Fighting Antimicrobial Resistance (AMR) with Insect-Based Livestock Feed

Prelims: Sustainable development | Current events of national and international importance

Why in news?

Recent studies have shown that the use of insect-based feed can be more cost-effective because it provides better digestible proteins than fishmeal- or soybean-based feeds.

- **Antibiotic overuse in livestock** – Animal husbandry accounts for over 50% of global antibiotic use, expected to reach 200,000 tonnes by 2030, a 53% rise from 2013 levels.
- Antibiotics are used to treat diseases and promote growth, but overuse fosters AMR.
- **AMR in Livestock** – Antibiotic residues in livestock intestines lead to bacteria acquiring resistance genes, which then spread to soil, water and ultimately to humans.

By 2050, antibiotic-resistant infections could cause 10 million deaths annually, up from 700,000 in 2014.

- Human over-exposure to such antibiotics can cause kidney disease, cancer, aplastic anaemia, etc.
- **Insect-Based Feed** – Insect-based feed is more cost-effective than traditional feeds like fishmeal or soybean meal.
- It acts as natural diet for many aquatic and terrestrial animals.
- It provides better digestible proteins, improving growth and immunity in livestock.
- Insects like Black Soldier Flies, House Crickets, Mealworms, etc., are rich in digestible proteins, fats, fibres and micronutrients (zinc, calcium, iron).
- **Nutritional Benefits** – 1 kg fishmeal (standard protein source) can be replaced with:
    - 0.76 kg Crickets
    - 0.85 kg Black Soldier Flies
    - 0.91 kg Locusts
- **AMR mitigation through insect feed** – Healthier livestock require fewer antibiotics for growth promotion or disease prevention, lowering the risk of AMR development.
- **Improves gut health of livestock** – Some insect-based feeds promote better gut microbiota balance, enhancing immunity naturally.
    - It reduces dependence on non-essential antibiotics in livestock production.
    - It limits environmental release of antibiotic-resistant bacteria.
    - It supports safer, more sustainable food chains.
- **Environmentally sustainable** – Insect farming produces far fewer greenhouse gases, uses less land and water, and converts organic waste into high-quality protein.
- **Indian Initiatives** – ICAR-CIBA (Central Institute of Brackish water Aquaculture) in partnership with private firms, is promoting insect-based feeds for aquaculture

(shrimp, seabass) and livestock.

Reference

The Hindu| Fighting AMR with Insect-Based Livestock Feed