



## Pantoea Tagorei

[Source: TH](#)

### Why in News?

Researchers at **Visva-Bharati University** have discovered a **new species of bacteria** that could transform agricultural practices. They named it ***Pantoea Tagorei*** after the famous Nobel laureate [Rabindranath Tagore](#).

### What are the Key Facts About Pantoea Tagorei?

- Pantoea Tagorei bacteria belong to the **genus Pantoea**, which is part of the **Enterobacteriaceae family**.
  - Pantoea bacteria can be isolated from various environments including Water, Soil, Humans, Animals, and Plants.
- It is described as a **plant growth-promoting bacteria**, Pantoea Tagorei has demonstrated remarkable capabilities in **boosting the cultivation of crops** like paddy, pea, and chilli.
- The bacteria efficiently extracts potassium from the soil, enhancing plant growth. Additionally, it facilitates the **solubilization of both potassium and phosphorus, nitrogen fixation**, and enhances overall nutrient availability for plants.
- The bacteria efficiently extracts potassium from the soil, **enhancing plant growth**.
- Positive effects on plant growth suggest a potential boost in crop yield. It can aid in addressing critical issues related to [food security](#).
- Pantoea Tagorei enhances soil nutrient availability, **reducing the need for commercial fertilizers**.
  - Minimizing reliance on fertilizers, the bacteria offers a **cost-effective approach to sustainable agriculture** and it can be a potential [Biofertilizer](#).

### Biofertilizer

- Biofertilizer can be defined as **biological products containing living microorganisms** that, when applied to seed, plant surfaces, or soil, **promote growth by several mechanisms** such as increasing the supply of nutrients, increasing root biomass or root area and increasing nutrient uptake capacity of the plant
  - They are made up of living organisms like **bacteria, blue-green algae, and mycorrhizal fungi**.
- **Example:**
  - **Bacterial Biofertilizers:** e.g. Rhizobium, Azospirillum, Azotobacter, Phosphobacteria.
  - **Fungal Biofertilizers:** e.g. Mycorrhiza.
  - **Algal Biofertilizers:** e.g. Blue Green Algae (BGA) and Azolla.

//



"You can't cross the sea merely by standing and staring at the sea."

## Rabindranath Tagore (1861-1941)

- First Indian and first non-European to achieve the **Nobel Prize in Literature in 1913** for his exceptional work, *Gitanjali*. Responsible for modernising **Bengali prose and poetry**.
- Gave the **national anthems of India and Bangladesh**: the *Jana Gana Mana* and the *Amar Shonar Bangla*.
- "*Jana Gana Mana*" was **translated by him from Bengali to English in February 1919** at Madanapalle in the District of Chittoor (Andhra Pradesh).
- In 1915, he was **awarded the knighthood** by British King George V which he later **renounced in 1919**, to protest against the Jallianwalla Bagh massacre.
- He is said to have given Mahatma Gandhi the title of Mahatma.
- Established the **Vishwa-Bharati University** in 1921.
- Spoke at the **World Parliament for Religions** in the years 1929 and 1937.



## UPSC Civil Services Examination, Previous Year Questions

### Prelims

**Q. With reference to Madanapalle of Andhra Pradesh, which one of the following statements is correct?(2021)**

- (a) Pingali Venkayya designed the tricolour Indian National Flag here.
- (b) Pattabhi Sitaramaiah led the Quit India Movement of Andhra region from here.
- (c) Rabindranath Tagore translated the National Anthem from Bengali to English here.
- (d) Madame Blavatsky and Colonel Olcott set up headquarters of Theosophical Society first here.

**Ans: (c)**

- The original song 'Jana Gana Mana' (National Anthem) was written in Bengali, but in a Sanskritized dialect known as Sadhu Bhasha.
- The idea of translating the song from Bengali to English came to Rabindranath Tagore while he was visiting the Besant Theosophical College on the invitation of Irish poet James H. Cousins. He penned down the English translation during his stay at Madanapalle, a small town in the Chittoor district of Andhra Pradesh.
- *Jana Gana Mana* was officially proclaimed as India's National Anthem by the Constituent Assembly of India on 24th January 24, 1950.
- **Therefore, option (c) is the correct answer.**

**Q. Which feature of some species of blue-green algae helps promote them as bio-fertilizers? (2010)**

- (a) They convert atmospheric methane into ammonia which the crop plants can absorb readily
- (b) They induce the crop plants to produce the enzymes which help convert atmospheric nitrogen to nitrates
- (c) They have the mechanism to convert atmospheric nitrogen into a form that the crop plants can absorb readily
- (d) They induce the roots of the crop plants to absorb the soil nitrates in larger quantities

**Ans: (c)**

## Exp:

- Cyanobacteria or blue-green algae is an example of a bio-fertilizer, a type of organic fertilizer which contains living organisms and harnesses naturally occurring inputs like solar energy, nitrogen, and water to ensure soil fertility and plant growth
- Blue green algae is photoautotrophic microbes. They have specialised cells which utilises solar energy to reduce atmospheric N<sub>2</sub> into Ammonia. Ammonia is used by plants for growth and increased production.
- Therefore, option (c) is the correct answer.

## MGNREGS Scheme

**For Prelims:** [Mahatma Gandhi National Rural Employment Guarantee Scheme \(MGNREGS\)](#), [Covid-19](#), Periodic Labour Force Survey (PLFS).

**For Mains:** MGNREGS Scheme, Government Policies & Interventions, Issues Relating to Development.

[Source: IE](#)

### Why in News?

The [Mahatma Gandhi National Rural Employment Guarantee Scheme \(MGNREGS\)](#) has witnessed a **significant surge in women's participation**, marking a historic high in the **current financial year of 2023-24**.

### What are the Women Participation Trends in MGNREGA?

- **Women Participation Trends:**
  - There has been a **gradual increase in women's participation over the last decade**, with percentages rising from 53.19% during the [Covid-19](#) outbreak in 2020-21 to the current 59.25%.
  - Southern states like Kerala, Tamil Nadu, Puducherry, and Goa showcase **notably high rates of women's involvement**, surpassing 70%, while northern states like Uttar Pradesh and Madhya Pradesh lag **behind at around 40% or below**.
  - Despite historical disparities, some states like Uttar Pradesh, Madhya Pradesh, and Lakshadweep show **recent improvements in women's participation rates** in the ongoing financial year, attributed to incremental percentages.
- **Rural Labor Force Trends:**
  - Beyond MGNREGS, the [Periodic Labour Force Survey \(PLFS\)](#) by the Ministry of Statistics and Programme Implementation demonstrates a **substantial surge in female Labour Force Participation Rate (LFPR) in rural areas**.
  - Notable figures show an **increase from 18.2% in 2017-18 to 30.5% in 2022-23 in rural female LFPR**, along with a decline in female unemployment rates from 3.8% to 1.8% during the same period.

### What is MGNREGA Scheme?

- **About:**
  - MGNREGA is one of the largest work guarantee programmes in the world launched in 2005

by the [Ministry of Rural development](#).

- It provides a legal guarantee for one hundred days of employment in every financial year to adult members of any rural household willing to do public work-related unskilled manual work at the statutory minimum wage.
- Active workers: 14.32 Crore (2023-24)
- **Major Features:**
  - The cornerstone of **MGNREGA's design is its legal guarantee**, ensuring that any rural adult can request work and must receive it within 15 days.
    - If this commitment is not met, an "unemployment allowance" must be provided.
  - It requires that priority shall be given to women in such a way that at least one-third of the beneficiaries shall be women who have registered and requested for work.
  - Section 17 of the MGNREGA has mandated Social audit of all Works executed under the MGNREGA.
- **Implementation Agency:**
  - The Ministry of Rural Development (MRD), Govt of India is monitoring the entire implementation of this scheme in association with state governments.
- **Objective:**
  - This act was introduced with an aim of improving the [Purchasing Power](#) of the rural people, primarily semi or unskilled work to people living below poverty line in rural India.
  - It attempts to bridge the gap between the rich and poor in the country.
- **Achievements of 2022-23:**
  - 11.37 crore households availed employment.
  - 289.24 crore person-days employment has been generated out of which:
    - 56.19% were for women
    - 19.75% were for [Scheduled Castes \(SCs\)](#)
    - **17.47% were for [Scheduled Tribes \(STs\)](#).**

## What are the Challenges with the Implementation of the Scheme?

- **Delay and Insufficiency in Funds Dispersal:**
  - Most states have failed to disburse wages within 15 days as mandated by MGNREGA. In addition, workers are not compensated for a delay in payment of wages.
    - This has turned the scheme into a supply-based programme and subsequently, workers had begun to lose interest in working under it.
  - There is ample evidence by now, including an admission by the Ministry of Finance, that delays in wage payments are a consequence of insufficient funds.
- **Caste Based Segregation:**
  - There were significant variations in delays by caste. While 46% of payments to [SC \(Scheduled Caste\) workers](#) and 37% for [ST \(Scheduled Tribes\) workers](#) were completed in the mandated seven-day period, it was a dismal 26% for non-SC/ST workers.
  - The negative impact of caste-based segregation was felt acutely in poorer States such as Madhya Pradesh, Jharkhand, Odisha and West Bengal.
- **Ineffective Role of PRI:**
  - With very little autonomy, [Panchayati Raj Institution \(PRI\)](#) are not able to implement this act in an effective and efficient manner.
- **Large Number of Incomplete works:**
  - There has been a delay in the completion of works under MGNREGA and inspection of projects has been irregular. Also, there is an issue of quality of work and asset creation under MGNREGA.
- **Fabrication of Job cards:**
  - There are several issues related to the existence of fake job cards, the inclusion of fictitious names, missing entries and delays in making entries in job cards.

## What are the Initiatives under MGNREGS?

- **Amrit Sarovar:** Construction/renovation of at least 75 Amrit Sarovars (ponds) in each district of the country; they will help in increasing the availability of water, both on surface and under-ground.
- **Jaldoot App:** It was launched in Sept 2022 for measuring the water level in a Gram Panchayat

through 2-3 selected open wells twice a year.

- **Ombudsperson for MGNREGS:** Ombudsperson App was launched in Feb 2022 for smooth reporting and categorization of grievances received from various sources related to the implementation of the MGNREGS.

## Way Forward

- There is a need to ensure **consistent fund flow to states and implementing agencies** while leveraging digital tools for transparent, timely wage payments.
- **Focus on exclusion errors**, identifying pockets where marginalized SC and ST families are missing out on MGNREGA benefits.
- **Empower State and Central Employment Guarantee Councils** for informed decisions, incorporating public participation via assemblies, civil society, and worker unions.

## UPSC Civil Services Examination, Previous Year Question (PYQ)

**Q. Among the following who are eligible to benefit from the “Mahatma Gandhi National Rural Employment Guarantee Act”? (2011)**

- (a) Adult members of only the scheduled caste and scheduled tribe households
- (b) Adult members of below poverty line (BPL) households
- (c) Adult members of households of all backward communities
- (d) Adult members of any household

**Ans: (d)**

**Exp:**

- Mahatma Gandhi National Rural Employment Guarantee (MGNREGA), which is the largest work guarantee programme in the world, was enacted in 2005 with the primary objective of guaranteeing 100 days of wage employment per year to every household whose adult members volunteer to do unskilled manual work.
- It aims at addressing the causes of chronic poverty through the ‘works’ (projects) that are undertaken, and thus ensuring sustainable development. There is also an emphasis on strengthening the process of decentralisation by giving a significant role to Panchayati Raj Institutions (PRIs) in planning and implementing these works.
- Therefore, option D is the correct answer.

---

## Field Pansy's Evolution

**Source: DTE**

### Why in News?

Recently, scientists have uncovered evidence of **rapid evolution in a flowering plant** found in Paris, France. The plant, identified as **Field Pansy (*Viola arvensis*)** is showing signs of **self-pollination**, a behaviour contradicting the conventional reliance on external pollinators.

### What are the Key Facts about Field Pansy?

- The **Field Pansy (*Viola arvensis*)**, is a common wildflower that can be found in many parts of **Europe, Asia, and North America**.
- It belongs to the group of plants called **angiosperms**, which produce seeds inside a protective structure called a fruit.
  - Angiosperms rely on insects and other animals to pollinate them and help them reproduce.



## Pollination

- **Pollination** is the process by which **pollen grains**, which contain the male **reproductive cells of plants**, are transferred from one flower to another, usually by insects that visit the flowers for nectar.
  - Nectar is a **sugary liquid that plants produce to attract pollinators**.
- Pollination is essential for the genetic diversity and survival of many plant species, and it has evolved over 100 million years of coevolution between plants and animals.
- Pollination is carried through pollinators (vectors that move pollen within the flower and from flower to flower).
- However, some plants can also **pollinate themselves**, without the help of any external agent. This is called **self-pollination**, and it is a way for plants to ensure their reproduction in case there are no suitable pollinators around.
  - Self-pollination can also save energy and resources for plants, as they do not need to produce as much nectar and flowers to attract pollinators.

## What are the Key Highlights of the Study?

- **Rapid Evolution:**
  - The study marks the **first evidence of rapid evolution in plants**, with the field pansy, showing significant changes in nectar production and flower size over a relatively short period.
    - The study found that flowers of the wild **pansy variety produced 20% less nectar and were 10% smaller**.
- **Self-Pollination:**

- The field pansy has evolved to self-pollinate, reducing its **reliance on pollinators** due to a decreasing availability of insects.
  - This behaviour is contrary to the conventional reliance on insects for pollination in **angiosperms**, marking a significant departure from **established plant reproductive strategies**.
- **Convergent Evolution:**
  - The study reveals convergent evolution across populations, with a reduction in rewarding traits and attractiveness to pollinators.
    - This convergence suggests a consistent evolutionary response to environmental pressures across different plant populations.
- **Resurrection Ecology Method:**
  - The researchers used the "resurrection ecology" method, planting seeds from the 1990s and 2000s against their contemporary descendants from 2021 to observe changes over time.
    - This method allowed them to track and compare changes in plant traits and behaviour across different periods.
- **Environmental Impact:**
  - The move towards selfing **may benefit plants in the short term** but poses a threat to their long-term survival, especially in the **face of climate change and other environmental changes**.
    - Self-pollination reduces the genetic diversity and adaptability of the plant, making it more susceptible to diseases and environmental stresses.
- **Pollinator Decline:**
  - The study warns of a potential feedback loop that could lead to further **declines in pollinators as a result of plant trait evolution**, impacting the plant-pollinator network.
- **Urgent Analysis:**
  - The study emphasizes the need to analyze whether these results are symptomatic of broader behavioral changes in the relationship between angiosperms and their pollinators.
    - Researchers call for a thorough understanding of the possibility of reversing the process and breaking the eco-evolutionary-positive feedback loop to preserve plant-pollinator networks.

---

## INS Imphal

**For Prelims:** INS Imphal, Indian Navy, [INS Surat](#), [BrahMos cruise missile](#), [Project 15B](#).

**For Mains:** Defence technologies, Maritime security

**Source:** [HT](#)

## Why in News?

Recently, INS (Indian Naval Ship) Imphal (Pennant D68) has been **commissioned into the [Indian Navy](#)**.



## What is INS Imphal?

### ▪ About:

- INS Imphal is the third of the four '[Project 15 Bravo Vishakhapatnam class](#)' **guided missile destroyers**.
  - The **fourth will be named [INS Surat](#)**.
- INS Imphal is among "the **most technologically advanced guided missile destroyers** in the world.
- It was launched and "christened" as 'Imphal' on 20th April, 2019.

### ▪ Features:

- The ship measures 163m in length, and 17m in breadth with a displacement of 7,400 tonnes and is amongst the most potent warships built in India.
- It is propelled by **four powerful Gas Turbines**, in a Combined Gas and Gas configuration, and is capable of speeds in excess of 30 knots.
- It is capable of launching the [BrahMos cruise missile](#), the world's fastest supersonic cruise missile.
- The ship is also **equipped to fight under Nuclear, Biological and Chemical warfare** conditions.
- It is armed with **sophisticated state-of-the-art weapons and sensors**, including Surface-to-Surface Missiles, Surface-to-Air Missiles, Anti-Submarine Warfare (ASW) rocket launchers and Torpedo launchers, ASW helicopters, radars, sonar and **Electronic Warfare systems**.

### ▪ Significance:

- The ship reinforces the principle of "Jalmev Yasya, Balmev Tasya," signifying that **controlling the seas grants immense power**. In the [Indo-Pacific region](#), where multiple powers vie for influence, INS Imphal contributes to India's efforts to establish itself as a significant maritime player.
- India heavily relies on **sea routes for international trade** due to geographical barriers like the Himalayas and challenges from neighboring countries.
  - INS Imphal aids in **securing these crucial sea lanes**, ensuring safe passage for trade vessels and thereby safeguarding India's economic interests.

## What is Project 15B?

- India's **indigenous Destroyer construction programme** commenced in the late 1990s with the **three Delhi class (P-15 class) warships** and this was followed by **three Kolkata class (P-15A) destroyers** commissioned a decade later.
  - Presently, under the P-15B (Visakhapatnam Class), a **total of four warships** are planned (**Visakhapatnam, Mormugao, Imphal, Surat**), following the success and technological



advancements achieved in [Project 15A](#).

- Project 15B aimed to build the advanced variants of Kolkata class destroyers as **Visakhapatnam class destroyers**.
  - The class is identified by the name of **its lead ship, hence known as the Visakhapatnam class**.
- Under Project 15B, a contract was signed in January 2011 with the **objective to build on the capabilities of the earlier ships while incorporating technological advancements** and improvements in weaponry, electronics, and other systems.
- The lead ship of **Project 15B is [INS Visakhapatnam \(Pennant No D66\)](#)**, which was commissioned in November 2021.
  - [INS Mormugao \(D67\)](#) is the second ship commissioned in December 2022, and [INS Surat](#) (to be designated D69 upon commissioning) was launched in May 2023.
- These ships are designed by the **Indian Navy's Warship Design Bureau** and constructed by Mazagon Dock Shipbuilders Limited (MDSL) in Mumbai.

---

PDF Reference URL: <https://www.drishtiias.com/current-affairs-news-analysis-editorials/news-analysis/28-12-2023/print>

