FERAL PIG MANAGEMENT FOR DISEASE INCURSIONS: POTENTIAL APPROACHES AND CHALLENGES

Matthew Gentle[1], Lana Harriott[1], Cameron Wilson[1] and John Cuskelly[3]

[1]Pest Animal Research Centre, Invasive Plants and Animals, Biosecurity Queensland
Toowoomba, Qld 4350
[3]Animal Biosecurity & Welfare, Biosecurity Queensland, Dalby, Qld 4455

ABSTRACT

In Australia, feral pigs (*Sus scrofa*) are overwhelmingly viewed as a devastating agricultural and environmental pest, with increasingly coordinated control efforts conducted by producers or pest managers to manage their impacts. Feral pigs also carry pathogens of human health significance and contribute to the persistence and transmission of a range of endemic diseases or pathogens of livestock and wildlife. Importantly, feral pigs are the invasive species of most concern in Australia as potential vectors of exotic disease. The wide geographic distribution, habitat range and population densities of feral pig populations, together with limitations of control applications, offers considerable challenges to implementing effective disease management strategies. There is a variety of control methods (including shooting, trapping, poisoning, exclusion fencing, recreational and commercial harvesting) currently available, but optimal strategies for their use are often lacking or require field-testing to better inform end-users. More novel solutions, like those currently used or under development in Europe for wild boar may also have a role to manage feral pig movements but require careful consideration for applications under local conditions.

This presentation and paper briefly discusses current and novel methods to manage feral pig population size or movements, and the potential responses of feral pigs to control. This is used to highlight feral pig management challenges in the event of an exotic disease outbreak affecting feral pigs in Australia using African Swine Fever (ASF) as an example.

Keywords: *Sus scrofa*, control, biosecurity.

INTRODUCTION

There are a variety of control methods currently available to manage feral pig populations or their impacts, primarily to benefit agriculture or the environment (Wilson and Gentle 2022). Most strategies focus on reducing population size though increasing mortality, and include poisoning, trapping, aerial shooting, and recreational and commercial harvesting. Other control methods rely on protecting assets through non-lethal means, including excluding or restricting feral pig movements or activities. While applications of these methods vary across landscapes, production systems and jurisdictions, we review their use, strengths and weaknesses and potential applications for managing feral pigs in an exotic disease incursion, using African Swine Fever (ASF) as an example. For details and discussion, please see Gentle *et al.* (2022).

KEY FINDINGS

Disease management challenges and feral pig control

Wild boar (*Sus scrofa*) are an important reservoir of the African swine fever (ASF) in Europe and Asia. In Australia, where feral pigs are widely distributed, direct transmission of ASF (following introduction) could occur between infected and susceptible feral pigs, and indirect transmission arising from contact with infected carcasses (Anon 2022a; Anon 2022b; Chenais *et al.* 2018). Of primary concern is the potential spread to domestic pigs through direct or indirect contact with feral pigs and/or their habitat (Gentle *et al.* 2022).

Exclusion fencing reduce the likelihood of contact between domestic and feral pig populations (and their habitat) and restrict their movements. Temporary barriers (including electric and 'odour' fencing) of varying permeability have been successfully used to manage wild boar dispersal and ASF spread from high-risk zones in Europe (Šatrán 2019), and may play an important role in disease outbreak management - particularly for key areas or isolated populations of feral pigs in Australia.
Control methods that allow for frequent carcass retrieval (e.g., trapping, shooting, hunting, harvesting) are required for active surveillance to detect virus presence. All methods may require lead or 'set-up time', and substantial efforts to be effective at reducing population size – even in the short-term (Wilson and Gentle 2022). Importantly, ASF virus can persist in infected carcasses and nearby soil, making carcass removal and site management critical to avoid cannibalism and oral transmission (Cukor *et al.* 2020; Probst *et al.* 2017). Poison baiting using 1080 is problematic for carcass retrieval and subsequent disposal given the generally long period following between consumption and death (see O'Brien 1988) makes carcasses difficult to locate. Sodium nitrite typically has a considerably shorter latent period, with carcasses often located close to the bait station (e.g. Humphrys 2017), and may thus be more applicable in active surveillance and disease management. Regulatory changes in some jurisdictions now limit the use of different 1080 bait substrates (e.g., fruit, vegetables, meat) or require non-target animal excluders that may reduce applications (Gentle and Elsworth 2021).

Fertility and biological control of feral pigs are not currently viable. Fertility control applications are highly scenario-specific and remain unlikely for broadscale use until target-specific, oral delivery mechanisms are available in wild pig populations (Bengsen *et al.* 2014). The use of any biological control agents to manage feral pig populations is also considered problematic given the susceptibility of domestic pigs. A credible ASF vaccine is not currently commercially available (Han *et al.* 2023), and would still require administration/delivery to susceptible feral pigs - for debateable cost-benefits. Impacts from treated animals would remain, including as reservoirs or transmission agents of (other) diseases.

Aerial shooting requires little lead time and thus can result in a rapid knockdown of pig populations, although ground access for effective carcass retrieval and disposal needs to be considered. Thermal culling, both aerial (e.g. Cox *et al.* (2023)) or ground-based may be particularly useful to improve capture rates, while hunting with dogs could assist capture (Caley 1993). However, intensive, 'aggressive' techniques may possibly alter pig behaviour and cause dispersal, which is obviously problematic for limiting disease spread (Saunders and Bryant 1988). However, such these often-perceived effects on pig behaviour require further assessment.
Hunting or commercial harvesting would be useful for passive surveillance, particularly to assist early detection, or to supplement more intensive, restrictive sampling in higher risk

areas. Importantly, surveillance and control measures also need to mitigate the potential for movement of infected material, using measures such as bans on feral pig hunting or entry to infected areas by the public (Šatrán 2019).

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For details please see Gentle *et al.* (2022).

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