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Pusa Soft Wheat 1

The Indian Agricultural Research Institute (IARI) has developed a soft wheat variety named Pusa Soft Wheat 1 (HD 3443).

> An earlier experiment of soft wheat named HS 490, developed in 2008-09 by IARI scientists, did not succeed as the yield level was lower and suitable only for growing in the foothills of the Himalayas.

- Pusa Soft Wheat 1 (HD 3443) is India's first soft wheat variety.
- It is registered with the Protection of Plant Varieties and Farmers' Rights Authority.
- It is suitable for growing in all producing States.
- It has a productivity of over 5 tonnes per hectare with protein content of 11.5% and gluten level of 8.9%.
- **Requirements** - Soft wheat requires less grinding force as its flour has smaller particle size and absorbs less water when kneaded into dough.
- Soft wheat products like cake and biscuits, even noodles, need less water to be absorbed by the flour for the best quality.
- So, molecular marker technology was used to identify lines with grain softness and gluten strength.

Reference

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2. https://jsnewstimes.com/agriculture/iari-develops-first-soft-wheat-variety-will-produce-more-than-5-tonnes-in-one-hectare

First Movers Coalition

India, along with Japan and Sweden, has joined the steering board of the First Movers Coalition to decarbonise carbon-heavy sectors.

- The First Movers Coalition is a global initiative launched by the US and the World Economic Forum (WEF) at COP26 (Glasgow).
- It is launched as a flagship public-private partnership to clean up these most carbon-intensive sectors; along with innovative Carbon Removal technologies.
- It aims to harness the purchasing power of companies to **decarbonize the seven carbon-heavy industries** and **long-distance transport sectors** responsible for 30% of global emissions.
- [The industrial sectors that account for 30% of global emissions are Aluminum, Aviation, Chemicals, Concrete, Shipping, Steel, and Trucking.]

- This Coalition aims to create early markets for clean technologies through **policy measures** and **private sector engagements**.
- **Working** - The coalition's members have committed to purchasing a percentage from suppliers using near-zero or zero-carbon solutions, despite the premium cost.
- This purchase would be done by the members out of their total industrial materials and long-distance transport spending.
- **India's Global-level Initiatives -** International Solar Alliance, One Sun One World One Grid, Coalition for Disaster Resilient Infrastructure

Reference

1. https://www.business-standard.com/article/economy-policy/india-joins-first-movers-coalition-to-decarbonise-carbon-heavy-sectors-122052500887_html
2. https://www.weforum.org/first-movers-coalition

PARAM Porul

PARAM PORUL supercomputing facility is established at NIT Tiruchirappalli under Phase 2 of the National Supercomputing Mission (NSM).

- The PARAM PORUL is 838 TeraFlops Supercomputing Facility.
- Majority of the components used to build this system have been manufactured and assembled within the country, along with an indigenous software stack developed by C-DAC.
- The system is equipped with a mix of CPU nodes, GPU nodes, High Memory nodes, High throughput storage and high performance Infiniband interconnect.
- PARAM PORUL system is based on **Direct Contact Liquid Cooling Technology** to obtain a high power usage effectiveness. This Cooling Technology also reduces the operational cost.
- **Related Links -** PARAM GANGA, PARAM PRAVEGA, National Supercomputing Mission

> In 2019, the first Supercomputer "PARAM Shivay" was designed and built under the Build approach of the National Supercomputing Mission (NSM) by C-DAC at the Indian Institute of Technology (BHU), Varanasi.

Reference

1. https://pib.gov.in/PressReleasePage.aspx?PRID=1828171
2. https://newsonair.com/2022/05/25/param-porul-supercomputer-inaugurated-at-nit-tiruchirappalli/

GSLV-F10/EOS-03 Mission

The upper stage of the GSLV-Mk II rocket malfunctioned, forcing the Indian Space Research Organisation to abort the GSLV-F10/EOS-03 Mission.

> A leak in a Vent and Relief Valve (VRV) had led to a lower build-up of pressure in the Liquid Hydrogen (LH2) propellant tank, leading to a failed mission.
>
> So, the GSLV with improvements added to its cryogenic upper stage (CUS) is expected to be ready in the second half of 2022.

- The Geosynchronous Satellite Launch Vehicle (GSLV-F10) was designed in 2021 to launch the Earth Observation Satellite (EOS-03) in a geosynchronous transfer orbit (GTO).
- EOS-03 is the first state-of-the-art agile Earth observation satellite which will be placed in a Geosynchronous Transfer Orbit by GSLV-F10.
- **Objectives of EOS-03** - To provide near real time imaging of large area region of interest at frequent intervals.
- For quick monitoring of natural disasters, episodic events and any short term events.
- To obtain spectral signatures for agriculture, forestry, water bodies as well as for disaster warning, cyclone monitoring, cloud burst monitoring etc.
- **Related Links -** Earth Observation Satellites, Small Satellite Launch Vehicle, EOS-02 Satellite, Reconnaissance Satellite

Reference

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3. https://www.vssc.gov.in/pdf/PressKit/gslv_f10_eos-03_brochure.pdf

Lean Diabetes

A new study has found that the diabetics who have a low Body Mass Index (BMI) have a unique metabolic profile compared to other groups of diabetics, and could be a distinct entity warranting further investigation.

- Lean Diabetes (LD) may be a kind of "hybrid" of type 1 and type 2 diabetes. They may not make enough insulin or respond to it very well.
- Diabetes among individuals with low BMI has been recognized for over 60 years as an entity in low and middle income countries (LMIC).
- But, this has been classified as malnutrition-related diabetes mellitus, by the World Health Organization (WHO).
- People with lean diabetes have a history of **malnutrition *in utero*** (in the uterus) and continue to have a **low BMI into adulthood**.
- **Two cases -** The thrifty phenotype theory in diabetes posits that the phenotype adapts in the womb to poor nutrition.
- [The phenotype is the observable physical characteristics of an organism, which basically includes the genes, and the impact on them by enviornmental factors.]
- When nutrition improves after birth, this thrifty phenotype becomes disadvantageous to the individual.
- In individuals whose nutritional status improves after birth, it is likely they might seem thin by Western standards.
- But, in reality, because of the programming *in utero*, they have actually accumulated more fat than planned for by the gene, leading to the **'thin-fat' phenomenon**.
- However, LD individuals never catch up with nutritional requirements, continuing to remain nutritionally challenged as adults, so the thrifty gene never comes into play.
- The cardinal feature of LD is a defect in insulin secretion capacity versus insulin resistance.
- **Symptoms** - They will be grossly malnourished, the sugar control will be poor and their sense of well-being will be poor.

- **Treatment** - If diagnosed wrongly as Type 1 diabetes, physicians might recommend insulin therapy, which may help, but 75 % of the cases could be managed with oral drugs.
- In addition, targeting better **maternal nutrition** would be the way ahead, as it would help avoid several related health and developmental sequelae later in the life of the foetus.

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2. https://www.webmd.com/diabetes/features/do-thin-people-get-diabetes

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