

## WILDLIFE A PRECIOUS GIFT

The International Animal Rights Day is celebrated on December 10 as it throws light on the reality of animal abuse across the world. The day unites all those people fighting against animal cruelty. Hunting and killing of animals has become a form of recreation. Murdering humans is considered a crime. But killing and wiping out an entire genre is hardly given consideration. Like forests, wildlife is also a national resource, which not only helps us in maintaining the ecological balance but is also beneficial from economic, recreational and aesthetic points of view. It was a time when human interference was minimum, the number of wild animals was quite high and there was no problem of their protection or conservation. But, with the expansion of agriculture, settlement, industrial and other developmental activities and mainly due to greed of man, number of wild animals gradually decreased day by day. We must understand that wildlife is a precious gift, God has given to this planet. The term 'wildlife' not only caters to wild animals but also takes into account all undomesticated life forms including birds, insects, plants, fungi and even microscopic organisms. For maintaining a healthy ecological balance on this earth, animals, plants and marine species are as important as humans. Hunting has tradition and the support of very powerful people on its side and with their influence hunting has been left untouched by legislation - the Protection of Animals Act only covers captive and domestic animals. High officials, who are supposed to be the guardians of law, often abuse their powers to shield the rich and powerful. Our country is unique in having a significant number of tigers in the wild, in spite of growing population and resource extraction pressures on their habitat. We should know that we are not just animals, but that we belong to the same family tree as other mammals, that our physiology and bodily processes are just like theirs, and that our mental processes too are from the same general pattern. The protection of the national animal has been a significant achievement till now. Hope this continues and leads to a significant rise in the coming years. Among animals, some are fewer in number than the others. If proper care and security are extended to them, the rare animals would survive. Only the future can tell whether national animal will survive to maintain the much-needed ecological balance. Tigers play a large role in sustaining the biodiversity of forests, in maintaining healthy ecology, habitat conservation and the livelihoods of rural communities. The tiger population has decreased in the states of Telangana & Andhra Pradesh. The destruction of forest coverage by Maoists may be one of the reasons for this decrease. Wild tiger deaths were also reported from Andhra Pradesh, Assam, Kerala, Karnataka and Uttarakhand. During the first six months of the year, 30 deaths were reported. The protection of the national animal has been a significant achievement till now. Hope this continues and leads to a significant rise in the coming years. Let us be thankful to the animal life in all its multifarious forms, to value and preserve humankind's relationship with the animal kingdom and most importantly to acknowledge the various indispensable life-sustaining roles animals play in our lives - of being our pets, our friends and companions. If we delay now, it might be too late.

**Will you heed animals' call and let them live?**



Reverence for nature is essential. It will help us survive upon this planet, preserve and protect this blessed earth for future generations.

Reverence is essential - reverence for our rivers and forests; reverence for our lakes and waterfalls; reverence for trees and plants and the grass that grows beneath our feet; reverence for birds and beasts, whom I love to call our younger brothers and sisters.

My vision of unity and fellowship and brotherhood is of a world in which the right to life is accorded to every creature that breathes the breath of life! How can wars cease until we stop all killing? How can we claim to seek world peace when we continue to slaughter sentient creatures?

Have you ever spared a thought for the atrocities that are perpetrated on animals day after day, in laboratories and in slaughterhouses? Have you thought of these creatures imprisoned in their tiny cages, deprived of light, fresh air and free movement, and finally consumed?

We cannot speak of dharma; we cannot speak of creation as one family until we stop the exploitation of animals - until we stop all killing! All killing must be stopped for the simple reason that if man kills an animal for food, he will not hesitate to kill a fellow human being whom he regards as an enemy.

We cannot have a world family built on the exploitation of the poor, and on the blood of the defenceless creatures. Such a 'family' will only

-Dada Vaswani

## India and G20: Agenda for Action

■ AJAY SETH & MICHAEL DEBABRATA PATRA

India assumes the Presidency of the Group of 20 (G20) amidst a daunting global environment riddled with policy challenges. A poly-crisis landscape confronts the G20 with headwinds from slowing global growth and trade, high inflation, aggressive monetary policy tightening and associated spill-over; geopolitical tensions, debt distress, climate change and the lingering pandemic.

Amidst centrifugal forces pulling at the fabric of globalisation, the role of the G20 in fostering global policy cooperation is crucial. As the third largest economy in the world in purchasing power parity (PPP) terms and the fifth largest in terms of market exchange rates, India accounts for 3.6 per cent of G20 GDP in nominal terms and 8.2 percent in PPP terms. The IMF projects that India's GDP will grow at 6.1 percent in 2023, which would be the highest among G20 nations. India's G20 Presidency priorities envision a balance between responsibility and ambition, encapsulating the vision of unity and interconnectedness.

Our progress in digital technologies and our experiences drawn from a thriving Fin Tech ecosystem uniquely position us in expanding financial inclusion, leveraging technology to buttress productivity and economic integration, and in dealing with challenges developing countries face in mitigating the effects of climate change. In these areas, we believe our Presidency can make substantial contributions.

The first Finance Track (FT) event of India's G20 Presidency - the meeting of Finance and Central Bank Deputies (FCBD) - is set to be held in Bengaluru during December 13-15, 2022. At this meeting, India's priorities and associated deliverables will be unveiled. The FT has eight work-streams, focusing on international financial architecture, the global economy, infrastructure invest-

ment, sustainable finance, international taxation, health and finance, financial sector regulatory issues and financial inclusion.

Accepting the Presidency of the G-20, Prime Minister Narendra Modi said, "India's G-20 priorities would be shaped in consultation with not just our G20 partners, but also our fellow travelers in the global South, whose voice often goes unheard." India's key FT priorities translate his commitment into action. They include strengthening global financial safety nets, managing global debt vulnerabilities, assessing macroeconomic implications of food and energy insecurity, and financing sustainable and resilient cities of tomorrow. We will also work on mobilizing timely and adequate financial resources for climate action, as most G20 countries have declared their net-zero target dates. On international taxation, we will build upon significant progress made by the G20, including addressing tax challenges, capacity building and enhancing tax transparency. We will continue developing G20-driven finance and health coordination for identifying and addressing risks and vulnerabilities associated with pandemics and improving preparedness to mobilise in response to new pandemic threats.

Within financial sector regulation, we would focus on risks and opportunities offered by technological developments. The recurring turmoil in crypto markets, the de-peging of some stable coins and fall of broader crypto markets have raised apprehensions about threats to financial stability from crypto currencies. It is, hence, necessary to broaden the G20 crypto-asset dialogue by addressing aspects such as monetary policy and macroeconomic concerns, data privacy, market integrity, competition policy and taxation by synthesizing the work of various international organisations. Rapidly growing digital financial services and increased dependence on third-party services expose the financial system to operational, li-

quidity and concentration risks. We seek to promote international cooperation in risk management frameworks to manage these risks. As the economy becomes more digitized, cyber risk poses a threat to the financial system - an outage anywhere in the chain may cause cascading effects impacting the entire financial system. A chain is only as strong as its weakest link. During our Presidency, we would also like to see increased global cooperation in mitigating system-level vulnerabilities from cyber risk.

To supplement the sustainable development goals (SDG) of reducing transaction costs of migrant remittances to less than 3 per cent by 2030, our approach will be to reduce both high transaction costs and the time between origination and settlement of payments through interoperability of national fast payment systems. We would leverage digital public infrastructure to advance financial inclusion and harness productivity gains. Constructive and actionable policy recommendations for developing a sound and vibrant digital financial ecosystem would help to achieve these goals while contributing to economic development.

In this milieu, the G20, which owes its genesis and raison d'être to the conviction that global problems need globally coordinated solutions, offers hope to the world as it brings together the world's major economies in a renewed effort to achieve its mandate of strong, sustainable, balanced and inclusive growth. Every crisis affords an opportunity. Therefore, let us hope that the current poly-crisis leads to the reinvigoration of global policy cooperation to meet emerging challenges, repair the multiple fractures the global economy faces and position the global economy on a trajectory that fulfills the G20's mandate. Equitable and inclusive human progress hinges on 'Vasudhaiva Kutumbakam' - One Earth, One Family, One Future.

## Rural Transformation Strategies

■ DR BANRSI LAL

Agriculture is the largest sector of the Indian economy. Presently, this sector contributes 19.9 per cent to the overall Gross Domestic Product (GDP). This sector is very important for the social security in terms of food, nutrition and employment. This sector employs the largest workforce although there is less income as compared to services and industries. The farm sector is often confronted with the crops productivity shocks. The climate change has adverse impact on the farm sector and the farmers do not get adequate support. Extreme climatic events are on rise and there is need of strenuous efforts for the well-being of the farmers. Several reforms are needed for the technology generation and technology dissemination so that the income of the farmers can be increased. The rising demand of food grain production and other commodities should also be kept in mind. The food grain in 2021-22 was 315.72 million tones. With the present status of food grain production, the demand of food grains is likely to be met except some deficiency in pulses, but a major deficiency is expected in edible oils and vegetables. In order to increase the crops productivity development efforts are needed. Agricultural efficiency and occupational diversification should be promoted. Special efforts are needed to build institutions and delivery system to develop different states as the food grain bowls. The farmers should be supported to mitigate the agricultural risks by diversifying the agriculture. The government of India has started innovative solutions to mitigate the problems of farmers. Government has included better production avenues with more area under irrigation and availability of quality agro-inputs. The focus has been given on farmers' empowerment against risks of crops failure and price fluctuation with more incentives for crops insurance and national agricul-

ture market. The diversification of agriculture with high value organic and natural farming, livestock, fishing and traditional farming is also on top priority of the government. Kisan TV Channel was launched by the government of India to update the farmers with the latest agricultural technologies. During the last few years' various new schemes have been launched by the government of India for the betterment of the millions of the farmers of the country.

The Government of India launched Pardhan Mantri Fasal Bima Yojana in Kharif 2016 by replacing the National Agricultural Insurance Scheme (NAIS) and Modified National Agricultural Insurance Scheme (MNAIS). In this scheme 2 per cent premium has been fixed for Kharif food grains, pulses and oilseed crops, 1.5 per cent has been fixed for the Rabi food grain crops, pulses and oilseed crops and 5 per cent for the horticultural and commercial crops. All the states are implementing these schemes for the insurance of different crops to provide benefit to the farmers. It is hoped that this scheme will bring relief to the farmers whose crops are damaged due to the natural calamities. In India 55 per cent of the area is under rain-fed condition. The farmers' well-being can be achieved by more Crop Per Drop and Har Khet Ko Pani. Recently government has launched a scheme known as Pardhan Mantri Krishi Sinchai Yojana (PMKSY). The priorities have been set up for the PMKSY. Many states have started innovative practices for water conservation and harvesting. Maharashtra government has started Jayukta Shivar Scheme which channelizes the funds of Corporate Social Responsibility for the creation and restoration of water bodies. Karnataka government has increased the subsidy on micro-irrigation by toping up the central subsidy to make it 100 per cent for the drip and sprinkler systems. Gujarat govern-

ment has also institutionalized a unique system of hand holding with the farmers for micro-irrigation. Various other states have also implemented many innovative practices for water conservation, water harvesting and efficient use of water.

After Green Revolution the farmers across the nation indiscriminately used the chemical fertilizers. In the early 70, the average proportion of N, P and K was 6:1.9:1 and in 1996 it was 10:2.9:1. With the excessive use of fertilizers the soil health has been deteriorated. Soil health card helps to inform the farmers about nutrient level of his/her farm so that he/she can make the judicious use of the fertilizers. Soil Health Card scheme is an innovative scheme for the benefit of the farmers. In order to increase the yield in rain fed areas now government is promoting organic farming and natural farming. For this purpose, government has launched two important schemes. First is Parparagat Krishi Vikas Yojana which will bring 5 lakh acres area under organic farming in three years and second is Organic Value Chain Development. The agricultural marketing systems suffer because of various distortions in the market. These markets are not transparent and uniform across the nation. There remain some serious restrictions on the movement of agricultural commodities. Karnataka government has developed a model which integrates a number of markets into a single licensing system with a joint venture of state government agency and NCDEX spot exchange which offers automated auction and post auction facilities. Considering this model as a base, the government has launched a scheme known as National Agricultural Market (NAM) scheme through Agri-Tech Infrastructure Fund for implementation. This scheme provides the scope for a Pan-India Electronic Trading Portal which will network selected

Agricultural Produce Marketing Committees market yards to create Unified National Market for Agricultural Commodities. The e-platform will be implemented in selected 585 regulated whole sale markets across the nation. Agricultural prices are not stabilized. Price Stabilization Fund (PSF) scheme has been launched for the procurement and distribution of perishable agriculture and horticultural commodities.

Livestock contributes 25 per cent of Gross Value Added in agriculture sector and provides employment to about 21 millions of people. It is one of the fastest growing sector of agriculture. Rashtriya Gokul Mission was launched by the government in 2014-15 for the conservation of indigenous breeds. The mission envisages establishment of Integrated Cattle Development centres to develop indigenous breeds. National Kamdhenu Breeding Centres for development, conservation and preservation of indigenous breeds are being set up in India to develop and conserve indigenous breeds in holistic manner. A nucleus herd of all the indigenous bovine breeds, Mithun and Yak will be conserved and developed with the objective of enhancing their productivity and upgrading genetic merit. The centre being a repository of indigenous germ-plasm will also be source of certified germ-plasm. Elite certified germ-plasm for artificial insemination and natural service, heifers, male and female calves, semen doses and embryos will be made available to farmers and breeding organizations. Keeping the scope of fisheries in view the scheme on Integrated Development of Fisheries has been launched under blue revolution. It is hoped that all these schemes will bring prosperity for the farmers and help in rural transformation.

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## Role of PSM in increasing crop production

■ PROF (DR) R D GUPTA

After nitrogen phosphorus is a vital nutrient for the growth and development of plants and micro-organisms. In soils, it exists both in inorganic and organic forms. The inorganic forms of phosphorus are compounds of calcium, iron, aluminium and fluorine, while the organic forms are compounds of phytin, phospholipids and nucleic acids which mainly come from decaying vegetation. The soils rich in organic matter are, therefore, rich in organic forms of phosphorus also. Rock phosphate or tri-calcium phosphate is one of the basic raw material for production of phosphatic fertilizer viz., single or triple superphosphate and diammonium phosphate. Tri-calcium phosphate having insoluble form of phosphorus cannot be directly applied to all soils except acidic ones. However there are certain micro-organisms which can bring out dissolution of insoluble phosphatic compounds in soils. For example use of cultures like *Pseudomonas striata*, *Bacillus polymyxa* and *Aspergillus awamori* have been found efficient in solubilization of low grade Missouri rock phosphate and soil fixed P. PSM contain phosphate solubilizing microbes which solubilizes phosphates from the soil and make it available to the crops. The efficiency of utilization of phosphatic fertilizers is very low due to their chemical fixation in soils. Besides, native soil P is mostly unavailable to crops because of its low availability. Most of the Indian soils are characterized by poor to medium status with respect to available P. Further, there is building of insoluble phosphates in soils where phosphatic fertilizers have been applied over long periods. In view of the aforesaid facts, it becomes imperative to introduce efficient P-solubilizers in the rhizosphere of crops and soils to increase the availability of P from insoluble phosphate compounds and, thereafter, its utilization for growing crops efficiently. Most important phosphate solubilizing organisms are bacteria and fungi.

Mechanism of phosphate solubilization: A number of soil bacteria especially belonging to the genera of *Bacillus* and *Pseudomonas* and fungi belonging to the genera of *Penicillium* and *Aspergillus* possess the ability to bring insoluble phosphates to soluble forms by producing a number of organic acids. Such acids include formic acid, acetic acid, propionic acid, lactic acid, glycolic acid, fumaric acid, succinic acid, etc. These acids lower the soil pH and bring about the dissolution of bound forms of phosphate. Some of the hydroxy acids may chelate with calcium and iron resulting in effective solubilization and utilization of phosphate by crops. Among the bacteria, *Pseudomonas striata*, *Bacillus megaterium*, *Bacillus mycoides*, *Bacillus circulans*, *Bacillus polymyxa* etc., are the most important species which bring about the dissolution of the insoluble phosphates. *Penicillium digitatum* and *Aspergillus awamori*, are the main fungi which also help in dissolving insoluble phosphate groups in soils. These micro organisms also produce amino acids, vitamins, growth promoting substances like Indole acetic acid (IAA) and Gibberellic acid (GA). Various species of fungi associated with legume root nodules have brought about the solubilization of  $Ca_3(PO_4)_2$  to the extent of 9.10 to 39.02 per cent as compared to control. The extent of solubilization brought about by four species of bacteria in rock phosphate has shown that soil *Bacillus*

megatherium caused gradual increase in available P upto 6 weeks and similar was noticed with *B. cereus* till the 8th week. However, *B. mycoides* and *B. circulans* showed altogether different trend, marked solubilization was taking place only upto 15 days of incubation. Subsequently, it increased again at 4th, 6th and 8th week.

Agronomic aspects: A commercial biofertilizer under the name "Phosphobacterin" was first prepared from *B. megatherium* var. phosphaticum and is widely used in Russia and East European countries with yield increase in the order of 5-10 per cent over control. Field experiments conducted under various agroclimatic zones of India have indicated significant increase in yield over control. In general 40 percent of the superphosphate could be saved by the application of rock phosphate and phospho-micro-organisms. Without phosphate solubilizing bacteria their yields were 25.0 and 34.0 q ha-1 while with culture of these bacteria the yields were 38.6 and 36.5 q ha-1. There are a number of factors which are responsible for enhancing efficiency in phosphate dissolving micro-organisms. Some of them, are detailed here as under:

(a) Organic carbon and nitrogen contents: As most of the phosphate dissolving microorganisms are heterotrophic in nature, so these micro-organisms will definitely solubilize more amount of rock phosphate in presence of organic carbon and nitrogen content.

(b) The use of phosphorus solubilizing micro-organisms along with FYM was effective in dissolution of insoluble forms of phosphates. It has also been reported that response of phosphorus dissolving micro-organisms was positive in soils with high organic matter content and low available P. It was found that performance of *Aspergillus awamori* with or without FYM was slightly better than *Bacillus polymyxa* in increasing the yield of soybean as compared to control in moderately deep soil. However, in other two soils, *Bacillus polymyxa* did well than *Aspergillus awamori*, particularly more in soil II. Addition of FYM and low available P in this soil might be indirectly responsible for enhanced activities of *Bacillus polymyxa*. In calcareous (vertisol) soil application of *Bacillus polymyxa* + FYM and vermiculture produced the highest yield of soybean than other treatments. Introduction of *Pseudomonas striata*, *Bacillus polymyxa* etc., in the rhizosphere of rice and wheat increased availability of phosphorus from insoluble phosphate (rock phosphate) and increased its utilization efficiency.

Vermicompost and phosphobacteria in combination with two inorganic P sources viz., single superphosphate (SSP) and Tunis rock phosphate (TRP) were tested in a soil calcareous black soil for their effect on the yield parameters of black gram and cotton mix. SSP and TRP were applied in soil at 100 per cent with and without Vermicompost and phosphobacteria. The application of TRP (100 per cent) with Vermicompost and phosphobacteria in black gram recorded the highest grain yield. PS Mare well known to play a significant role in solubilizing the unavailable phosphates from soils into available forms for the uptake of growing plants, so these must be added to increase the agricultural production.

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**YOUR COLUMN**  
**Basohli-Mahanpur link in dilapidated condition**

Dear Editor,

Through the medium of your esteemed daily, I would like to invite the attention of the concerned authorities towards Basohli-Mahanpur link road, which is presently in a dilapidated condition and has turned into a death trap.

30 Km Basohli Mahanpur road link, lifeline for lakhs of souls living in two Tehsils of Basohli and Bani, has always been creating nuisance and discomfort for commuters ever since its construction 30 years back. The link being used by the masses is not worth calling the road in any sense because the entire length of the link is jerky, full of pot holes. There are blind and sharp turns where none can imagine of any untoward incident in the next moment. Due to the narrowness of the road, blind and sharp curbs it is always prone to the fatal accidents due to head on collision between the vehicles or rolling down the road while negotiating the curbs or giving a pass to the vehicles coming from opposite direction. Not to talk of availability of the full breadth of the road, some time its breadth fall short for even one light vehicle due to the non clearance of the debris collected along the road as a result of land slide during the rainy season. At majority of places, the height of road has gone 2 to 3 ft down ground below which causes a great danger for the light vehicles and two wheelers because there is every possibility of falling down from the vehicles while giving a passage to the heavy vehicles coming from opposite direction. Many times the natives had to bear the irreparable losses of the precious lives. The passengers are completely left on the mercy of the god. The matter has many times been brought in the notice of the department through correspondence and the media but nothing solid has been done on grounds. It seems as if the entire PWD department is lost in deep slumber and will wake up only after few lives are lost due to the negligence of the concerned agency. It is funny how VVIPs close their eyes and take this dereliction of officers so lightly when the precious lives of the people are at stake. It is, therefore, requested that the sides below the asphalted roads be filled with the soil, drainage system cleared the sharpness of the curves removed and the debris accumulated on both sides of the road be removed by deploying JCP immediately otherwise this road will be like a Damocles' sword hanging over the innocent commuters. It is the practice rather an permanent job of the PWD department to give clearances to the roads after the rainy season is over because cores of rupees are placed at the disposal of the department for the purpose every year which are either misused or surrendered due to their negligence. Let the roads become free and safe passages for people and not death traps.

Shiv Kumar Padha,  
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