

## **ANTIMICROBIAL RESISTANCE: SCIENCE & TECHNOLOGY**

**NEWS:** Fighting antimicrobial resistance with insect-based livestock feed

### **WHAT'S IN THE NEWS?**

India is promoting insect-based livestock feed to reduce antibiotic use in animal husbandry, thereby tackling the rising threat of antimicrobial resistance (AMR). Insect-based feed offers nutritional, economic, and AMR-curbing benefits compared to traditional feed that fuels antibiotic overuse.

#### **Context**

- Rising concerns over the overuse of antibiotics in animal husbandry have prompted India to explore alternatives to traditional livestock feed.
- The Indian Council of Agricultural Research (ICAR) is leading partnerships to develop insect-based feed solutions to build antimicrobial resistance (AMR)-resilient food systems.

#### **What is Antimicrobial Resistance (AMR)?**

- AMR refers to the ability of bacteria, viruses, fungi, and parasites to evolve over time and become resistant to medicines that once killed them or halted their growth.
- This makes infections harder to treat, increases the risk of disease spread, severe illness, and death.
- Currently, nearly 700,000 people die globally from AMR-related infections every year.
- If unchecked, AMR could cause up to 10 million deaths annually by 2050 and potentially consume 3.8% of the world's annual GDP.

#### **How Traditional Livestock Feed Contributes to AMR**

- More than 50% of all antibiotics produced globally are used in animal agriculture.
- Antibiotics are often administered not just for treating diseases but also for promoting rapid animal growth.
- The constant use of antibiotics in animal feed exposes gut bacteria in livestock to low doses of antibiotics, encouraging the development of antibiotic resistance genes (ARGs).
- These ARGs can then transfer to humans through the food chain, contaminated water, soil, or direct contact with animals.

#### **Significance of Insect-Based Feed**

- **Curbing AMR:** Insects naturally produce antimicrobial peptides (AMPs) such as defensins and cecropins, which help boost immunity in animals. This reduces disease incidence and diminishes the need for routine antibiotic use in animal husbandry.

- **Nutritional Superiority:** Insect-based feed is rich in digestible protein, essential amino acids, fats, and key micronutrients like zinc, iron, and calcium. Many fish and poultry species naturally consume insects, making them a biologically suitable feed component.
- **Economic Viability:** Studies indicate insect-based feed has a higher benefit-to-cost ratio compared to conventional protein sources like fishmeal or soybean meal. Locally producing insect-based feed also reduces dependency on expensive imports of protein-rich feed.

## Efforts Against Antimicrobial Resistance

- **Global Efforts:**
  - ***Global Action Plan (GAP) on AMR:*** Launched in 2015, this framework emphasizes a coordinated “One Health” approach involving human, animal, and environmental sectors.
  - ***World Antimicrobial Awareness Week (WAAW):*** A global campaign to raise awareness of the threat of AMR and encourage best practices.
  - ***Global Antimicrobial Resistance and Use Surveillance System (GLASS):*** Initiated by WHO in 2015 to collect and share data on AMR trends and guide policy responses.
  - ***Global Antibiotic Research and Development Partnership (GARDP):*** A collaborative initiative of WHO and the Drugs for Neglected Diseases Initiative (DNDi) to promote research and development of new treatments through public-private partnerships.
- **Indian Initiatives:**
  - ***National Action Plan on Antimicrobial Resistance (NAP-AMR):*** Launched with a One Health focus, it brings together various ministries and departments to combat AMR.
  - ***AMR Surveillance Network:*** Established by ICMR to track trends and patterns of drug-resistant infections across India.
  - ***India’s Red Line Campaign:*** Mandates that prescription-only antibiotics be marked with a red line to discourage over-the-counter sales without prescriptions.
  - ***National Antibiotic Consumption Network (NAC-NET):*** Gathers data on antibiotic use from health facilities nationwide to inform policy and monitoring by the National Centre for Disease Control (NCDC).
  - ***Operation AMRITH:*** Launched by Kerala’s Drug Control Department to curb excessive antibiotic use through targeted enforcement and awareness initiatives.

## Concluding Remarks

- The AMR crisis is a present and growing threat that endangers modern healthcare, agriculture, and sustainable global development.

- Moving toward insect-based feed represents an important opportunity to reduce antibiotic dependence in animal husbandry and to build a more sustainable, environmentally friendly food production system.

**Source:** <https://www.thehindu.com/sci-tech/energy-and-environment/fighting-antimicrobial-resistance-with-insect-based-livestock-feed/article69723711.ece>