

National Tech Excellence Award

Technology Development Board, a statutory Body of the Department of Science and Technology, on the special occasion of Azadi ka Amrit Mahotsav, has instituted the award to honour the outstanding contribution of women scientists and entrepreneurs in commercializing innovative indigenous technologies.

Applications have been invited from Indian Women Scientists and Entrepreneurs to felicitate a select few with the prestigious India National Tech Excellence Award for Women 2022 for pursuing, prevailing, creating an impact, and etching out stories of inspiration for future young girls.

The awards will be presented on International Women's Day on 8th March, 2022.

The awards are categorized under two categories National Women Scientist Award for Excellence in Translational Research and National Women Entrepreneur Award. Both the awards will be presented in two distinct subcategories of Senior (45 years and above) and Young (Below 45 years). The awardees will receive a cash award of Rs 3 Lakh and Rs 1 Lakh for senior and young, respectively, and number of awards will be two in each category.

The contribution of Indian women in the science & technology and entrepreneurship has been exemplary, and they have proved that they can own businesses, work tirelessly to show that they are adept and successful in the entrepreneurial space. In rural India, too, women entrepreneurs have made their way and emerged as leaders across different sectors, proving that they are capable mentors for future generations.

The contributions made by women across sectors have been evident over the centuries, science and technology being one of the most benefitted. Women like, Leelavati, a mathematician and astrologer; Janaki Ammal, first Indian scientist to have received the Padma Shri Award in 1977; Kadambini Ganguly, one of the first female physicians of South Asia to be trained in western medicine; Anna Mani, an Indian physicist, and meteorologist, also the former DDG of the Indian Meteorological Department; Indira Hindocha, the first Indian women who delivered a test tube baby; Kiran Mazumdar Shaw, Chairman & Managing Director, Biocon Limited, Kalpana Chawla, a first Indian woman in space, Dr. Renu Swaroop, first Woman Secretary to lead DST and Dr. Alka Mittal, first woman CMD of ONGC have made significant contribution to sectors such as aerospace, medical science, biotechnology, meteorology, and many others, they have proven it time, and again, that opportunity and access to knowledge & resources can make all the difference. The Government of India has been continuously focusing on women empowerment in Science and Technology, through various schemes and initiatives like Beti Bachao, Beti Padhao, "KIRAN" (Knowledge Involvement in Research Advancement through Nurturing), "GATI" - Gender Advancement for Transforming Institutions and many other women scientist schemes. All these aim to support the talents of Indian women, and the Department of Science and Technology has played a key role in supporting talented women in science.



Learning to overcome mental pollution

There is much debate on different kinds of pollution – water, soil, air and other elements. But the most dangerous of them all is mental pollution that is rarely acknowledged and hardly discussed in public forums. Any kind of mental affliction is left to either psychiatrists or religious masters, whereas it really needs to come out into the open and discussed freely in educational institutions and work places, as well as in homes.

The Dalai Lama has talked at great length about destructive emotions that are caused by having a self-centred attitude and by believing that reality is as it appears. The antidotes to destructive emotions are compassion and the realisation that nothing exists as it appears. Once we are able to ward off negativities, we can obtain the perspective required to embrace all that is good, overcome all that is destructive, and enjoy peace and harmony and experience love at all levels.

The root of all unpleasantness and unhappiness is lack of kindness and compassion, the base qualities on which one can build a life of happiness. It is said that anyone who causes you to feel anger, is in fact wielding power over you. And one of the ways by which we can protect ourselves from getting overpowered in this manner, is to practise compassion that creates acceptance and understanding, then there is no scope for anger.

Emotions per se are not destructive; they become so only when we express them in inappropriate ways. Becoming self-aware but not self-centred is the first step towards recognising one's emotions for what they are and learning to detect what is toxic to mind, body and soul. Once we allow mental pollution to take place, it can spread and tighten its grip over our lives, ruining it not just for us but for all those around us.

Philosophical platitudes may not work in dire situations that call for emergency measures but by and large, most issues that are blown out of proportion need to be given time to settle down, and appropriate action taken in due course.

Narayani Ganesh

The happiness and peace attained by those satisfied by the nectar of spiritual tranquillity is not attained by greedy persons restlessly moving here and there.

-Chanakya

EDITORIAL

Bye-Bye 2022 and Welcome 2023

■ OMKAR DATTATRAY

The year 2022 which was more or less like other previous years came to an end and the New Year 2023 took its birth and we woke up in the New Year and embraced it with great enthusiasm and joy. Like all other years the bygone year 2022 was a mixed bag of achievements as well as failures. As we embrace the New Year 2023 and bade good bye to year 2022, we have the memories of the bygone year fresh in our mind and welcome the New Year with great fanfare and fervor. The occasion of the New Year provides us the opportunity to resolve and make New Year resolutions and pledge to work for the unity, integrity, sovereignty, peace, security and development. We also resolve to weed out corruption, drug addiction, militancy and hatred from the country. On the New Year eve while we celebrate the New Year with gaiety, we also will have a look on the achievements and the failures of the year gone by and resolve to make the new year more fruitful for us and the country.

There were key positives and negatives of the bygone year and the union budget 2022. There were various positive points in the budget of the bygone year. It has listed some first time initiatives with emphasis on digital technologies and climate action while it had been criticized for being capitalistic budget with negligible mention for the poor people of the country. The budget 2022 had received various mixed reactions from experts, politicians and the common citizens. Ranging from the 5G auction which was conducted in 2022 and the announcement and implementation of National Tele Mental Programme is an outstanding achievement of year 2022. Digital revolution in education and catering to the removal of gaps which had come due to COVID 19 and due to closure of schools in imparting the classroom education is another milestone of the year gone by along with the implementation of on

line education. Digital university was established to extend world class education for all. The schools were opened in the year 2022 as the country under the leadership of Modi had fought coronavirus and won victory over the pandemic. Indian efforts of fighting coronavirus which started in 2020 and were carried to 2021 bore its fruits in 2022 and the year saw almost all elimination of COVID 19.

The normal activity took momentum and this is a plus point of year 2022. However at the end of the year and close of December there were some positive cases of the new variant of coronavirus, but the country is armed to combat the new variant of coronavirus. This is no small development, 5G auctions and increased connectivity was another feather in the cap of the people.

The implementation of PM Gati Shakti plan was an important priority of the budget 2022.

E-Passport and digital banking, digital payments and fintech innovations was another achievement of year 2022.

One of the limitations of the budget 2022 is that it was bound to make rich, richer and poor, poorer.

Inflation, soaring prices of the essential goods and services was the failure of the government.

The inflation has broken the back of the common man, Joblessness and unemployment is also a main minus point of the year which has gone. We faced terrible inflation and there was no tax relief for the middle class. Digital and crypto currencies was another innovation in the economy of the country.

PM Modi made a significant announcement in June of providing 10 lakh government jobs to the educated unemployed youth and its implementation began in October 2022. The centre government is thinking to revive and restore the old pension scheme for its employees and it will benefit government employees on a big scale.

The nation has celebrated 75th year of independence themed as 75th Azadi Ka Amrit Mahotsav.

Azadi Ka Amrit Mahotsav has been celebrated in the nook and corner of the country with fanfare. We have excelled in many areas but have failed in some others.

The country has failed in key areas that include poverty, health, education, equality and fraternity.

India has become a fifth growing economy in the world.

Recently we have been decorated with the crown of the presidency of G20 and this is a very big achievement which we have got in the year 2022 as India will be in a position to lead the world.

The mantle of G20 presidency is a matter of pride for the countrymen and it has given India an opportunity to lead the world.

There was calm on the Indo-Pak border and the LOC. There was complete silence between India-Sino LOC throughout the year baring the efforts of crossing the line by the Chinese troops recently but they were sent back by our brave army Jawans.

The peaceful assembly elections in UP, Punjab, Goa, Manipur, Uttarakhand, HP, Gujarat is also a great democratic achievement.

The nation has also elected the first women Dalit as the president of the country and it proved that anyone can assume the mantle of presidency in the country. It is the empowerment of the weaker section of the society.

The killing of 56 foreign terrorists in J&K is not an ordinary feat.

To the close of the year four local terrorists were neutralized in December in Jammu.

Modi diplomacy and foreign, bilateral and multilateral relationships were cemented with different countries during 2022. The friendship with Russia, USA was strengthened.

The year 2022 showed that the Indian say matters in the international spheres and the status of India has increased because of the diplomacy of Modi. While there have been a number of plus points of 2022, the failures are not hidden from anyone. There was an increase in the road accidents in various parts of the country and thousands of the people have died because of road accidents. In Jammu and Kashmir we have witnessed an unprecedented spurt in the road accidents and a big number of precious lives have been lost due to these accidents.

The country has witnessed brute silting of the throat of a number of youth belonging to the majority community at the hands of radicalized youth of the Muslim community.

The hatred has increased in the country. Due to the cases of love Jihad and live in relationship many women had been brutally killed their partners and it has shattered the relationships. The case of killing and cutting the body of a girl named Shraddha into 35 pieces by her living partner is unprecedented and it has brought down shivers in the people.

The radicalization, extremism and fundamentalism was on increase and so was the hatred and this hints towards our failure.

We were back with our annual list of the worst technologies of the year.

Think of these as anti-breakthroughs, the sort of mishaps, misuses, misuses and bad ideas that led to technology failure.

There was and is tension and war between Russia and Ukraine and the tension between India and China.

The clouds of world war third are still hovering over our heads. Thus in short the year 2022 was a mixed bag but we should welcome new year 2023 with open arms.

(The author is a columnist, social and KP activist).

MOVING ON TO MILLETS

■ DR. PARVEEN KUMAR

Nutrient-rich, drought-tolerant and multipurpose, Millets are rightly being called as 'Super Foods' and 'Food of Future'. They are nutri-cereals that provide most of the nutrients required for normal functioning of human body. The International Crop Research Institute for the Semi-Arid Tropics (ICRISAT) estimates that more than 90 million people in Africa and Asia depend on millets in their diets and 500 million people in more than 30 countries depend on sorghum as a staple food. However, in the past 50 years, these grains have largely been abandoned in favor of developing more popular crops like maize, wheat, rice, and soybeans.

In the Indian subcontinent, these are recognized as traditional grains, grown and consumed in the Indian subcontinent from the past more than 5000 years. These are one of the oldest foods known to humanity. Millets owing to their unique characteristics have been identified as a major category of food commodities to be propagated and promoted for enhancing nutritional levels of the population. Millets are a group of small grained cereal food crops which are highly nutritive, tolerant to drought and other extreme weather condition; do not require much input and most of them are natives of the country. These crops are called as 'Nutri-cereals' as they provide most of the nutrients required for normal functioning of human body. Millets are classified into major millets and minor millets based on their grain size. They are Pseudo millets also and are so called because they are not part of the Poaceae botanical family, to which 'true' grains belong; however they are nutritionally similar and used in similar ways to 'true' grains.

MILLETS AS NUTRI-CEREALS:

Recognizing the importance of millets in the nutritional security, the Ministry of Agriculture and Farmers Welfare, GoI has declared millets comprising of Sorghum (Jowar), Pearl Millet (Bajra), Finger Millet (Ragi/Mandua), Minor Millets i.e., Foxtail Millet (Kamngani/Kakum), Proso Millet (Cheena), Kodo Millet (Kodo), Barnyard Millet (Sawa/Sanwa/Jhangora), Little Millet (Kutki), Brown top millet and two pseudo millets i.e., Buckwheat (Kuttu), Amaranth (Chaulai) as 'Nutri-Cereals' for production, consumption and for trade and commerce. Millets are gluten free and non-allergenic and non acid forming foods. Millet consumption decreases triglycerides and C-reactive protein, thereby preventing cardiovascular disease. All millets are rich in dietary fibre. Dietary fibre has water absorbing and bulking property. It increases transit time of food in the gut which helps in reducing risk of inflammatory bowel disease and acts as detoxifying agent in the body. Millets act as a probiotic feeding for micro flora in our inner ecosystem. Millets hydrate our colon to keep us from being constipated. Niacin in millet can help lower cholesterol. Nutritional status of millets: These nutri-cereals contain about 7-12% protein, 2-5% fat, 65-75% carbohydrates and 15-20% dietary fibre. The essential amino acid profile of the millet protein is better than various cereals such as maize.

Millets contain fewer cross-linked prolamins, which may be an additional factor contributing to higher digestibility of the millet proteins. Small millets are good source of phosphorous and iron. Millets contributes to antioxidant activity with phytates, polyphenols, tannins, anthocyanins, phytosterols and pinacostanols present in it having important role in aging and metabolic diseases. All millets possess high antioxidant activities.

Major Millets: Sorghum (Jowar): It is rich in protein, fibre, thiamine, riboflavin, folic acid, and carotene. It is also a good source of potassium, phosphorus and calcium with sufficient amounts of iron, zinc and sodium. A major portion of protein present in Sorghum is prolamin. Prolamin has a unique feature of lowering digestibility upon cooking which might be a health benefit for certain dietary groups.

Pearl Millet (Bajra): Pearl millet contains considerably high pro-

(International Year of Millets 2023)

portion of proteins (12-16%) as well as lipids (4-6%).

It contains 11.5% of dietary fiber. It increases transit time of food in the gut. Hence, reduce risk of inflammatory bowel disease. The niacin content in pearl millet is higher than all other cereals. It also contains folate, magnesium, iron, copper, zinc and vitamins E and B- complex. It has high energy content compared to other millets. Pearl millet is also rich in calcium and unsaturated fats which are good for health.

Finger Millet (Ragi): Finger millet has the highest mineral content and is the richest source of calcium (300-350 mg/100g). Finger millet proteins are unique because of the sulphur rich amino acid contents. The grains have excellent malting properties and are widely known for its use as weaning foods.

It has high antioxidant activity. Minor Millets: Foxtail millet (Kakum): It is considered to be one of the most digestible and non-allergic grains. It also contains minerals such as copper & iron.

Kodo millets (Kodon): It has high protein content (11%), low fat (4.2%) and very high fibre content (14.3%). Kodo millet is rich in various B vitamins especially niacin, pyridoxine and folic acid as well as the minerals such as calcium, iron, potassium, magnesium and zinc. Besides, it also contains a high amount of lecithin and is an excellent for strengthening the nervous system.

Little millet (Kutki/Shavan): Little millet, as its name goes, is smaller than other millets; but is high in iron content and also has high antioxidant activities. It contains about 38% of dietary fiber. Barnyard millet (Sanwa): It is the richest source of crude fiber and iron. The grains possess other functional constituents i.e., Gamma amino butyric acid (GABA) and Beta - glucan that are used as antioxidants and in reducing blood lipid levels. Proso millet (Chenna/Barri): This minor millet has the highest amount of proteins (12.5%) with a significant amount of carbohydrate and fatty acids. It is a cheaper source of manganese as compared to other con-

ventional sources like spices and nuts. The higher amount of calcium present in it also helps in bone growth and maintenance. Besides, this millet reduces cholesterol levels and also reduces the risk of heart diseases. Pseudo Millets: Buckwheat (Kuttu): It also contains about 18% crude protein with biological values above 90%. This can be explained by a high concentration of all essential amino acids, especially lysine, tryptophan, and the sulphur-containing amino acids. It is also rich in iron (60-100 ppm), zinc (20-30 ppm) and selenium (20-50 ppb). It also contains aromatic compounds. Salicylaldehyde (2-hydroxybenzaldehyde) was identified as a characteristic component of buckwheat aroma. On an average one cup of cooked groats contains about 155 calories, with 6 grams of protein, 1 gram of fat, 33 grams of carbohydrate, and 5 grams of fiber. The Starch in groats is 25% amylose and 75% amylopectin and depending on hydrothermal treatment, buckwheat groats contain 7-37% of resistant starch. Amaranth (Ramdana/ Rajigra): With high protein content (13-14%) and a carrier of lysine, an amino acid that's missing or negligible in many others, this grain has also an oil percentage of 6 to 9% which is higher than most other cereals. Amaranth oil contains approximately 77% unsaturated fatty acids and is high in linoleic acid. It is also high in dietary fibre, iron, magnesium, phosphorus, potassium and appreciable amounts of calcium. Millets are wonder foods and the unfortunate part is that owing to lack of knowledge regarding nutritional value of these crops, these have more or less lost their importance as vital crops. It is high time to promote the cultivation of these crops by educating masses about the health benefits of them.

Moving on to Millets: Millets are therefore an ideal solution for countries to increase self-sufficiency and reduce reliance on imported cereal grains. Considering the immense potential of millets in nutritional security and their ability to withstand climatic stress and grow in regions otherwise not feasible for cultivation and with minimal inputs, year 2023 is being celebrated as International Year of Millets. Infact, United Nations General Assembly at its 75th session in March 2021 declared 2023 the International Year of Millets (IYM 2023). Food and Agricultural Organization (FAO) is the lead agency for celebrating the Year in collaboration with all other relevant stakeholders. In April 2018, the government of India designated millet as a nutritious cereal and millet was also included in the POSHAN Abhiyan. A nutritious cereal component for millet is being implemented in 212 districts across 14 states as a part of National Food Security Mission. So, the year 2023 celebrated as International Year of Millets provides us with an opportunity to raise awareness of and direct our policy attention to their large scale cultivation and use in our dietary intake; owing to their nutritional and health benefits and their suitability for cultivation under adverse and changing climatic conditions.

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Shrinking agricultural land on account of construction of residential settlements: Its impacts and remedies

■ SHAFEEQ MALIK

Cultivable land in the country has marginally declined but the trend of increasing agricultural production is still expected to continue. Replying to a question in Rajya Sabha, the then Agriculture Minister Radha Mohan Singh said that cultivable land in the country has marginally declined from 182.7 million hectares in 2005-06 to 182 million in 2012-13 which fell further to 17.65 hectares in 2022-23. Whereas the population graph of India has reached to 139.34 crores (2021) which was 107.50 crores in 2001 whereas it was 125.03 crores in 2011. If the rate of decline remains same; within a short period of time, we will lose a considerable stretch of the agricultural land and shall have to strive hard for finding the alternate land and shall have to do a lot of work to make it fit for agriculture. It will have disastrous impact on economy of the country and shall have reciprocal consequences on account of the fast-growing population. The decline in agricultural land is the resultant of the human activity which is considered as an interference in the natural ecosystem. It involves construction of roads and railways, construction of buildings for urbanisation & housing and establishment of the industries, ports and airports etc to keep the development abreast with the global standards. In changing world with such a pace; infrastructure is required for comprehensive development of the country which involves numerous projects completion; it becomes unavoidable to use the agricultural land. It is therefore inevitable to be kept in mind that the

roads and railways cannot be avoided to pass through the land of agricultural importance as they provide connectivity to the produce, human resource and the infrastructure used for storage or processing units, equally. The airports (being the huge infrastructural units) too cannot be constructed without using the agricultural land but the other factors which include construction of

buildings for urbanisation & housing and establishment of the industries may