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BIOSECURITY ALONG THE VALUE CHAIN

Biosecurity in different value chains

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Pig value chains in Africa

Sector 1: Industrial, intensive

- Target: commercial retail sector, regional and international export
- Large numbers of pigs (100 sows or many more), modern genetics
- Management systems: intensive indoor systems, often multi-site to ensure separation of age groups; modern technology for feed, water supplies
- Feed: high quality commercial rations
- Health care: veterinarians specialized in pig health
- Biosecurity: high, according to biosecurity plan including closed herds, all-in-all-out system, restricted entry, shower-in
- Suitable for compartmentalization to enable business to continue regardless of the disease status of the country or area

Sector 1: Value chain

- Formal value chains serve the commercial pig sector
- New stock only from reliable suppliers of genetics
- Market-ready pigs are sold, usually on contract, to large commercial abattoirs
- Transport of pigs to markets is governed by meat safety and welfare regulations in vehicles designed for the purpose
- HACCP compliance is increasingly required at abattoirs to ensure meat safety

Sector 1: Intensive, industrialized – biosecurity and ethical challenges

- Maintaining large numbers of pigs in close contact favours transmission of pathogens, so a high level of hygiene must be maintained as well as excellent observation for any clinical signs of disease
- Staff working with pigs need to be highly motivated and to understand and take ownership of the biosecurity plan to ensure that all measures are scrupulously and consistently implemented
- Welfare of the pigs in such systems is often questioned and should be assured to the greatest extent possible, including complying with requirements such as reducing time spent in sow crates, and ensuring optimal conditions in terms of ventilation and temperature

Sector 1: Commercial outdoor farming

- Markets exist for pork derived from extensively farmed, free-range pigs
- Three types of extensive commercial pig farms exist on their own or in combination to satisfy specific markets
  - Speciality production of high-quality processed pork such as Iberian ham
  - Free-range production under natural conditions to address welfare concerns
  - Free-range organic production to address human health concerns
- High quality commercial rations are usually provided but pigs have access to natural pasture and feed such as acorns, which influence flavour; for Iberian ham, acorns are the main or entire diet during fattening
- Biosecurity guidelines exist for these systems and include a stout perimeter fence

Sector 2: Small, semi-intensive farms

- Target: local markets
- Small number of pigs, usually 50 sows or fewer; farms may be farrow-to-finish or specialized in fattening or piglet production
- Management system: pigs usually confined
- Feed: commercial or home-mixed rations
- Health care: variable but likely to call a veterinarian for unusual disease events or deaths
- Biosecurity: variable, but some basic biosecurity usually in place

Sector 2: Value chains

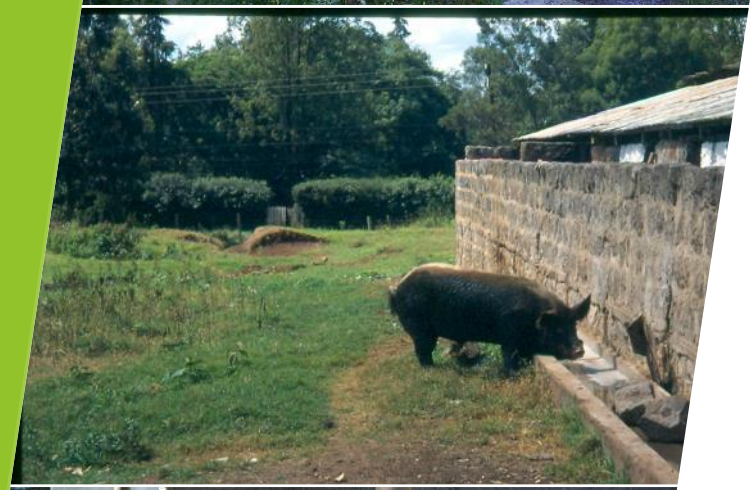
- New stock from commercial breeders, farm gate traders, live markets and auction yards
- Value chains may be formal, with pigs sold to commercial abattoirs, or informal, depending on distance from a commercial abattoir that will take small numbers of pigs
- Informal value chains include local butchers and food outlets including markets, farm gate traders, live markets and auction yards
- Small-scale producers can be integrated into formal commercial value chains, with guaranteed high-quality feed and supply contracts, for example Farmers Choice in Kenya

Sector 2: Challenges

- Small herds may be below the critical mass needed for profitability, resulting in lack of resources to invest in the farming enterprise, including biosecurity
- Welfare issues include provision of nutritious feed and sufficient water, as well as access to health services when required

Sector 3: Backyard farms, free-ranging and scavenging pigs

- Highly diverse sector ranging from traditional rural to peri-urban pig production
  - Pigs are kept for income generation and as a hedge against adverse events to provide emergency funds, but also for traditional and cultural reasons
- Usually small numbers of pigs (1 – 10) but can be many more, particularly in traditional free-ranging systems
- Target: local markets and farm gate traders
- Pigs may be confined, partially confined, or free-ranging
- Feed depends on the husbandry system; dependent on availability and cost
- Health care is usually not provided, may be available from community-based animal health workers or extension officers
- Biosecurity varies from basic but effective in backyard farms to absent in free-range and scavenging pigs



Sector 3: Backyard farms

- Rural and peri-urban settings
- Pigs are confined or partially confined
- Feed in rural settings often consists of agricultural by- and waste products, as well as domestic food waste
- In peri-urban settings pigs are fed industrial by- and waste products (brewers' grain, stale bread, damaged pasta, whey from cheese factories), market waste (spent fruit and vegetables), or swill consisting of leftover food from restaurants, hotels and other retail outlets)

Sector 3: Free-ranging pigs in traditional systems

- Pigs may be permanently free-ranging or may be confined at night, seasonally, or when necessary, for example sows with litters
- Tethers are sometimes used to limit the range of older pigs, with piglets left free-ranging; there are serious welfare issues with tethers of the type illustrated
- Feed, usually in the form of crop rests, may be supplied once a day, especially to pigs that are confined at night due to theft or predation

Sector 3: Scavenging pigs

- Scavenging pigs live largely on garbage that may include carrion and human waste and are found in both village and peri-urban settings
- Pigs likely became domesticated due to being attracted to human settlements to scavenge
- Scavenging is the basis of pigs being perceived as unclean, resulting in taboos on eating their flesh that generally have a religious origin
- These pigs nevertheless provide a lifeline to the very poor, and in some societies are recognized as sanitizers of the environment
- One of the main challenges is their role in transmitting porcine cysticercosis due to the pig tapeworm *Taenia solium*, with neurocysticercosis recognized as the most important cause of epilepsy in humans in Africa

Sector 3: Value chains

- Value chains vary from local sales to neighbours and clients in the same village to more complicated and often long chains involving pig traders, live markets or auction yards, roadside sales and informal slaughter points
- Emergency sale of pigs to minimize losses during an ASF outbreak is common practice, as well as sale of sick or dead pigs
- Profitability is usually low and many pig keepers would prefer to access higher priced markets but cannot do so due to distance from formal markets and low numbers of pigs
- Biosecurity along the informal value chains is usually non-existent although ASF causes heavy losses to pig value chain actors as well as producers

Conclusion

- The endemic ASF situation in Africa requires that pig value chains from farm to sales points should maintain an adequate level of biosecurity to prevent outbreaks
- The intensive industrialized sector has the option of compartmentalization to prevent ASF and achieve business continuity with willing trade partners
- Basic biosecurity measures such as confinement of pigs, ensuring safety of feed and preventing introduction of the virus via people and fomites can prevent ASF
- **Engagement with pig value chain actors is essential to determine which biosecurity options are feasible, affordable and culturally acceptable in order to achieve better management of ASF**

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