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NEWS ALERT

Forum for Indian Science Diplomacy

RIS Science Diplomacy News Alert is your fortnightly update on Indian and global developments in science research, technological advancements, science diplomacy, policy and governance. The archives of this news alert are available at http://fisd.in. Please email your valuable feedback and comments to science.diplomacy@ris.org.in

GLOBAL

IPCC Special Report on Land Use and Climate Change

The recent special report from IPCC on land use and climate change is a comprehensive report that has significant implications for land use and climate change related policies. The report emphasized the dual role of land and land use as source of green house gases emission and a solution for climate change. The report pointed out that while improper use of land is making climate change worse, land is also a significant sink as they are removing more emissions that what is emitted by them. The climate change has had drastic impact on land and this aggravates problems. Reducing deforestation and afforestation are important solutions for climate change, and, the benefits from them are not limited to mitigating effects of climate change. Further the report addressed the question of policies on land use and cautioned that diversion of land for bioenergy production could compete with food production. The overall message is land is a critical resource and land use policies have to take into account global climate change.

'Mosaic' HIV vaccine to be tested across the world

An experimental HIV vaccine that targets more strains of the virus than any other developed so far will start a late-stage clinical trial later this year. The 'mosaic' vaccine, which incorporates genetic material from HIV strains from around the world, also seems to have the longest-lasting effects of any others tested in people. The phase III trial starting September will test the vaccine in transgender individuals and in males engaging in same sex acts (especially susceptible to HIV) across the Americas and Europe. So far only Mosiaco Vaccine has demonstrated any kind of protection. The latest vaccine uses a disabled common cold virus that carries synthetic versions of three HIV genes. Researchers built the genes based on sequences from HIV strains found in several regions around the world. As an added boost two synthetic proteins — based on proteins produced by HIV strains common in Africa, the Americas, Europe and Australasia — have been added to make it a truly global vaccine.

Avocado Genome Sequence

The avocado (Persea americana) is a commercially important tree fruit species in the Lauraceae family, otherwise known for the spices cinnamon, bay leaves, and sassafras. It is a vital crop for Mexico, from which almost 50% of all avocado exports originate, valued at about $2.5 billion US dollars. Avocado is a crop of enormous importance globally, but particularly to Mexico. The team successfully sequenced and analyzed the nuclear genomes of Mexican and Hass variety avocados, and also resequenced the genomes of Guatemalan and West Indian varieties. The long life cycle of avocado makes breeding programs difficult, so genomic tools will make it possible to create faster and more effective breeding programs for the improvement of this fruit.

Go beyond Quantitative to enhance the quality of AI

Artificial Intelligence engineers should enlist ideas and expertise from a broad range of social science disciplines, including those embracing qualitative methods, in order to reduce the potential harm of their creations and to better serve society as a whole. An analysis in the journal Nature Machine Intelligence says that there is mounting evidence that AI can exacerbate inequality, perpetuate discrimination, and inflict harm. AI engineers are currently seeking to instill "value-alignment", but it is exceptionally difficult to define and encode something as fluid and contextual as 'human values' into a machine. The authors offer a blueprint for inclusion of the social sciences in AI through a series of recommendations..

Demand for reversal of ECJ rule on genome editing ban in agriculture

Research institutes from across Europe are calling on the European Parliament and the European Commission to rethink the EU's stance on genome editing of crop plants, to enable Europe to compete in sustainable food production and keep up with the speeding pace of innovation in agriculture. They want to reverse the European Court of Justice (ECJ) ruling on modern precision genome editing. Researchers at 120 institutes around Europe said the EU's ban "no longer correctly reflects the current state of scientific knowledge." Scientists should be allowed to use precision genome editing, such as CRISPR/Cas, which is, a speeded-up equivalent of traditional breeding techniques. There are also questions about whether the EU can police the rule, because unlike GMOs that contain foreign DNA, plants and animals modified using CRISPR contain only DNA that occurs naturally.

China moves ahead with Genome Edited Crops

China is moving ahead with CRISPR technology, particularly in agriculture. It has built up significant capacity in R&D in genome edited crops. While the regulatory regime is not clear, many scientists are working on agriculture related applications using CRISPR. Syngenta considers that genome edited corn has great potential in China, as there is good scope to increase productivity. According to a scientist it may take just six months to commercialize genome edited crops, if they are approved for cultivation. China spends about $10 billion dollars annually in agricultural research which is more than double of the spending by U.S government.

INDIA

India unveils the Draft on E-Commerce Norms

To protect consumers' interest, the Government of India has proposed guidelines for e-commerce firms that entail a 14-day deadline to effect refund request, mandate e-tailers to display details of sellers supplying goods and services on their websites and moot the

procedure to resolve consumer complaints. The consumer affairs ministry has sought views of stakeholders on the draft guidelines on e-commerce by September 16. Meanwhile, the government is planning to come out with a national e-commerce policy to facilitate achieving holistic growth of the sector. The e-commerce sector in India has been witnessing an explosive growth fuelled by the increase in the number of online users, growing penetration of smartphones and the rising popularity of social media platforms. The e-commerce sector in India is estimated to reach USD 230 billion by 2028, accounting for 10 per cent of India's retail business.

DRDO successfully flight-tests Quick Reaction Surface-to-Air Missiles

Defence Research Development Organisation (DRDO) on 4 August successfully flight-tested its state-of-the-art Quick Reaction Surface-to-Air Missiles (QRSAM) against live aerial targets from Integrated Test Range (ITR), Chandipur. Two missiles, developed by DRDO, were tested against two live targets meeting complete mission objectives of engaging the targets. QRSAM, with many state of the art technologies, engaged the targets at different ranges and altitudes. The system is being developed for the Indian Army with search and track on move capability with very short reaction time.

India ratifies amendment to Framework Agreement of the ISA

India has ratified the amendment to the Framework Agreement of the International Solar Agreement (ISA) for opening up the ISA membership to all United Nations member states. This will put solar energy on the global agenda with universal appeal for developing and deploying solar energy. Earlier only countries lying between 23.5 degrees latitude of the equator could join as full members. It will further lead to ISA initiative benefitting the world at large, enabling countries such as Germany and South Korea to join.

ISRO's commercial wing begins operations

The New Space India Limited (NSIL), the newly established commercial subsidiary of the Indian Space Research Organisation (ISRO), has got its first customer - an American space rideshare company, Spaceflight. The American firm has bought a payload slot on the first commercial launch of ISRO's newest rocket – Small Satellite Launch Vehicle (SSLV). The first flight of SSLV is slated to take place from the Satish Dhawan Space Centre later this year. SSLV is designed to inject small satellites weighing up to 500 kg in low-earth orbits, and NSIL has been tasked with the production of the rocket in collaboration with private players. The first SSLV mission will deploy the commercial spacecraft in two different orbital planes. Spaceflight is a rideshare company that provides launch and mission services to its customers using rockets of different agencies. It has executed nine missions with ISRO, sending over 100 spacecraft to orbits aboard its launch vehicles. NSIL is ISRO's second commercial arm after Antrix Corporation.

World's first hyperloop system to be built in India

The government of Maharashtra state in western India has officially declared that it will pursue construction of the high-speed transit technology between Mumbai and Pune. Virgin Hyperloop One and the shipping company DP World are teaming up to bring the project to life in India. DP World, a Dubai-based port operator, will spend $500 million up front to complete the first phase of the project. Hyperloop technology uses electric propulsion and magnetic levitation to move pods at high speeds through transit tunnels. Testing of the Virgin Hyperloop One in Las Vegas has seen the pods move up to 240 miles per hour, but with a

longer track, it could reach up to 700 miles per hour. However, Virgin Hyperloop One has not yet tested the technology with human passengers.

Study on benefits from alternatives to burning in Agriculture

A new economic study shows that thousands of farmers in northern India could increase their profits if they stop burning their rice straw and adopt no-till practices to grow wheat. Alternative farming practices could also cut farmers' greenhouse gas emissions from on-farm activities by as much as 78% and help lower air pollution in cities like New Delhi. The direct seeding of wheat into unplowed soil and shredded rice residues was the best option -- it raises farmers' profits through higher yields and savings in labour, fuel, and machinery costs. Leaving straw on the soil as a mulch helps capture and retain moisture and also improves soil quality. The study demonstrates that it is possible to reduce air pollution and greenhouse gas emissions in a way that is profitable to farmers and scalable.

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Research and Information System for Developing Countries
Core IV B 4th Floor, India Habitat Centre, Lodi Road, New Delhi 110003, India
Tel:-011- 24682176, E-mail: science.diplomacy@ris.org.in
Website: www.fisd.in

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