

1. Genetically Modified Crops

Topic: Environment and Ecology

Crop Modification Techniques

Cross Breeding

Combining two sexually compatible species to create a variety with the desired traits of the parents



The Honeycrisp Apple gets its famous texture and flavor by blending the traits of its parents.

Mutagenesis

Use of mutagens such as radioactivity to induce random mutations, creating the desired trait



Radiation was used to produce a deeper color in the red grapefruit.

Polyploidy

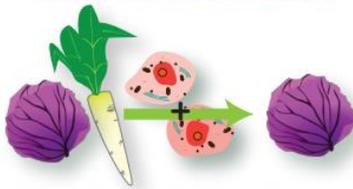
Multiplication of the number of chromosomes in a crop to impact its fertility



Seedless watermelons are created by crossing a plant with 2 sets of chromosomes with another that has 4 sets. The seedless fruit has 3 sets.

Protoplast Fusion

Fusion of cells or cell components to transfer traits between species



Male sterility is transferred from radishes to red cabbage by fusing their cells. Male sterility helps plant breeders make hybrid crops.

Transgenesis

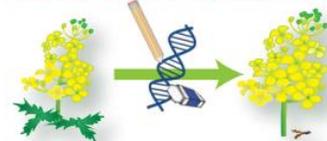
Addition of genes from any species to create a new variety with desired traits



The Rainbow Papaya is modified with a gene that gives it resistance to the Papaya Ringspot Virus.

Genome Editing

Use of an enzyme system to modify DNA directly within the cell



Genome editing was used to develop herbicide resistant canola to help farmers control weeds.

Follow us on Twitter (@frankfoode) or join our Facebook Page

In News: The Department of Biotechnology (DBT) has issued guidelines easing norms for research into genetically modified (GM) crops.

More on the Topic:

- The guidelines provide a road map for the sustainable use of genome editing technologies and applicable to public and private sector research institutions engaged in research and development and handling of genome edited plants.
- The environment ministry had **exempted certain types of genome-edited crops from the stringent biosafety regulations** applicable to genetically-modified (GM) crops.
- The ministry had exempted **site directed nuclease (SDN) 1 and 2 genomes** from rules 7-11 of the Environment Protection Act, thus allowing to avoid a long process for approval of GM crops through the Genetic Engineering Appraisal Committee (GEAC).
- **The guidelines define various categories of genome edited plants and determine regulatory requirements** for appropriate categories and provide the regulatory framework and scientific guidance on data requirement in context of development of these crops.
- The guideline aligns and harmonizes India's regulatory framework on genome editing with other mega food producing countries from Latin America, North America, Africa and Asian countries.



Significance of the Guidelines:

- Guidelines are expected **to bring transformational change in product development and commercialisation** and would contribute towards increasing farmer's income.
- The conventional breeding technique takes 8–10 years for development of new agricultural crop varieties, while **through genome-editing, the new varieties could be developed in two to three years.**
- New guidelines will further improve the genome editing technology development and its practical applications.

About Genome Editing:

- Genetically modified organisms are the organisms in which genetic material has been altered in a way that does not occur in natural recombination.
- Genome editing is a group of technologies that gives scientists the ability to change an organism's DNA.
- **Genome is the complete genetic information of an organism** and genome editing is a type of genetic engineering in which DNA is inserted, deleted, modified or replaced in the genome of a living organism.
- In the field of genome engineering, **“CRISPR” or “CRISPR-Cas9” is used as a tool to target specific stretches of genetic code** and to edit DNA at precise locations.

Based on the nature of the edit that is carried out using site directed nuclease (SDN), the process is divided into three categories:

- **SDN1** introduces changes in the host genome's DNA through small insertions/deletions **without introduction of foreign genetic material.**
- In the case of **SDN 2**, the edit involves using a small DNA template to generate specific changes. Both these processes do not involve alien genetic material and the end result is indistinguishable from conventionally bred crop varieties.
- On the other hand, **SDN3 process involves larger DNA elements or full length genes of foreign origin** which makes it similar to Genetically modified organisms (GMO) development.

Source: Indian Express

2. Citizenship to Chakma and Hajongs

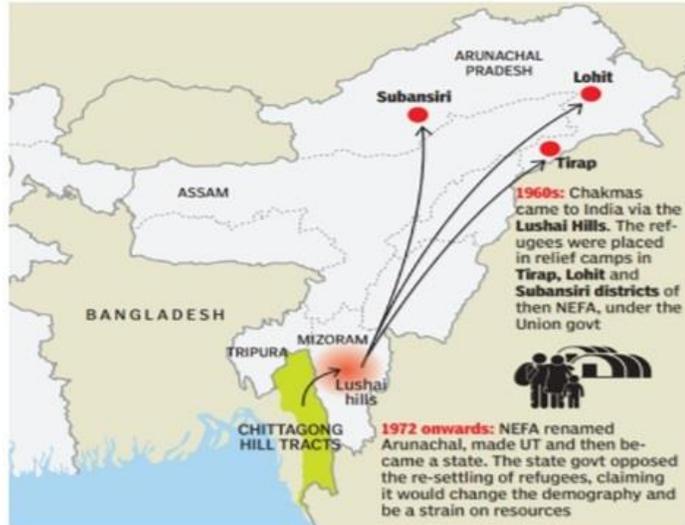
Topic: Culture

In News: The National Human Rights Commission (NHRC) has requested the union government and the government of Arunachal Pradesh to “take appropriate action on Chakma and Hajong citizenship, as directed by the Supreme Court.

More on the Topic:

- The Chakmas and Hajongs **had lived in the Chittagong Hill Tracts of East Pakistan**, which is now Bangladesh. They fled their homes when their land was submerged by the Kaptai dam in the 1960s.
- The Chakmas, who are Buddhist, and the Hajongs, who are Hindus, **had faced religious persecution in Bangladesh.**
- After they migrated to India, the government settled a majority of them in Arunachal Pradesh.
- In 2015, the Supreme Court had asked the Centre to grant citizenship to the Chakma and Hajong refugees.
- But several organisations and civil society groups in Arunachal Pradesh were against it, saying the decision would change the demography of the state and affect the minority status of the tribal population.

Source: Indian Express



3. Formalisation of Economy

Topic: Reports and Indices

In News: According to ICICI Securities the pay of private sector employees is growing at par with the public sector and is expected to outpace them. It is a signs of formalisation of the economy

More on the Topic:

- According to International Labour Organization (ILO) the informal sector consists of all private unincorporated enterprises owned by individuals or households that are not separate legal entities and for whom no complete accounts are available.
- Informal employment includes not just persons working in informal enterprises, but also includes certain types of employment outside informal enterprises. For instance, persons working in formal enterprises who are not covered by social protection at their work are categorized as informal workers.
- Domestic workers, casual day laborers, and family workers are not covered by social security provided by their employers.

Increasing size of formal economy~	
Number of jobs formalised since FY18 (as per EPFO records)	~36.6 lakh or ~0.66 lakh crore
Unorganized workers registered on E-shram portal (as on 30 Oct)	5.7 crore or ~Rs 6.8 lakh crore
Formalisation of cash usage since pandemic	~Rs 1.2 lakh crore
Amount of Agriculture credit formalised since FY18	~Rs 4.6 lakh crore
Increase in digital payments towards Petrol + Diesel on Petrol Pumps during last three years	~Rs 1.0 lakh crore

Process of Formalisation:

- Formalization processes result in **a move towards greater formality of firms and/or jobs.**
- Greater formalisation will see **a shift from low-paying, labour-intensive jobs in informal sector to more productive, formal-sector jobs.** This could lead to disruption in short term.
- Shifts from the unorganised to the organised sector occur at two levels — **one, the formalisation of the firm, and two, the formalisation of the informal labour force.**
- While in the case of the former, enterprises are essentially shifting from the informal to the formal part of the economy, the latter could be a consequence of both, formalisation of the firm, and/or formalisation of the informal labour force of an existing formal enterprise.
- Advantages of Formalisation:
 - Formalisation leads to **more tax revenues with an increase in tax-to-GDP ratio.**
 - Formalisation provides **a level-playing field for tax-compliant entities,** expanding the tax base so that the burden falls more equitably on all the players rather than a select few.
 - **Formalisation will lead to Formal Credit Facility.** It will provide long term loans, Cheaper loans etc.
- With formalisation of economy more persons and entities will come under tax net. This will help increase government tax revenue. This revenue will be **invested in social sector** like education, skill development etc. It will cause **ripple effect in development of the country.**

- There will be **efficient regulations** like environment laws, labour laws etc.
- **Less black money will be generated** and their flow in to illegal activities would be checked.

Source: Hindu

4. Pradhan Mantri Ujjwala Yojana

Topic: Government Schemes

In News: Indian Government will give a subsidy of ₹ 200 per gas cylinder (upto 12 cylinders) to over 9 crore beneficiaries of Pradhan Mantri Ujjwala Yojana.

More on the Topic:

- Pradhan Mantri Ujjwala Yojana is a scheme of the Ministry of Petroleum & Natural Gas for providing LPG connections to women from Below Poverty Line (BPL) households.
- The scheme was launched on 1st May 2016.
- All PMUY beneficiaries will be provided with **the first LPG refill and Stove (hotplate) both free of cost** along with their deposit free connection by the Oil Marketing Companies (OMCs).



Ujjwala 2.0:

- The second phase of the Pradhan Mantri Ujjwala Yojana or Ujjwala cooking gas scheme was launched in August 2021.
- Ujjwala 2.0 now **aims to cover 10 million more beneficiaries in the second phase** of the scheme. Union Budget 2021-22, has decided to extend Pradhan Mantri Ujjwala Yojana to provide additional 1 Crore LPG connections, with a **special focus on migrant families**.
- Under Ujjwala 2.0, migrant workers can get a free cooking gas connection based on a self-declaration without any need for documents like address proof.

Significance of the Scheme:

- According to WHO estimates, **about 5 lakh deaths in India alone due to unclean cooking fuels**.
- Most of these premature deaths were due to non-communicable diseases such as heart disease, stroke, chronic obstructive pulmonary disease and lung cancer.
- Indoor air pollution is also responsible for a significant number of acute respiratory illnesses in young children.

- According to experts, **having an open fire in the kitchen is like burning 400 cigarettes an hour.**
- Providing LPG connections to BPL households will **ensure universal coverage of cooking gas in the country.**
- **This measure will empower women and protect their health.** It will reduce drudgery and the time spent on cooking. It will also provide **employment for rural youth** in the supply chain of cooking gas.

Source: Business Standard

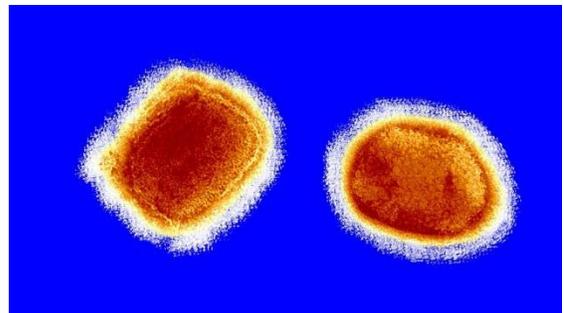
5. Monkey Pox Virus

Topic: Environment and Ecology

In News: WHO has warned that monkey pox outbreaks will rise in the coming months.

More on the Topic:

- Monkeypox is a viral infection that is more common in West and Central Africa. The first case of monkeypox in humans was recorded in 1970 in the **Democratic Republic of Congo** during a period of intensified effort to eliminate smallpox.
- Monkeypox belongs to the same family of viruses as smallpox. But Smallpox had a higher fatality rate than monkeypox.
- Smallpox **was declared eradicated worldwide in 1980.**
- There's a recent spike in cases as over 100 infections were confirmed (or suspected) in Europe and some other countries.
- The Monkeypox illness usually causes symptoms of fever, muscle aches and swollen lymph nodes. Chickenpox-like rashes are also found on the hands and face.
- Transmission usually happens due to **close contact with infected animals** such as rodents and monkeys and is **limited between people.**



Treatment:

- There is **currently no specific treatment** recommended for monkeypox.
- **Vaccination against smallpox was about 85% effective** in preventing monkeypox.
- Thus, prior childhood smallpox vaccination may result in a milder disease course.

Source: Business Standard

6. Ramban tunnel

Topic: Infrastructure Development



In News: Centre has constituted 3-member team to probe incident of Ramban tunnel collapse.

More on the Topic:

- The tunnel is located on the Jammu-Srinagar National Highway in Ramban district.
- The area is also prone to frequent landslides.

Source: Hindu
