

Indigenous African Swine Fever (ASF) Vaccine

Developed by ICAR

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The **Indian Council of Agricultural Research (ICAR)** has developed **India's first indigenous African Swine Fever (ASF) vaccine for pigs**. Developed by ICAR-National Institute of High Security Animal Diseases (ICAR-NIHSAD), Bhopal, the vaccine is **expected to reduce pig mortality, minimise economic losses and strengthen India's livestock disease management**.

What is African Swine Fever (ASF)?

According to the **World Organisation for Animal Health (WOAH)**, **African Swine Fever (ASF)** is a **highly contagious viral disease of domestic and wild pigs caused by the African Swine Fever Virus (ASFV)**. It is one of the world's most devastating transboundary animal diseases, characterised by **high fever, haemorrhages and mortality rates of up to 100%**. Although **African Swine Fever (ASF) does not infect humans**, it causes severe economic losses by reducing pig populations, disrupting trade and affecting farmers' livelihoods.

African Swine Fever in India

African Swine Fever was first detected in India in 2020 and has since spread to several **States and Union Territories**, particularly affecting the North-Eastern region, where pig farming is an important source of livelihood.

- The disease has caused large-scale pig deaths, disrupted pig production, restricted animal movement and trade, and severely affected farmers' incomes.
- In the absence of an effective treatment or vaccine, control mainly depended on rapid diagnosis, culling of infected pigs and strict biosecurity measures.
- During the 2020-21 outbreaks, Assam suffered estimated losses of about ₹276 crore.
- In Mizoram, ASF affected over 11,382 households up to 2025, causing estimated losses of around ₹982 crore.

These recurring outbreaks highlighted the need for an effective indigenous vaccine.

Indigenous African Swine Fever (ASF) Vaccine Developed by ICAR

To tackle the growing threat of ASF, scientists at **ICAR-National Institute of High Security Animal Diseases (ICAR-NIHSAD), Bhopal**, developed India's first indigenous MA-104 Cell Line-Based Live Attenuated African Swine Fever Vaccine for pigs.

African Swine Fever (ASF) Vaccine Key Features

- India's first indigenous vaccine against African Swine Fever.
- Developed using a live attenuated ASF Virus (Genotype II) with unique gene deletions.
- Uses the widely available MA-104 cell line, making it suitable for affordable large-scale production.
- Successfully tested for safety, purity, genetic stability, immune response and protective efficacy, and field validated with the Department of Animal Husbandry and Dairying (DAHD).
- Recommended for healthy pigs above eight weeks of age.
- Administered as a 1 mL intramuscular injection, followed by a booster dose after 14 days.
- Expected to reduce pig mortality, minimise economic losses and strengthen India's animal health security.

About MA-104 Cell Line

The **MA-104 cell line** is a continuous cell culture used to grow viruses for vaccine production. In India's indigenous African Swine Fever (ASF) vaccine, it enables efficient, large-scale and cost-effective vaccine manufacturing.

The use of the MA-104 cell line is one of the most significant scientific achievements of India's indigenous African Swine Fever (ASF) vaccine.

- It enables large-scale production of the ASF vaccine using a well-established and widely available cell line.
- It removes dependence on patented proprietary cell lines used by commercially available ASF vaccines.
- It significantly reduces vaccine manufacturing costs, making vaccination more affordable.
- It strengthens Atmanirbhar Bharat by developing indigenous vaccine production technology.
- It has the potential to make India a global supplier of affordable ASF vaccines.

Indigenous African Swine Fever (ASF) Vaccine Significance

Indigenous African Swine Fever Vaccine marks a major milestone in India's animal health and livestock disease management.

- It is India's first indigenous vaccine against African Swine Fever.
- It provides an effective preventive tool against a disease with mortality rates of up to 100%.
- It is expected to reduce pig deaths and minimise economic losses for pig farmers.
- It strengthens animal health security, **food security** and biosecurity.
- It supports the sustainable growth of the pig farming sector, especially in the North-Eastern region.
- It demonstrates India's growing capability in indigenous veterinary vaccine research and development.

Challenges

Despite the breakthrough, several challenges remain in controlling African Swine Fever.

- Large-scale vaccine production and timely distribution need to be ensured.
- High vaccination coverage is required to effectively control outbreaks.
- Strict biosecurity measures remain essential as vaccination alone cannot eliminate disease risks.
- Continuous surveillance is needed to monitor virus evolution and vaccine effectiveness.
- Awareness among small pig farmers regarding vaccination and disease prevention needs improvement.

Way Forward

A comprehensive approach is required to maximise the benefits of the indigenous ASF vaccine.

- Scale up commercial production to ensure timely vaccine availability across the country.
- Integrate vaccination with surveillance, rapid diagnosis and strict biosecurity measures.
- Prioritise vaccination in ASF-prone regions, particularly the North-East.
- Strengthen farmer awareness and veterinary extension services.
- Promote continued research to improve vaccine effectiveness against emerging virus variants.

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