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Recommended vaccine programs for village-based pig production systems in Lao PDR

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Introduction

Classical swine fever (CSF) virus is endemic in Lao PDR, with major outbreaks each year resulting in significant production losses in all farming systems, including smallholder, semi-intensive and intensive farms. CSF is a vaccine-preventable disease and there are many vaccines, both live attenuated and subunit, commercially available. In Lao PDR a variety of livestock vaccines are produced at the National Vaccine Production Centre (NVPC), which is located at Nongteng village 15 km from Vientiane. The NVPC was established in 1980 and produces vaccines for CSF, haemorrhagic septicaemia, Newcastle disease, fowl cholera, infectious bronchitis, fowl pox and duck plague. CSF vaccine is produced from the live attenuated C-strain virus from homogenised rabbit spleen and mesenteric lymph nodes freeze dried in the presence of stabilisers in a rubber stoppered vial and stored at –20 °C.

Storage and transport of CSF vaccine

The NVPC recommends that, under correct storage conditions, the shelf life of CSF vaccine is 12 months; however, many provincial and district vaccine storage freezers do not have the capacity of –20 °C storage (–10 °C is the normal limit in small domestic refrigerator-freezers). The CSF virus is an enveloped virus and, because rapid and frequent temperature fluctuation results in viral death, there can be a significant decrease in the live virus titre of each dose of vaccine under such conditions. Therefore, temperature fluctuations should be avoided to maximise the amount of live virus in each dose administered to the pig.

Vaccine should be transported on ice in a well-insulated ‘cool-box’ to prevent the transport temperature exceeding 4 °C; if long transport times are anticipated, sufficient ice or ice-packs need to be included. In Lao PDR vaccine delivery follows a chain from the NVPC through different government offices before delivery to the farm (Figure 1).

Delivery of vaccine at the village level

The CSF vaccine is supplied freeze dried in a 10-dose vial and needs to be reconstituted in 10 mL of sterile distilled water which is provided by the manufacturer. Once reconstituted, the vaccine should be used as quickly as possible and not re-used the next day. The following procedures should be followed during a vaccination program in a village:

• Sterile technique should be used when reconstituting vaccine.
• Unused reconstituted vaccine should be discarded.
• Once reconstituted, vaccine should be used in only one village.
• Pigs should be adequately restrained and 1 mL of vaccine administered intramuscularly.
• A pig snare can be used to restrain larger pigs.
• Sterilised/sterile syringes should be used when administering vaccine.
• Syringes and needles should be sterilised between uses in different villages.

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Recommended vaccine strategy by animal age class

Sows: Sows should be vaccinated every 6 months or at least once per year. Pregnant sows should not be vaccinated.

Boars: Boars should be vaccinated every 6 months or at least once per year.

Piglets (of vaccinated sow): Every effort should be made to allow newborn piglets access to colostrum within the first 12 hours after birth. Piglets should be vaccinated no earlier than 5–6 weeks of age to avoid virus neutralisation by maternally derived antibodies. A booster dose is recommended 4 weeks after the initial dose. Subsequent vaccinations should be given according to information for boars and sows above.

Factors contributing to vaccination success

Animal-related factors include the following:

• no subclinical infection present
• livestock well fed and watered
• low parasite burden
• livestock old enough for maternal antibodies to have declined
• livestock not challenged with CSF virus before vaccine can generate an immune response

Vaccine-related factors include the following:

• vaccine not expired
• vaccine proved to be effective by the manufacturer
• vaccine stored and transported at correct temperature and fluctuations avoided or minimised
• vaccine not exposed to heat for long periods of time.

Figure 1. CSF vaccine delivery chain in Lao PDR
Vaccination procedures include the following:
• correct route of administration
• animal restrained to ensure delivery of the correct dose
• use of diluent supplied by the manufacturer
• leftover doses from multidose containers disposed of safely
• sterile equipment used in multidose containers.