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Agarwood

India has successfully prevented agarwood from being included in CITES's Review of Significant Trade (RST).

- It is a tree species from the ***Thymelaeaceae family*** which is a dark, fragrant, resinous wood that comes from the heartwood of the Aquilaria tree.



- **Scientific name-** Aquilaria malaccensis
- **Habitat-** This species typically grows in ***tropical rainforests*** at elevations up to 1000 meters.
- **Distribution-** Aquilaria malaccensis is primarily found in Southeast Asia, including countries like India, Bangladesh, Bhutan, Indonesia, Malaysia, Myanmar, the Philippines, and Thailand.
- **Appearance-** The tree can grow up to 40 meters tall and has a diameter of up to 60 centimeters.
- Its leaves are oblong and leathery, and it produces small, fragrant flowers.
- **Applications-** It is renowned for producing a dark, fragrant resin known as agarwood or "oud," highly valued for its use in perfumes, incense, and traditional medicines.
- Agarwood is utilized in numerous applications such as in the aroma industry, in medicine preparations, preparations of air fresheners and purifiers.
- The essential oil extracted from agarwood has anti-inflammatory, anti-rheumatic, analgesic and antioxidant properties.
- **Conservation Status**
 - IUCN - ***Critically Endangered***.
 - Convention on International Trade in Endangered Species of Wild Fauna and

Flora (CITES) - Appendix II.

CITES

- The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) is an international agreement to which States and regional economic integration organizations adhere voluntarily.
- **Establishment-** CITES was established in 1973 and came into force on July 1, 1975.
- **Purpose-** The main aim of CITES is to ensure that international trade in specimens of wild animals and plants does not threaten their survival.
- **Membership-** As of now, CITES has 184 member countries, also known as Parties
- **Aim-** Its aim is to ensure that international trade in specimens of wild animals and plants does not threaten the survival of the species.
- It plays a critical role in the conservation of biodiversity by regulating international trade in wildlife, ensuring that such trade is legal, sustainable, and traceable.
- **Secretariat-** The CITES Secretariat is administered by UNEP and is in Geneva, Switzerland.

Appendices

- **Appendix I-** Includes species threatened with extinction. Trade in these species is only permitted in exceptional circumstances.
- **Appendix II-** Includes species not necessarily threatened with extinction but may become so unless trade is closely controlled.
- **Appendix III-** Includes species protected in at least one country, which has asked other CITES Parties for assistance in controlling the trade.

Reference

1. [The Hindu | Agarwood](#)
2. [Cites | What is CITES](#)

National Initiative for Proficiency in Reading with Understanding and Numeracy (NIPUN)

In several Indian states, mothers of young children have education beyond Grade 10, making them valuable assets for NIPUN.

- It is a national mission to ensure that all children in India have ***foundational literacy and numeracy skills*** by the end of grade 3 by 2026-27.
- It is one of the components of the NEP 2020.

NEP 2020 aims to increase the Gross Enrolment Ratio in higher education including vocational education from 26.3% (2018) to 50% by 2035.

- **Launched in-** 2021.
- **Nodal agency-** The Department of School Education & Literacy, Ministry of

Education.

- **Objectives-** Ensure all children can read with comprehension and have basic numeracy skills by the ***end of Grade 3.***
- NIPUN Bharat focuses on holistic development, goes beyond traditional classroom learning.
- It recognizes that students are multi-dimensional and addresses their cognitive, emotional, physical, and social growth.
- It focuses on different domains of development, such as physical and motor development, socio-emotional development, literacy and numeracy development, cognitive development, and life skills.
- These domains are interrelated and interdependent and will be reflected in a Holistic Progress Card.

State-wise mother education data

- In Uttarakhand, Maharashtra, Punjab, and Haryana, 30-40% of mothers of young children have schooling beyond Grade 10.
- In Tamil Nadu, this figure is close to 43%.
- In Himachal Pradesh, it is over 54%.
- **Kerala** tops the list with nearly 72% of these mothers having high school education.

References

[India Express | NIPUN](#)

Tinzaparin

Recently, researchers discovered that tinzaparin significantly reduces damage to human cells caused by spitting cobra venom.

- **Tinzaparin-** Tinzaparin is a prescription drug used to treat deep vein thrombosis (DVT) and pulmonary embolism (PE).
- It is a Low Molecular Weight Heparin (LMWH) and a drug commonly used to ***prevent blood clots.***
- Tinzaparin is a potent inhibitor of activated coagulation factors, especially Factors Xa and IIa (thrombin).
- It can also inhibit angiogenesis by binding to heparin-binding sites on endothelial cells, and by increasing the release of tissue factor pathway inhibitor (TFPI).
- It can also be used in conjunction with warfarin for the treatment of acute symptomatic Deep Venous Thrombosis (DVT) with or without PE.
- It significantly reduces damage to cells due to spitting cobra venom.
- It could protect these cells even when it was introduced an hour after the cells had been exposed to the venom.
- **Highlights of the recent study -** The researchers hypothesized that if the venom's toxicity depended on the biological pathway that synthesised ***heparan sulphate,*** artificially stopping this pathway could ameliorate the venom's toxic effects.

- Tinzaparin could protect these cells even when it was introduced an hour after the cells had been exposed to the venom.
- Tinzaparin worked by blocking the interaction between the venom and its receptor in the cell by binding to venom molecules.

Naja pallida



- It is also known as the ***red spitting cobra***.
- It is orange and red in colour.
- It is ***native to Tanzania***.
- It is formidable (Humans fear due to its great size).
- It has a 1.2-metre-long foe.
- When threatened, the cobra raises its hood, hisses, and if necessary, sprays venom from its mouth at the predator's face before lunging to bite and deliver more venom.
- The venom attacks cells in the body and damages the nervous system.

Encounters with venomous snakes kill about 1.4 lakh people every year, especially in the tropical regions of Africa and Asia.

References

1. [The Hindu | Tinzaparin](#)
2. [WebMD | Tinzaparin \(Porcine\)](#)

Integrated Disease Surveillance Program (IDSP)

The government recently released a report that 1,862 disease outbreaks were reported to the Integrated Disease Surveillance Programme, with Kerala reporting the highest number last year.

- **IDSP**- The Integrated Disease Surveillance Programme (IDSP) is a decentralized, state-based program in India that aims to detect and respond to disease outbreaks early.
- It is now part of the **National Health Mission**.
- **Launch**- It was launched in **2004** with assistance from the **World Bank**.
- **Ministry** - Ministry of Health and Family Welfare.
- **Mandate**- It is mandated with surveillance and response to outbreak prone communicable diseases.
- **Functions**
 - **Early warning** - Detect early warning signs of disease outbreaks so that effective responses can be initiated quickly
 - **Data collection** - Provide data to monitor the progress of disease control programs and allocate health resources more effectively
 - **Information sharing** - Facilitate the sharing of relevant information with health administration, communities, and other stakeholders
 - **Disease trends** - Detect disease trends over time and evaluate control strategies
 - **Training** - Train health and social workers to help implement the program.
- **Surveillance units** - The IDSP has established
 - Central Surveillance Units (CSUs) in Delhi,
 - State Surveillance Units (SSUs) in state and union territory headquarters, and
 - District Surveillance Units (DSUs) in all districts.
- It has also established a referral lab network in 9 states that links medical college labs and other major centers with adjoining districts to provide diagnostic services for epidemic-prone diseases.
- **Data Management** - Under IDSP data is collected on epidemic-prone diseases on weekly basis (Monday-Sunday).
- The information is collected on 3 specified reporting formats, namely
 - "S" (suspected cases),
 - "P" (presumptive cases) and
 - "L" (laboratory confirmed cases).
- It is filled by Health Workers, Clinicians and Laboratory staff respectively.
- The weekly data gives information on the disease trends and seasonality of diseases.
- **IDSP Portal** - It is a one stop portal which has facilities for data entry, view reports, outbreak reporting, data analysis, training modules and resources related to disease surveillance.
- About 90% of Districts are now reporting disease surveillance data in the portal.

References

1. [Economic Times | Integrated Disease Surveillance Programme](#)
2. [IDSP | About us](#)

Polyatomic ion

Recently, researchers have discovered a new method to utilize carbon dioxide (CO₂) in ambient conditions, unlike the previously harsh thermal conditions.

- **Conversion of Amines to N-Formamides Using CO₂**- The transformation of amines to N-formamides is essential for synthesizing heterocycles, pharmaceuticals, and bio-active compounds.
- **Polyoxometalates (POMs)**- These are synthesized nanomaterials composed of three or more transition metals linked by shared oxygen atoms.
- These compounds are promising candidates for improving the photocatalytic conversion of CO₂ due to their unique properties:
 - POMs provide high-efficiency catalytic sites that enhance reaction rates.
 - They exhibit extraordinary thermal stability, making them suitable for various reactions.
 - POMs have excellent redox abilities and properties like semiconductors, crucial for photocatalysis.
 - The light absorption properties of POMs can be finely tuned by incorporating different transition metals, enhancing their photocatalytic efficiency.
- **Recent Advancements** - They have explored 2 novel Keggin POM-based solids.
- Among these, PS-97 was found to be highly efficient for the photocatalytic N-formylation of various substituted anilines and morpholine with CO₂ using phenyl silane as a reducing agent.
- Notably, this reaction operates under ambient conditions.

Reference

[PIB | Polyatomic ion](#)

