PHEROMONE – SCIENCE & TECHNOLOGY

News: A newly developed sustainable pheromone dispenser, created by a collaboration between the Jawaharlal Nehru Centre for Advanced Scientific Research, and the ICAR–National Bureau of Agricultural Insect Resources, is aimed at reducing pest control costs and promoting sustainable farming practices.

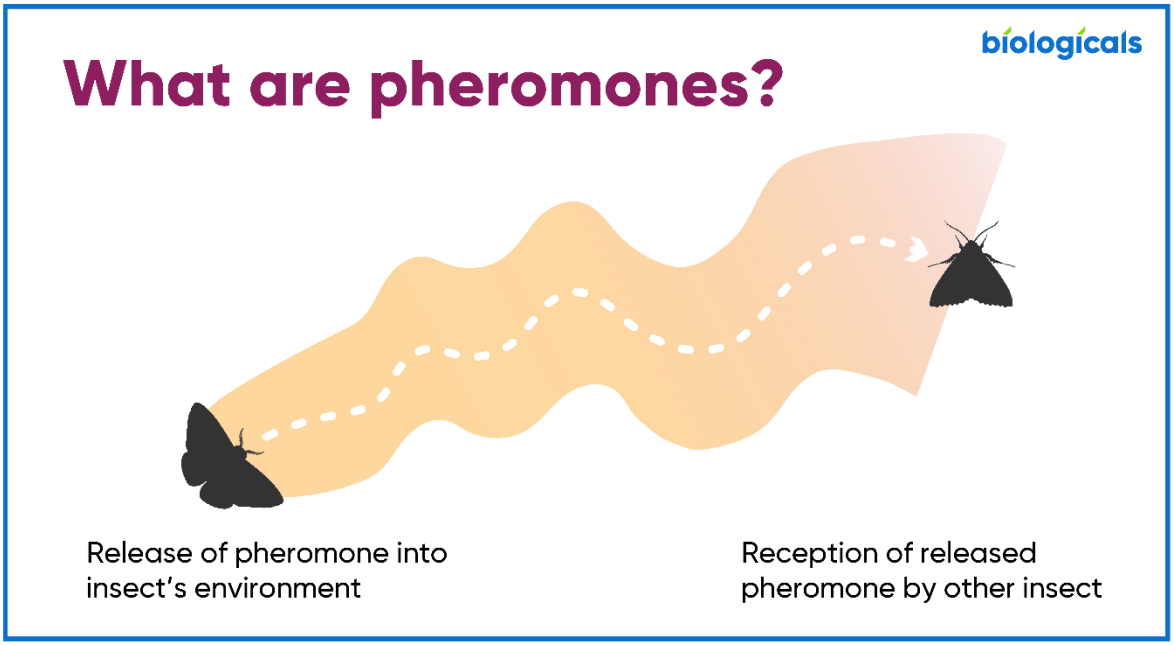
What's in the news?

About the Pheromone Dispenser

It has been **developed using a mesoporous silica matrix**. It addresses a key limitation in existing dispensers. Current pheromone dispensers, **made from polymer membranes or polypropylene tubes**, release pheromones inconsistently. The new structure allows for uniform adsorption and controlled release of pheromones. The controlled release system extends the dispenser's efficacy, reduces the frequency of replacement, and lowers the quantity of pheromones needed, making the technology cost-effective and labor-efficient.

What Are Pheromones?

Pheromones are **chemicals secreted by an organism that causes a particular reaction in another member of the same species.** First scientifically identified in 1959, pheromones are usually secreted through fluids like sweat, urine, and other excretions. Such chemicals can



stimulate a range of responses-from changes in hormone levels to specific behaviors-and are the silent language of the animal world.

Do Humans Have Pheromones?

Although many good proofs demonstrate that most animals communicate through the use of pheromones, scientists are still researching whether human beings have them.

Pheromones in Other Mammals

Pheromones have been widely reported in numerous species, ranging from mammals to insects and reptiles. Pheromones are considered to play an important role in the animal kingdom, where they facilitate the coming together of mates, territorial marking, and mother-offspring interaction. The first pheromone ever isolated was that of moths, followed by further studies reporting the presence of pheromones in mice, pigs, and goats.

Types of Pheromones

Pheromones are categorized into four types based on their function:

- **Releasers**: Cause an immediate behavioral response, such as mate attraction.
- **Signalers**: Convey social information, such as health status or social hierarchy.
- **Modulators**: Influence mood and emotions.
- **Primers**: Affect developmental processes like puberty and reproduction.

How Do Pheromones Function?

In most animals, **pheromones are detected through a specialized organ called the vomeronasal organ** (VNO). While humans have a VNO, it is thought to be non-functional. Some animals, such as rabbits and sheep, can detect pheromones using their main olfactory system. **Potential Human Pheromones**: **Androstadienone (found in male sweat) and estratetraenol (found in female urine) have been proposed as potential human pheromones**, but evidence is lacking.

Source: https://dst.gov.in/helping-indian-farmers-fight-pests-bringing-sustainable-pest-control-pheromone-dispenser-market