafood contains mercury.

Undercooked food

It is important to avoid the consumption of raw and undercooked food. These foods may contain bacteria and viruses which can affect the mother and baby. Consume well cooked food and properly refrigerate food to avoid cross contamination.

Unpasteurised food

Unpasteurised food can contain food borne diseases. Hence avoid dairy products that are not properly pasteurised. You can consume mozzarella, cottage cheese and skim milk. But avoid cheese like feta and brie.

Unwashed vegetables and fruits

It is important to cook food for consumption during pregnancy. Do not consume food that is not cooked, raw or under cooked. These foods may contain bacteria and germs that can impact you during pregnancy. Wash all food products thoroughly before you cook it.

Caffeine, tea, alcohol

Completely avoid caffeine, tea and alcohol during pregnancy to prevent birth defects and complications. These three drinks can increase the risk of miscarriage.

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