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Brief 1

Enhancing biosecurity along Uganda's pig value chains to control and prevent African swine fever

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Summary

African swine fever (ASF) is an important health challenge facing the Ugandan pig sector, causing significant economic losses. While effective control and treatment of ASF are unavailable due to the absence of effective treatment or vaccination, its impact can be minimized through the adoption of biosecurity measures designed to prevent the entry and spread of the disease on farms. In collaboration with the Ministry of Agriculture Animal Industry and Fisheries, local Government of Hoima, Kamuli, Lira, Mukono and Masaka districts, National Livestock Resources Research Institute, Makerere University, the International Livestock Research Institute (ILRI) undertook detailed assessments of the pig value chain in Uganda to document critical areas for intervention and pilot tested practical biosecurity measures for controlling ASF along pig value chains. This brief highlights lessons learnt from these studies.

Key recommendations include:

- Providing basic information about ASF to key value chain actors and stakeholders, most importantly farmers, traders and butchers;
- Strengthening of grassroots-level surveillance and reporting systems to feed in the national structure;
- Building the capacity of the disease reporting structure from centre to local governments to ensure veterinary services are answerable to a direct chain of command in the event of a disease outbreak;
- Enhancing inspection of live pigs during transportation and strengthening public health and meat hygiene; and
- Encouraging the uptake of biosecurity measure by farmers through the promotion of business models that improve income from piggery.

These recommendations would not only enhance the control and prevention of ASF, but also of other diseases, negatively affecting livestock, trade and public health in the country.

Background

Every year ASF outbreaks are reported in most pig-rearing districts, causing on farm mortality of up to 100% (Dione et al. 2014; Atuhaire et al. 2013). Income losses result in severe poverty, especially for smallholder pig farmers dependent on these animals for their livelihoods. Without effective treatment or vaccination, the adoption of good biosecurity measures is the only way of controlling ASF. However, there is opportunity for effective implementation of practical biosecurity measures in Uganda' pig production systems in order to achieve desired results (Dione et al. 2016a; Nantima et al. 2016). A study has shown that awareness, implementation and effective monitoring of biosecurity can reduce the incidence of ASF outbreaks on smallholder pig farms in Uganda (Dione et al. 2017). The successful control of ASF and other pig diseases requires improved biosecurity practices by all stakeholders, supported by responsive policies and a strong legal framework. Based on five years of experience in the ILRI-led Smallholder Pig Value Chain Development (SPVCD) projects in Uganda (2012–2016), this brief provides recommendations for improved ASF disease management.

Process

Evidence-based data was gathered from studies on ASF control and management undertaken through the SPVCD projects in collaboration with local partners. SPVCD workshops on

outcome mapping (Ochola 2012), impact pathways (Worsley 2013), identification of best-bet interventions (Ochola 2013), as well as value chain analysis (Ouma et al. 2015), stakeholder meetings and feedback workshops with value chain actors all supported these recommendations.

Implementation of biosecurity measures

Effective implementation relies on:

- Observation of routine on-farm biosecurity measures;
- Routine meat inspection and the application of proper hygiene standards by pork handlers, particularly traders and butchers;
- Early detection and timely reporting of ASF outbreaks;
- Effective movement control measures during outbreaks; and
- Quarantining animals during outbreaks and, particularly, restrictions to limit the spread of disease through trade in infected animals.

Observation of routine on-farm biosecurity measures

Among the solutions required to minimize the risk of disease spread, the observation of routine farm biosecurity is a priority (FAO 2010). A package of simple and easily applied procedures for on-farm hygiene standards was developed (Nantima et al. 2015a) and tested in Masaka and Lira districts (Dione et al., 2017). These procedures include: restricting visitors from accessing farms; taking caution when bringing stock on to farms; establishing footbaths on farms; boiling swill; and improving fencing. This extension package also helped farmers better recognize the key clinical signs associated with ASF and how to apply relevant prevention and control measures. Once they observed the benefits of adopting biosecurity measures, communities became more willing to take preventive action. However the issue of the high cost associated with key biosecurity inputs, such as disinfectants remain a challenge to many farmers (Dione et al. 2017).

Routine meat inspections and application of improved hygiene standards

Backyard slaughter with limited biosecurity has been reported in most pig-keeping communities. Due to a lack of capacity and resources at district level, meat inspection is not routinely undertaken. Poor hygiene and handling of meat after slaughter are high-risk practices. Slaughterhouses are an important element in the marketing chain where biosecurity, particularly bio-containment measures should be implemented. Fresh pork that has spoiled or become waste may infect pigs if regulations on swill feeding are not rigorously applied (FAO 2010). The ILRI and partner interventions demonstrated an increase in butcher knowledge on appropriate pig slaughter and pork handling practices because of the training they received. This also improved the capacity of butchers to identify pigs potentially infected with ASF, a key step towards reporting (Ouma et al. 2017a).

Early detection and timely reporting of disease outbreaks

Control of disease outbreaks relies on early detection, timely reporting and a rapid response by relevant stakeholders. Farmers are expected to detect and report suspected cases of ASF to the nearest veterinary officer either by telephone or in person. However, willingness to report is hindered by absence of compensation to farmers for diseases-related losses, the imposition of quarantine measures limiting pig movement and trade, and lack of resources available to the authorities to respond promptly. In response to a suspected ASF case, farmers prefer to sell or slaughter their pigs for consumption to avoid large losses, leading to increased risk of disease spread (Dione et al. 2015; Nantima et al. 2015b). In addition, lack of timely communication between veterinary officials, farmers and disease diagnostic laboratories was identified as a key challenge that makes coordination of efforts during ASF outbreaks very difficult.

Quarantine and movement control measures during outbreaks

The impediments to effective quarantining described above are compounded post-farm-gate, where unregulated animal movement poses a major challenge. Traders and other value chain actors do not normally seek permits when transporting their pigs due to a lack of knowledge, difficulty in reaching the relevant local veterinary authorities, or simply to avoid paying the fees stipulated under the Animal Movement Act. As a result, it is not possible to trace the movement of pigs from and between and to markets. This situation makes disease outbreak investigation challenging. The use of quarantine is very important in assessing the health status of new pigs introduced into the herd, as well as managing suspected ASF-infected pigs (FAO 2010).

Increased engagement with the regulatory environment

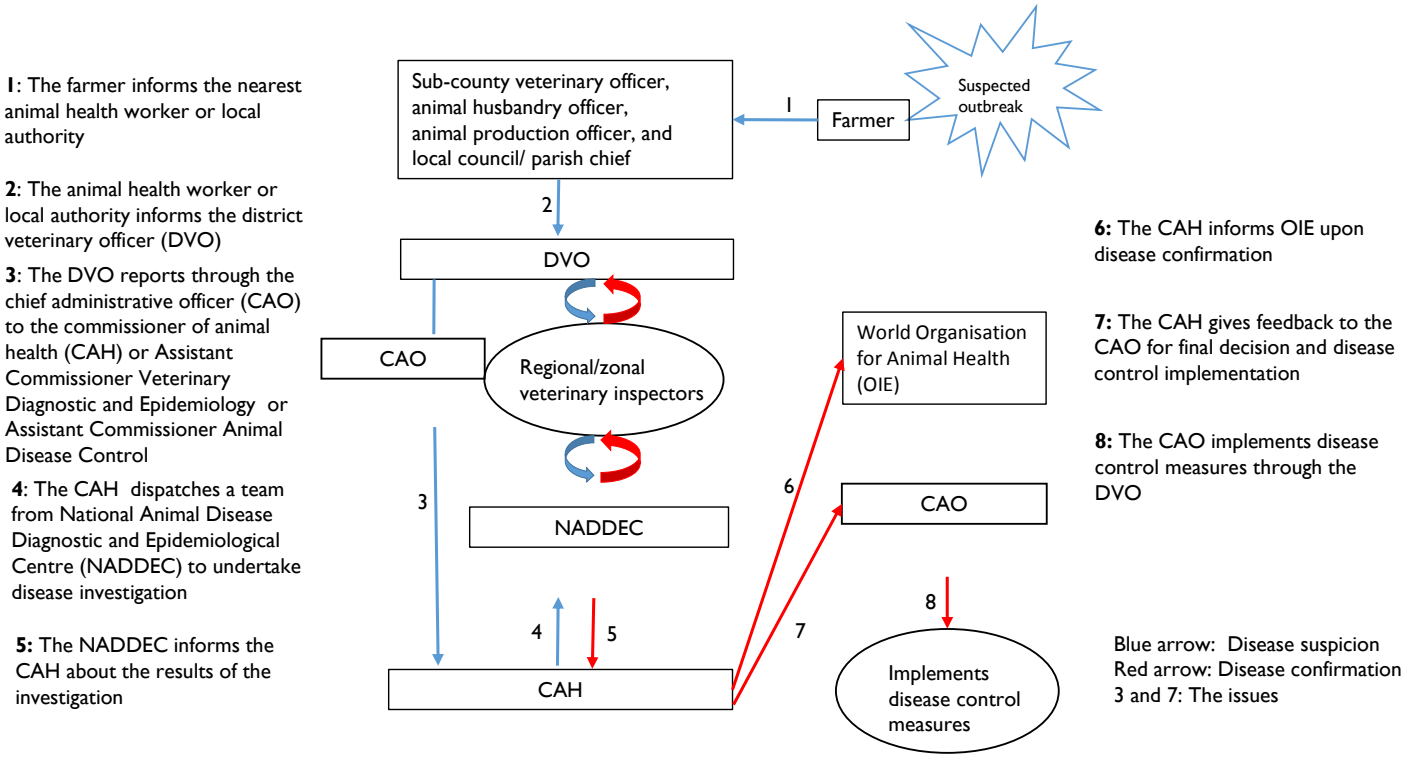
While there is not an explicit national policy or regulatory framework for ASF control in Uganda, there are policies and legal instruments which could potentially enhance ASF prevention and control in the country. These instruments include the:

- Delivery of Veterinary Services policy 2002, revised in 2016, which defines the roles and responsibilities of the public and private sector in animal health service delivery. The policy provides for government to ensure prompt reporting of outbreaks of notifiable diseases. It highlights the roles of central and local government, and the private sector, in animal disease surveillance, monitoring, outbreak investigation, as well as the confirmation of notifiable diseases and provision of quality diagnostic services. The central government is responsible for the financing of the control of any disease which assumes epidemic proportions, including ASF.

- Animal Diseases Act, CAP 38, 1918, revised in 2006, outlines the guidelines for handling epidemic diseases, such as ASF. These include steps for the reporting and confirmation of disease, regulation of the movement of animals, carcasses, hides and skins, the powers of relevant officers, compensation of farmers, the declaration of infected areas, and relevant legislation and regulations, including the type of offences and penalties for transgression. The legislation outlines the obligations of farmers to notify sick animals to the nearest veterinary authority, the duty of veterinary personnel and other stakeholders to report any suspected disease to the Commissioner for Animal Health (CAH) within 24–48 hours and the authority bestowed upon veterinary officers in districts for animal health diagnosis.

potentially places District Veterinary Officer (DVO) in a difficult situation, since they are only indirectly responsible to the CAH. DVOs are likely to be discouraged from implementing disease control measures that conflict with political decisions or which may lead to a loss of income to the district. The law further weakens the district veterinary command structure by turning district local government bodies into corporate entities. Consequently, this may lead to a delay in reporting disease outbreaks to the CAH and, as such, indirectly jeopardize ASF disease control efforts (Figure 1). Streamlining the reporting structure, particularly in the case of disease, would significantly improve the management of the outbreaks.

Figure 1: Current management structure of livestock disease outbreaks in Uganda



The implementation of these laws faces obstacles, including a lack of human and financial resources, and coordination in the veterinary system, as well as limited awareness of the policy by enforcement authorities. However, enhanced engagement between the relevant authorities and pig value chain stakeholders, and targeted public awareness of existing regulations—in particular through the national pig multi-stakeholder platform—offers substantial opportunities of ensuring these instruments are more effectively applied.

The disease outbreak management structure

The Local Government Act of 1995 established local authorities at district level and introduced a decentralised chain of command in all technical departments. It laid down the functions of the Chief Administrative Officer (CAO) as the technical head of the district. The CAO supervises and coordinates all delegated government services (Local Government (amended) Act 2015). This

Recommendations

Engage in public awareness campaigns, training and education

The training of pig value chain actors on basic biosecurity measures, and their associated benefits, should be routinely undertaken throughout the country by the relevant authorities. This would help provide extension information on biosecurity to farmers, traders and extension staff. Hygiene and sanitation trainings/public awareness campaigns should be broadened to include drama and radio talk shows also targeting consumers. If the community was better informed, this would encourage struggling value chain actors to implement biosecurity measures and reduce the risk to diseases.

The fact that women are more involved in daily management of pigs makes them a good target for disease

surveillance and reporting training. Moreover, during disease outbreaks, both men and women are involved in the provision of animal health care and the search for solutions (Dione et al. 2016b). Therefore, training on biosecurity should explicitly target both men and women within the same household (and for single parents, older sons and daughters too). This broader outreach would help spread knowledge of pig husbandry among household members and ensure that prompt action during disease outbreaks does not rely on a few individuals.

Enhance national disease surveillance and increase stakeholder engagement with the regulatory environment
This should involve the strengthening of grassroots-level surveillance and reporting systems to feed in the national structure. Uganda has benefited enormously from the existence of village health teams that carry out day-to-day surveillance and pass on their assessments of the primary heath situation at household level to the authorities. There is need for a similar policy for animal health, starting at village level, e.g. through the establishment of community-based animal disease reporting systems for pig diseases and community disease-management networks. There is also a need to promote the development and implementation of self-regulation and by-laws regarding disease reporting and biosecurity practices at community level.

Such an approach would help the sharing of key information and knowledge to facilitate control of animal disease threats and promotion of a one-health surveillance system.

Improve disease reporting structure
Improving the chain of command from the central government to local governments will ensure that all veterinary officials have a clear reporting hierarchy to reduce system inefficiencies in disease reporting and management.

Enhance inspection of live pig during transportation.
There is need to enhance veterinary officials' adherence to existing regulations e.g. by involving them in significant movement of animals particularly during outbreaks. The strengthening of inspection of vehicles during transporting would also help reduce risk of spreading diseases.

Strengthen public health and meat hygiene
The development of communal infrastructure for slaughter and processing of pigs would facilitate meat inspection and the proper disposal of slaughter waste by preventing roaming animals, such as dogs, from gaining access to potentially infectious material. There is, therefore, a need to invest in community slaughterhouses.

Encourage the uptake of biosecurity measure by farmers through the promotion of business models that improve income from piggery
Although the implementation of biosecurity measures leads to reductions in the number of ASF outbreaks, it also leads to a 6.2% reduction in farmer profit margins per year and a more than 8% increase in the margins of other value chain actors (Ouma et al. 2017b). There is, therefore, a need for interventions that provide financial incentives to farmers to compensate them for the cost of implementing biosecurity measures. Such interventions may include the promotion of business models that link producer organizations/cooperatives to quality inputs and service suppliers at better terms in order to improve their profit margins. Collective action through cooperatives or associations will also help value chain actors engage in lobbying and advocacy for the implementation of laws on the prevention and control of ASF and other pig diseases with their respective local government authorities.

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CGIAR is a global partnership that unites organizations engaged in research for a food-secure future. The CGIAR Research Program on Livestock provides research-based solutions to help smallholder farmers, pastoralists and agro-pastoralists transition to sustainable, resilient livelihoods and to productive enterprises that will help feed future generations. It aims to increase the productivity and profitability of livestock agri-food systems in sustainable ways, making meat, milk and eggs more available and affordable across the developing world. The Program brings together five core partners: the International Livestock Research Institute (ILRI) with a mandate on livestock; the International Center for Tropical Agriculture (CIAT), which works on forages; the International Center for Research in the Dry Areas (ICARDA), which works on small ruminants and dryland systems; the Swedish University of Agricultural Sciences (SLU) with expertise particularly in animal health and genetics and the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) which connects research into development and innovation and scaling processes.

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