

MIGRATION MIRACLE

As various butterfly species flap their wings before monsoon sets in the city, leaving B'lureans in awe, experts reveal the reason behind their traversal

ANUBHAB ROY

THE sheer and utter incomprehensibility of life and its scope never ceases to confound us. Amongst the countless species in our tiny blue planet, the life cycle of a butterfly is a particularly curious case: how is one to explain that a caterpillar which has grown from a minute pupa, would grow further to the point of spurting out wings? Of late, the city has been witnessing their visual cacophony, outside balconies, or office windows, as they migrate. Hordes of various species were seen in areas like JP Nagar, Koramangala, and Indiranagar.

Monsoon Migration

As Shonali Chinniah, director and owner at Curiouscity Science Centre, explains, "Butterflies, particularly Dark Blue Tiger, Blue Tiger, Common Crow, and Double Branded Crow migrate seasonally in response to the monsoon cycle. Studies highlight that these butterflies travel from the Western Ghats to the Eastern Ghats, between May and June, to avoid the torrential South-West monsoon that hit their larval habitats in the Western Ghats. Their migration ensures survival by allowing them to breed alternately in the plains and in the hills. During October through November they migrate back from the Eastern to the Western Ghats." Lepidopterist Rohit Girotra adds that 'the migration depends on the intensity and duration of the monsoon'.

Why Bengaluru?

The predominance of this phenomenon in Bengaluru has two reasons behind it: its geography falling on the East to West migration corridor, and the city's existing butterfly population. "Bengaluru being located right about the centre of peninsular India, happens to be on the migratory path. Around 120 species have been documented from the city and this includes uncommon ones such as the Lilac Silverline, which was reported from the Hesaraghatta grassland after years. The butterfly diversity in the city has also been shaped by the planting of greenery and maintaining parks and gardens," says Seshadri KS, a faculty member at Ashoka Trust for Research in Ecology and the Environment, Srirampura. Anil Chinniah, also an owner and director at Curiouscity, adds, "The city's urban greenery provides temporary resting spots, and the presence of milkweed plants supports their survival. Additionally, the climate during premonsoon and post-monsoon periods offers ideal conditions."

Pressing Threats

The effects of urbanisation have taken a hit in Bengaluru over the years, without much notice. "The main causes include loss of host plants due to urbanisation and habitat fragmentation. Each butterfly species has a limited number of host plants it can lay its eggs. Butterflies like the Lemon Emigrant struggle as their food sources are disappearing due to landscaping," rues Anil.

At this juncture, conservation is crucial. Curiouscity, JP Nagar and Butterfly Park, Bannerghatta are great sites inviting folks to marvel at the fascinating creatures, with the former hosting guided walks till June 15 from 10am to 3pm (tickets are priced at ₹100 per adult & ₹50 per child). "All one has to do to watch butterflies is to observe them without trying to catch them. Binoculars may be handy. There are several field guides for butterflies which can be used to learn to identify them," Seshadri states.

"The butterfly diversity in the city has been shaped by the planting of greenery and maintaining parks and gardens"
Seshadri KS, faculty member, Ashoka Trust for Research in Ecology and the Environment

Lemon Emigrant
Common Cerulean
Red Pierrot
Dark Blue Tiger
Lemon Emigrant

20-05-2025
Ind. Exp. Spl. Pg.01

Less water, more rice: Why gene editing may be a game changer

With drought-tolerant, climate-resilient rice just two years away from Indian farms, gene editing could change how the country grows its staple. But questions around safety, regulation, and adoption still remain

Vishwa.Mohan@timesofindia.com

Two varieties of rice — 'DRR Dhan 100 (Kamala)' and 'Pusa DST Rice 1', developed by ICAR and its institutes — are the world's first genome-edited varieties, and promise to be a game-changer in sustainable agriculture.

Scientists say these two varieties, when cultivated on 5 million hectares, can produce 4.5 million tonnes of additional paddy and save a total of 7,500 million cubic metres of irrigation water. And, apart from a yield advantage of 20%-30%, these climate-resilient varieties could reduce methane emissions by 20%, the scientists claim.

This could go a long way towards solving one of the biggest problems in cultivating rice, a staple for about 800 million Indians: its resource-heaviness. Each kilo of traditional rice requires, on average, 2,500 litres of water, and its cultivation consumes more than 50% of the irrigation water available to the country's agriculture sector.

What Is Genome Editing?

Genome editing enables scientists to make targeted changes in the native genes of living organisms, creating new and desirable traits without introducing foreign DNA. It involves adding, removing or modifying DNA sequences at specific locations in the genome. This technology has applications in various fields, including medicine, agriculture and basic research.

Why Do We Need Genome-Edited Rice?

Because rice is such a resource-guzzler, ICAR's National Rice Research Institute (NRRI), which scientifically calculated the amount of water needed to produce 1kg of rice, noted that a major impact of climate change would be visible in the form of water stress, and that rice cultivation was likely to be most affected.

"In the next two decades, there's a need to produce around 25% more from 10%-15% reduced share of water," said ICAR-NRRI in a research paper on managing water for rice-production systems.

Genome editing allows the development of drought-tolerant rice varieties that have a low water requirement.

Better Yield, Climate-Resistant

ICAR (Indian Council of Agricultural Research) had launched a genome-editing research project in rice in 2018 and selected two widely cultivated mega rice varieties — 'Samba Mahsuri (BPTS204)' and 'MTU1010 (Cottondora Sannalu)' — to enhance their qualities through tech interventions.

Scientists enhanced these rice varieties with better stress tolerance, improved yield and climate adaptability without compromising on their existing strengths as they developed the two new genome-edited varieties.



PUSA DST RICE 1

- Developed by **ICAR-Indian Agricultural Research Institute (ICAR-IARI), New Delhi**
- Enhanced tolerance to **salinity and drought**
- Particularly suitable for farmers in areas affected by **saline & alkaline soils**
- Demonstrated remarkable **improvements in yield performance** under various stress conditions
- Yield advantage of nearly **10%** in inland salinity conditions, nearly **15%** in alkaline soils, and **30%** in coastal salinity conditions

DRR DHAN 100 (KAMALA)

- Developed by **ICAR-Indian Institute of Rice Research (ICAR-IIRR),** Hyderabad
- Matured in around **130 days,** 20 days less than its parent variety
- Early maturity helps **conserve water**
- **19% yield improvement** over Samba Mahsuri, average yield of **5.4 tonnes per hectare**
- Under optimal conditions, potential yield of up to **9 tonnes per hectare**



Genome-edited varieties are, however, suitable for only those states/UTs for which the parent varieties are recommended: Tamil Nadu, Karnataka, Puducherry, Chhattisgarh, Andhra Pradesh, Telangana, Odisha, Maharashtra, Kerala, Madhya Pradesh, Bengal, Bihar, Jharkhand and (eastern) UP.

ICAR is now accessing intellectual property rights before the newly developed genome-edited varieties are made available to farmers. Seeds for commercial cultivation are expected to reach farmers within two years.

Can It Harm Humans?

The Coalition for a GM-Free India — a network of organisations and individuals advocating for a GM-free India — has demanded that govt immediately withdraw the two genome-edited rice varieties and bring them under the purview of rigorous regulation. They claim the two varieties have the potential to harm humans and cause irreversible damage to the environment, apart from threatening the country's seed sovereignty.

'No Health Or Environmental Concerns'

Since the genome-edited line contains no foreign DNA, it makes it comparable to conventionally bred varieties.

Two key approaches — Site Directed Nuclease 1 (SDN1) and Site Directed Nuclease 2 (SDN2) — produce genetically edited organisms that are considered "indistinguishable from naturally occurring or conventionally bred mutants". As such, they are exempt from stringent bio-safety regulations under Rules 7-11 of the Environment (Protection) Act, 1986.

The Institutional Bio-safety Committee (IBC) of ICAR institutes approved the lines, and the Review Committee on Genetic Manipulation (RCGM) granted clearance on May 31, 2023, for classification under India's relaxed regulatory framework for SDN1 and SDN2 genome edits.

Viswanathan Chinnusamy, lead developer of the genome-edited rice and joint director (research), IARI, said plants with genome-edited seed varieties do not contain 'exogenous' (foreign) DNA, unlike genetically modified crops.

He also dispelled health fears with gene-edited rice varieties, saying the genome-edited variety is equivalent to a mutant variety developed by a conventional approach.

"Hence, it has no health or environmental concerns," he said.

20-05-2025
Times of Ind. Spl. Pg.01

ವಿ ರೈತ ಮಿತ್ರ



■ಮುಂಗಾರಿಗೆ ಬೆಳೆ ಆಯ್ಕೆ ಯಾವ ರೀತಿ ಇರಬೇಕು?

| ಪ್ರಭಾಕರ್ ನೆಲಮಂಗಲ

ಮುಂಗಾರಿನಲ್ಲಿ ಸಾಮಾನ್ಯವಾಗಿ ಏಕದಳ, ದ್ವಿದಳ ಮತ್ತು ಎಣ್ಣೆಕಾಳುಗಳನ್ನು ಬೆಳೆಯಲಾಗುತ್ತದೆ. ಏಪ್ರಿಲ್ -ಮೇ ತಿಂಗಳ ಮಳೆಯ ನಂತರ ಮಾಗಿ ಉಳುಮೆ ಮುಗಿಸಿ, ಕನಿಷ್ಠ ಶಿಫಾರಸು ಮಾಡಿದ ಸಾವಯವ ಗೊಬ್ಬರ (ಕೊಟ್ಟಿಗೆ ಗೊಬ್ಬರ/ಕಾಂಪೋಸ್ಟ್) ಮಣ್ಣಿಗೆ ಸೇರಿಸುವುದು. ಪೂರ್ವ ಮುಂಗಾರಿನ ಮಳೆ ನಂತರ ಹಸಿರೆಲೆ ಗೊಬ್ಬರವಾದ ಅಪ್ಪೆಣಬು, ಅಲಸಂದೆ ಮತ್ತು ಹುರುಳಿ ಬಿತ್ತಬಹುದು. ಮೇ ತಿಂಗಳಿನಲ್ಲಿ ತೊಗರಿ, ಹರಳು, ಎಳ್ಳು, ಹೆಸರು, ಅವರೆ ಹಾಗೂ ಅಲಸಂದೆ ಬಿತ್ತುವುದು ಸೂಕ್ತ. ಜೂನ್-ಜುಲೈ ತಿಂಗಳಿನಲ್ಲಿ ರಾಗಿ (ಧೀರ್ಘಾವದಿ ತಳಿ), ಮುಸುಕಿನ ಜೋಳ, ಸಿರಿಧಾನ್ಯಗಳಾದ ನವಣೆ, ಹಾರಕ, ಊದಲು ಅಥವಾ ಕೊರಲೆ ಬಿತ್ತಬಹುದು. ಆಗಸ್ಟ್ ತಿಂಗಳಿನಲ್ಲಿ ರಾಗಿ (ಮಧ್ಯಮಾವದಿ/ಅಲ್ಪಾವದಿ ತಳಿ), ಅವರೆ, ಅಲಸಂದೆ, ಹುಚ್ಚೆಳ್ಳು, ಸೂರ್ಯಕಾಂತಿ ಮತ್ತು ಸಿರಿಧಾನ್ಯಗಳನ್ನು ಬಿತ್ತಬಹುದು ಹಾಗೂ ಸೆಪ್ಟೆಂಬರ್ ತಿಂಗಳಿನಲ್ಲಿ ಈಗಾಗಲೇ ಆಗಸ್ಟ್ ತಿಂಗಳಿನಲ್ಲಿ ಸೂಚಿಸಿದ ಎಲ್ಲ ಬೆಳೆಗಳನ್ನು ಬೆಳೆಯಬಹುದು.

| ಡಾ. ಕೆ.ಪಿ. ರಘುಪ್ರಸಾದ್ ಪ್ರಾಧ್ಯಾಪಕರು ಹಾಗೂ ಮುಖ್ಯಸ್ಥರು

20-05-2025
Vijaya Vani Pg.11c

Farmer societies also eligible for power subsidy, rules HC

Vasantha.Kumar
@timesofindia.com

Bengaluru: The Dharwad bench of the high court has instructed the state govt and electricity distribution companies to modify their agricultural power subsidy policy to ensure fair treatment between farmer societies and individual farmers.



While ruling on a petition, Justice Sachin Shankar Magadum declared a Sept 4, 2008 govt order — which denies farmer societies tariff subsidy solely because their collective consumption surpasses the specified horsepower limit — "unconstitutional".

"The authorities must frame and notify appropriate guidelines within a reasonable period (preferably six months) to extend power tariff subsidies to registered farmer societies, in a manner that aligns with the principles of equality, promotes cooperative farming, and advances broader goals of sustainable agricultural," the judge said in his order.

Two farmers' cooperative societies in Belagavi district contested Hubballi Electricity Supply Company Ltd's (Hescom) demand notice and the govt order. They had established lift irrigation projects at a cost of Rs 5.8 crore on the Krishna river, benefiting 200 acres and 103 acres in Parthanahalli and Madhabhavi villages.

The petitioners said Hescom sought Rs 3,995.2 crore in subsidies from the state govt, which released Rs 5,067.7 crore. They claimed the state paid subsidies for unmetered installations, based on estimated consumption, contradicting the Electricity Act and govt orders. The petitioner-society's main complaint centres on the state's constitutional duty to provide water access. They argued that farmers who formed societies to create lift irrigation schemes face discrimination, whilst individual IP holders receive subsidies. The petitioners contended that denying subsidies to marginal farmer societies, whilst granting them to individual farmers violates Article 14 of the Constitution.

Hescom argued that the petitioners' difficulties stemmed from the pandemic. The govt maintained that society members could access the scheme individually, but collective applications were excluded. They specified a 10HP-meter limit for irrigation facilities and suggested the petitioner-society approached court to avoid Hescom's recovery proceedings.

But Justice Magadum observed that farmers in collectives represent the same group eligible for individual subsidies and denying them subsidies contradicts the goal of supporting small farmers.

20-05-2025
Times of Ind. Pg.04

ತೊಗರಿ, ಸೋಯಾ ಅವರೆ, ನವಣೆ ಬೀಜ ಉತ್ಪಾದನೆ: ರೈತರಿಗೆ ಗುಣಮಟ್ಟದ ಬೀಜ ಖಾತ್ರಿ

ಕೃಷಿ ವಿವಿಯಿಂದ ರೈತರಿಗೆ ಬಿತ್ತನೆ ಬೀಜ

• ಚಂದ್ರಕಾಂತ ಮಸಾನಿ

ರಾಯಚೂರು: ಇಲ್ಲಿನ ಕೃಷಿ ವಿಜ್ಞಾನಗಳ ವಿಶ್ವವಿದ್ಯಾಲಯದ ಬೀಜ ಘಟಕವು ವಿಶ್ವವಿದ್ಯಾಲಯದ ವ್ಯಾಪ್ತಿಯಲ್ಲೇ 3,400 ಕ್ವಿಂಟಲ್ ತಳಿವರ್ಧಕ ಹಾಗೂ ಗುಣಮಟ್ಟದ ಬೀಜ ಉತ್ಪಾದನೆ ಮಾಡಿ ಕಲ್ಯಾಣ ಕರ್ನಾಟಕದ ಜಿಲ್ಲೆಗಳ ರೈತರಿಗೆ ವಿತರಿಸಲು ಆರಂಭಿಸಿದೆ.

ಗುಣಮಟ್ಟದ ತೊಗರಿ, ಸೋಯಾ, ನವಣೆ, ಕಡಲೆ ಬೀಜ ಖರೀದಿಸಲು ಕಲಬುರಗಿ, ಕೊಪ್ಪಳ ಹಾಗೂ ಯಾದಗಿರಿ ಜಿಲ್ಲೆಗಳ ರೈತರು ತಂಡಗಳಲ್ಲಿ ಬಂದು ಬೀಜ ಖರೀದಿಸಲು ಆರಂಭಿಸಿದ್ದಾರೆ.

ವಿಶ್ವವಿದ್ಯಾಲಯವೇ 170 ನೋಂದಾಯಿತ ರೈತರ ಹೊಲಗಳಲ್ಲಿ ಪ್ರಮಾಣೀಕೃತ ಬೀಜಗಳ ಉತ್ಪಾದನೆ ಮಾಡಿ ರೈತರಿಂದ ಖರೀದಿಸಿ ಕಲ್ಯಾಣ ಕರ್ನಾಟಕದ ಜಿಲ್ಲೆಗಳ ರೈತರಿಗೆ ಖರೀದಿಸಿ ಕೃಷಿ ವಿಜ್ಞಾನ ಕೇಂದ್ರ (ಕವಿಕೆ), ಕೃಷಿ ಸಂಶೋಧನಾ ಕೇಂದ್ರ (ಎಆರ್‌ಎಸ್) ಹಾಗೂ ಕೃಷಿ ಶಿಕ್ಷಣ ವಿಸ್ತರಣಾ ಕೇಂದ್ರದಲ್ಲಿ (ಎಸಾಕೆ) ಬೀಜ ವಿತರಣಾ ಕೇಂದ್ರಗಳನ್ನು ತೆರೆದು ವಿತರಿಸಿದ್ದಾರೆ. ರೈತರಿಗೆ ಅನುಕೂಲ ಮಾಡಿಕೊಡಲು ಪ್ರತಿ ಜಿಲ್ಲೆಗೆ ಒಬ್ಬರು ಸಂಯೋಜಕರನ್ನೂ ನೇಮಕ ಮಾಡಿದೆ.

ಒಂದು ಎಕರೆಗೆ ಒಂದು ಕೆ.ಜಿಯ ಒಂದು ಪ್ಯಾಕೆಟ್ ಬೀಜ ಕೊಡಲಾಗುತ್ತಿದೆ. ಮುಂಗಾರು ಹಂಗಾಮು ಆರಂಭವಾಗುವ ಮೊದಲೇ ರೈತರು ಬೀಜ ಖರೀದಿಸಿದರೆ ಅನುಕೂಲ ಎಂಬ ಕಾರಣಕ್ಕೆ ಈಗಾಗಲೇ ಸಾಕಷ್ಟು ರೈತರು ಬೀಜ ಖರೀದಿಸಿದ್ದಾರೆ.

ಮುಖ್ಯಾಂಶಗಳು

- ಬೀಜ ಬೆಳೆಗಾರರ ಸಮಸ್ಯೆ ಪರಿಹಾರಕ್ಕೆ ವಾಟ್ಸಾಪ್ ಗುಂಪು
- ರೈತರ ಸಹಭಾಗಿತ್ವದಲ್ಲೇ ಬೀಜೋತ್ಪಾದನೆ
- ಗುಣಮಟ್ಟದ ಬೀಜ ಉತ್ಪಾದನೆಗೆ ಆದ್ಯತೆ

ರಾಯಚೂರು ಕೃಷಿ ವಿಜ್ಞಾನಗಳ ವಿಶ್ವವಿದ್ಯಾಲಯವು ಕಲ್ಯಾಣ ಕರ್ನಾಟಕದ ಭಾಗವನ್ನು ಅತ್ಯುತ್ತಮ ಗುಣಮಟ್ಟದ ಬೀಜೋತ್ಪಾದನೆ ವಲಯವನ್ನಾಗಿ ಅಭಿವೃದ್ಧಿಪಡಿಸುವ ಉದ್ದೇಶ ಹೊಂದಿದೆ
ಅರುಣಕುಮಾರ ಹೊಸಮನಿ
ಬೀಜ ಘಟಕದ ವಿಶೇಷ ಅಧಿಕಾರಿ



ರಾಯಚೂರಿನ ಕೃಷಿ ವಿಜ್ಞಾನಗಳ ವಿಶ್ವವಿದ್ಯಾಲಯದ ಬೀಜ ಘಟಕದಲ್ಲಿ ಸಿದ್ಧಪಡಿಸಿದ ತಳಿವರ್ಧಕ ಹಾಗೂ ಗುಣಮಟ್ಟದ ತೊಗರಿ ಬೀಜದ ಪ್ಯಾಕೆಟ್ ಪ್ರದರ್ಶಿಸಿದ ಬೀಜ ಘಟಕದ ವಿಶೇಷ ಅಧಿಕಾರಿ ಅರುಣಕುಮಾರ ಹೊಸಮನಿ

ರೈತರು ಬೀಜ ಖರೀದಿಸುವುದಕ್ಕೂ ಆರಂಭಿಸಿದ್ದಾರೆ. ಕೃಷಿ ವಿಜ್ಞಾನಗಳ ಮೇಲ್ವಿಚಾರಣೆಯಲ್ಲಿ ಬೀಜ ಉತ್ಪಾದನೆಯಾಗುತ್ತಿರುವ ಕಾರಣ ಗುಣಮಟ್ಟದ ಬೀಜದ ಬಗ್ಗೆ ರೈತರಲ್ಲಿ ವಿಶ್ವಾಸಾರ್ಹತೆ ಹೆಚ್ಚಿದೆ.

'ಕೃಷಿ ವಿಶ್ವವಿದ್ಯಾಲಯವು ನೋಂದಾಯಿತ ರೈತರ ಹೊಲದಲ್ಲಿ ಪ್ರಮಾಣೀಕೃತ ಬೀಜ ಬೆಳೆಯಿಸುತ್ತಿದೆ. ತೊಗರಿ, ಸೋಯಾ, ನವಣೆ ಹಾಗೂ ಕಡಲೆಗೆ ಬೇಡಿಕೆ ಇದೆ. ವಿಶ್ವವಿದ್ಯಾಲಯದ ವಿಜ್ಞಾನಿಗಳ ತಂಡವು ವಿತ್ತನೆ ಸಂದರ್ಭ, ಬೆಳೆಯುವ, ಹೂವು ಬಿಡುವ, ಕಾಳು ಕಟ್ಟುವ ಹಾಗೂ ಕಟಾವು ಸಂದರ್ಭದಲ್ಲಿ ವಿಜ್ಞಾನಿಗಳ ವಿಶೇಷ ತಂಡ ಭೇಟಿ ನೀಡಿ ಪರಿಶೀಲಿಸುತ್ತದೆ' ಎಂದು ಕೃಷಿ ವಿಜ್ಞಾನಗಳ ವಿಶ್ವವಿದ್ಯಾಲಯದ ಬೀಜ ಘಟಕದ ವಿಶೇಷ ಅಧಿಕಾರಿ ಅರುಣಕುಮಾರ ಹೊಸಮನಿ ಹೇಳಿದರು.

'ವೀಕ್ಷಕರ ತಂಡದಲ್ಲಿ ರಾಜ್ಯ ಬೀಜ ನಿಗಮ, ರಾಜ್ಯ ಬೀಜ ಮತ್ತು ಸಾವಯವ ಪ್ರಮಾಣನ ಸಂಸ್ಥೆ, ರಾಷ್ಟ್ರೀಯ ಬೀಜ ನಿಗಮ, ಕೃಷಿ ಇಲಾಖೆ, ಕರ್ನಾಟಕ ಸಹಕಾರ ಎಣ್ಣೆಬೀಜಗಳ ಬೆಳೆಗಾರರ ಒಕ್ಕೂಟದ ಸದಸ್ಯರೂ ಇದ್ದಾರೆ. ನಾಲ್ಕು ಹಂತಗಳಲ್ಲಿ ಪರಿಶೀಲನೆ ನಡೆದ ನಂತರವೇ ವಿಶ್ವವಿದ್ಯಾಲಯದ ಬ್ರ್ಯಾಂಡ್‌ನ ಅಡಿಯಲ್ಲೇ ಗುಣಮಟ್ಟದ ಬೀಜ ಮಾರಾಟಕ್ಕೆ ಬಿಡುಗಡೆ ಮಾಡಲಾಗುತ್ತಿದೆ' ಎಂದು ತಿಳಿಸಿದರು.

'ಒಣ ಬೇಸಾಯಕ್ಕೆ ಸೂಕ್ತವಾದ ತಳಿಗಳನ್ನು ವಿಶ್ವವಿದ್ಯಾಲಯವೇ ಅಭಿವೃದ್ಧಿಪಡಿಸಿ ಮಾರಾಟ ಮಾಡುತ್ತಿದೆ. ಟಿಎಸ್-3ಆರ್ ತೊಗರಿಗೆ ಹೆಚ್ಚಿನ ಬೇಡಿಕೆ ಇದೆ. ಮೊದಲು ಬಂದವರಿಗೆ ಆದ್ಯತೆ ಮೇಲೆ ಬೀಜ ಕೊಡುತ್ತಿದ್ದೇವೆ. ಕೃಷಿ ವಿಶ್ವವಿದ್ಯಾಲಯದ ಬೀಜೋತ್ಪಾದನೆ ಕಾರ್ಯಕ್ರಮ ಪರಿಗಣಿಸಿ ಏಸಿಎಆರ್-ಭಾರತೀಯ ಬೀಜ ವಿಜ್ಞಾನ ಸಂಸ್ಥೆಯು 2017-2018ರಲ್ಲಿ ಅತ್ಯುತ್ತಮ ಬೀಜೋತ್ಪಾದನಾ ಕೇಂದ್ರವನ್ನು ಪ್ರಶಸ್ತಿ ಯನ್ನೂ ಪ್ರದಾನ ಮಾಡಿದೆ' ಎಂದು ಖುಷಿ ಹಂಚಿಕೊಂಡರು.

ವಿಶ್ವವಿದ್ಯಾಲಯದಲ್ಲಿ ಲಭ್ಯವಿರುವ ಬೀಜ

- ತೊಗರಿ-ಟಿಎಸ್-3ಆರ್
- ತೊಗರಿ-ಬಿಆರ್‌ಜಿ811
- ತೊಗರಿ- ಬಿಆರ್‌ಜಿ152
- ನವಣೆ-ಎಚ್‌ಎನ್-46
- ಸೋಯಾ ಅವರೆ-ಡಿಎಸ್‌ಬಿ21
- ಮೇವಿನ ಬೀಜ-ಸಿಒಎಸ್‌ಎಫ್-31
- ಸೆಣಬು-ಲೋಕಲ್
- ಹೈಬ್ರಿಡ್ ಸೂರ್ಯಕಾಂತಿ-ಆರ್‌ಎಸ್‌ಎಫ್‌ಎಚ್700

20-05-2025
Praja Vani Pg.06

On World Bee Day, A Look At What Makes The Insect So Sought-After On Farms And Orchards And How The Job Is Not Without Risks

Why Renting Bees Is New Agri Buzzword

But it's not always good for bees

Mohita.Tewari@timesofindia.com

If the bee disappeared off the surface of the globe, then man would only have four years of life left." Often attributed to Albert Einstein but probably apocryphal, this quote is a reminder of the critical importance of bees as pollinators. And now that there's been a significant decline in the population of honeybees because of various factors — habitat loss, pesticide use, climate change, disease and parasites — bad fruiting in orchards has become a more frequent phenomenon.

"How to pollinate?" For an increasing number of farmers, that's the biggest question.

If you don't have them, hire them. It was this answer to the farmers' big question that turned scientist-turned-apiarist Nitin Kumar Singh of Barabanki, Uttar Pradesh, into a bee-entrepreneur. Now, Nitin's stash of 600 boxes — each containing over 1,25,000 bees — travels across the country to help out whoever needs them. From litchi growers in Bihar's Muzaffarpur to sun-kissed apple orchards in Himachal Pradesh's Kinnaur, Nitin's bees bring a promise of good harvest wherever they go.

For, these bees help out with pollination, which can boost crop yields. The practice, known as 'rent-a-bee' or 'pollinator rental', is a godsend in areas where natural bee populations are insufficient to pollinate crops effectively. And it's not just about the money. Nitin, who has published over 10 peer-reviewed research papers in international journals such as Nature, Elsevier and PLOS One, says his main motivation is to save the environment.



Bees are unmatched as pollinators, but a general decline in their population means farmers are increasingly turning to apiarists with an eye on landing a good harvest

The 42-year-old PhD in environmental biotechnology used to work as a research fellow at Integrated Functional Genomics at University of Munster in Germany, and as a postdoctoral researcher at the Agricultural Research Organisation in Israel, before he moved to India and began renting out his bees.

"Bees are our allies," he says. "Without them, there will be no us. We just have to understand them better and let them do their job."

Geetanjali Misra, a zoology professor at Lucknow University, says India has seen a 20% decline in bee population in recent years. In some regions, such as Odisha, the drop is by nearly 80%. This, she says, can be attributed to factors like lack of pollen and nectar sources, pesticides and climate change.

Lack of pollen and nectar sources have affected bee health and survival while fluctuations in temperature and rainfall patterns have also disrupted their foraging and nesting behaviour, she explains.

Misra says that given their role in pollination, a decline in the bee population can lead to reduced crop yields and potential food security issues along with a reduction in plant biodiversity since many species depend on bees for pollination.

Nitin's apiary in Barabanki's Damaura village, nearly 27km from Lucknow, is a riot of colour: bright sunflowers, ripe red tomatoes, a crop of millets, patches of mustard and mint, a distant treeline of tall mango trees. The soundtrack to this vista is provided by the constant hum of bees.

Bees, says Nitin, need fresh nectar to stay healthy. There are no high-tension cables or phone towers nearby, nor is any pesticide used in the apiary, he adds.

Nitin's bees have travelled to almost every part of the country, from Manipur to Maharashtra, on mission pollination. "My bees are basically tourists," Nitin says. "Depending on the month and cropping season, they have to travel as and when they are hired. There's little demand among locals, but there's a huge demand of bees from apple orchards in Himachal. Similarly, we also rent bees to orange growers in Nagpur."

Most of the bees are of Italian origin, Apis mellifera ligustica. "When we give bees on rent to other states, we make sure that they travel only between sunset and sunrise because bees have their own inviolable routine," Nitin says.

Bees leave their boxes — also called moveable-comb hive or Newton hive — at sunrise to collect nectar from surrounding areas and return to it at sunset. Farmers who hire the bees don't need to do anything special. They just place the boxes in their farms or orchards; the bees go out when the sun rises and return to their boxes by sunset, after collecting nectar and performing pollination.

One bee box costs Rs 1,500 a month. "An area of 15,000 sqft requires around 10-20 boxes for pollination," says Nitin. "The price of these boxes depends on the time of the year. For example, Oct to May is the season for beekeepers to harvest a hive. During this period, the price of bee boxes is higher, compared with the June-Sept period."

The bee-renting business, however, is far from easy. Akhilesh Kumar from Lucknow's Gomtinagar, who runs Bhavana Agrotech, told TOI that he had to eventually discontinue his business, thanks to the many challenges that kept cropping up.

"There are only a few players in this business due to a lack of awareness about its benefits," says Rajasthan-based apiarist Ram Kishor Yadav, who runs his venture, 'Shahadwale', from Behror district. "Bees are usually hired by companies that are into seed production, or by advanced farmers." Yadav says seed-production firms rely on honeybees primarily for pollination as bee pollination can improve the quality of seeds and the overall yield of some crops. "Bees are also used by advanced farmers, who take help from scientists — especially apple and pomegranate growers. Bee pollination can increase crop yields by 30% to 35%," he explains.





A LOT GOING ON IN THAT BOX

A 'bee box', also called a hive, has around 10 frames hung parallel to each other. These are made of wood with a wax foundation on which bees draw out the comb

Each box has around **1,25,000 bees** and one queen bee

Each box costs a farmer **₹2,500** a month to rent

An area of **15,000 sqft** needs 10-20 boxes for pollination

Nitin Kumar Singh

But it's not always good for bees

Joeanna Rebello Fernandes

Ashuram Godara, a pomegranate farmer from Palana in Bikaner, Rajasthan, spends up to Rs 50,000 a year on rented bees. Fifteen to 20 hives truck into his 22-acre farm when the crop flowers, and return to Kalki Agro Foods, the bee rental company in Behror, when the fruits appear. Despite the cost incurred, the farmer prefers to rent rather than maintain hives of his own because the pesticides he sprays on his fruit can harm resident bees, while itinerant bees can be dispatched to the safety of their home base.

In fact, bee rental companies cite exposure to pesticides as one of the chief reasons for bee deaths on farms. They penalise farmers for colony losses, with some like Kalki Agro Foods charging them for every compromised frame, while others, like Sridhar Industries in Bengaluru, withholding the deposit on the beehive unit itself. Before renting out their hives, pollination rentals caution farmers against using pesticides on their crops — particularly the neonicotinoid class of pesticides — when bees are in residence. Neonicotinoids impair the nervous system of insects and can cause a range of negative impacts, from weakened immunity, loss of navigational abilities to death.

However, renter-farmers and agri-businesses can't always prevent bee deaths even if they themselves practise organic agriculture, because toxic chemicals can arrive downwind from surrounding farms.

The govt can help mitigate this problem by listing all the molecules used in pesticide formulae. It doesn't do this because all the new and old molecules used in pesticides are all bee-killing chemicals," says Apoorva BV, owner of Shridhar Industries, a beekeeping business that offers hive rental services as a small part of its portfolio. Apoorva is also the co-founder of The Hive, a trust dedicated to bee education and conservation. "You can't promote natural pollination without first addressing this issue. The growth of insect pollination services is directly proportional to farmer awareness," he says. At the same time, pollination services can help farmers appreciate the role that insects play in agro-ecosystems. When farmers understand insects, they'll avoid pesticide overuse and adopt natural approaches to biocontrol balance, which is essentially the predator-prey balance. "Pesticides will ruin this dynamic," warns Apoorva. "They will kill both pests and biocontrol agents indiscriminately. If the govt ignores this risk, we stand to lose all insect biomass in India." He believes that the economic value of pollination also needs to be surveyed by state and crop. Accurate projections can help farmers assess future earnings from bee colonies and seek them out proactively.



Apiarists say pesticides are among the chief hazards facing bees on farms

Even as some farmers have been making a beeline for pollination services, conservationists warn of the risks posed by this growing market. One of these is the consequence of exposing bees consistently to a limited range of crops.

"Pollen provides bees with proteins, minerals, and other nutrients. Just like humans need a varied diet, so do bees," says Shiny Mariam Rehel, senior programme coordinator for biodiversity conservation at Keystone Foundation, which supports conservation and community development in the Nilgiri Biosphere Reserve. The nonprofit is also a member of the Indian Pollinator Initiative, a consortium of conservationists and academics dedicated to developing research and guiding policy.

"Exposure to only one or two kinds of pollen may impact the insects' immunity and egg-laying pattern," says Rehel. There are other concerns. Contract bees, airdropped from other areas, may deprive local bee species of available food resources and eventually displace the few that are left. The absence of local pollinators could further imperil the area's biodiversity.

It's a concern shared by Narsanna Koppula, co-founder of Aranya Agricultural Alternatives, which endorses permaculture and sustainable agriculture. Kopulla worries that changes in temperature, climate, and humidity that bees experience when they're taken to new and unfamiliar places can affect their survival rate.

"By making honey-producing bee species the mainstay of their pollination rental services, companies may end up driving non-honey producing bees, such as carpenter, blue orchard, and bumblebees, to the sidelines. If we focus on the commercial aspect alone, biodiversity will take a backseat," he says. "We need to think of bees not only for furthering business, but also for strengthening ecosystems."

20-05-2025
Times of Ind. Pg.07

ಕೃಷಿ ವಲಯ ಶೇ. 3.5ರಷ್ಟು ಬೆಳವಣಿಗೆ



ನವದೆಹಲಿ: ಪ್ರಸಕ್ತ ಆರ್ಥಿಕ ವರ್ಷದಲ್ಲಿ (2025-26) ದೇಶದಲ್ಲಿ ಕೃಷಿ ವಲಯದ ಬೆಳವಣಿಗೆ ಶೇ. 3.5ರಷ್ಟಾಗುವ ನಿರೀಕ್ಷೆ ಇದೆ ಎಂದು ಕೇಂದ್ರ ಕೃಷಿ ಸಚಿವ ಶಿವರಾಜ್‌ಸಿಂಗ್ ಚೌಹಾಣ್ ಸೋಮವಾರ ತಿಳಿಸಿದ್ದಾರೆ.

ಹೊಸ ತಂತ್ರಜ್ಞಾನಗಳ ಕುರಿತು ರೈತರಿಗೆ ಅರಿವು ಮೂಡಿಸುವ 15 ದಿನಗಳ ರಾಷ್ಟ್ರವ್ಯಾಪಿ ಆಂದೋಲನ ಕುರಿತ ಸಭೆಯ ವೇಳೆ ಸುದ್ದಿಗಾರರ ಜತೆ ಮಾತನಾಡಿದ ಅವರು, 'ಜಾಗತಿಕ ಮಟ್ಟದಲ್ಲಿ ಕೃಷಿ ಕ್ಷೇತ್ರದ ಬೆಳವಣಿಗೆ ಶೇ. 1.5ರಿಂದ ಶೇ. 2ರಷ್ಟಾದರೂ ಉತ್ತಮ ಎಂಬುದಾಗಿ ಪರಿಗಣಿಸಲಾಗುತ್ತದೆ. ಆದರೆ ಭಾರತ ಕನಿಷ್ಠ ಶೇ. 3- ಶೇ. 3.5ರಷ್ಟು ವೃದ್ಧಿ ದಾಖಲಿಸಲಿದೆ' ಎಂದು ಹೇಳಿದರು. ಮೇ 29ರಿಂದ ಈ ಆಂದೋಲನ ಆರಂಭವಾಗಲಿದ್ದು, ದೇಶದ 723 ಜಿಲ್ಲೆಗಳ 65 ಸಾವಿರ ಗ್ರಾಮಗಳ 1.30 ಕೋಟಿ ರೈತರನ್ನು ತಲುಪುವ ಉದ್ದೇಶವಿದೆ. ಇದಕ್ಕಾಗಿ 3,749 ಕೃಷಿ ವಿಜ್ಞಾನಿಗಳನ್ನು ಒಳಗೊಂಡ 2,170 ತಂಡಗಳನ್ನು ರಚಿಸಲಾಗಿದೆ. ಕೃಷಿ ವಿಜ್ಞಾನ ಕೇಂದ್ರಗಳ 2,980 ಸಿಬ್ಬಂದಿಯೂ ಇದರಲ್ಲಿರುತ್ತಾರೆ. ಇದರ ಎಲ್ಲ ವೆಚ್ಚವನ್ನೂ ಈಗಿರುವ ಅನುದಾನದಲ್ಲೇ ನಿರ್ವಹಿಸಲಾಗುತ್ತದೆ ಎಂದು ವಿವರಿಸಿದರು.

20-05-2025
Vijaya Vani Pg.10