Science & Technology · GS - III

Indigenous vaccine development in the animal husbandry sector can strengthen India's biosecurity and reduce economic vulnerability. Examine the significance of indigenous vaccines in controlling zoonotic diseases and ensuring livestock-sector resilience.

EXAM YEAR	PAPER	SUBJECT
DAILY PRACTICE 18/11/2026	GS - III	Science & Technology

MARKS	WORD LIMIT
15	~250 words

Answer Hint

Vaccine self-reliance, animal health security, zoonotic disease prevention, poultry industry, import substitution, scientific research, surveillance, biosecurity, One Health approach.

Model Answer

Introduction

The development of an indigenous vaccine against Highly Pathogenic Avian Influenza (HPAI) represents an important advancement in India's veterinary biotechnology and animal health security.

Significance of Indigenous Vaccines

- **Disease control:** Vaccines can reduce disease incidence and mortality among poultry, helping contain outbreaks.
- **Economic security:** Reduced dependence on imported vaccines can improve affordability, supply-chain reliability and protection of poultry farmers' livelihoods.
- **Scientific self-reliance:** Domestic research institutions gain capacity to develop vaccines suited to India's disease-control requirements.

- **Zoonotic risk reduction:** Effective control of animal infections can reduce opportunities for transmission of certain pathogens to humans.
- **Food security:** Protecting poultry production supports the availability and affordability of animal protein.

Challenges and Requirements

Vaccination must be integrated with regular surveillance, diagnostic testing, farm-level biosecurity, movement controls and scientific disposal of infected birds. Vaccine effectiveness, safety, field performance and strain compatibility also require continuous monitoring.

Way Forward

India should strengthen veterinary research infrastructure, public-private partnerships, vaccine manufacturing, disease surveillance and farmer awareness. A One Health approach integrating human, animal and environmental health is essential for managing emerging infectious diseases.

Conclusion

Indigenous veterinary vaccines can strengthen animal health security and rural economic resilience. Their effectiveness, however, depends on an integrated disease-prevention and surveillance framework.

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