Surveillance options to demonstrate absence of feral pigs

Contributors

The material provided below to support assessment for absence of feral pigs has been reviewed by the NFPAP's Scientific Advisory Panel, comprised of scientists and technical specialists who have strong technical and practical expertise in feral pig management and monitoring.

Recommendations

- That these surveillance options be applied by Australian pork producers who have voluntarily adopted the Voluntary Enhanced Biosecurity Standards (VEBS) to:
  - obtain evidence to demonstrate absence of feral pigs in their local region and on their properties and
  - provide justification to a third party around mitigations applied or not applied, and specifically on why exclusion fencing to mitigate access to the piggery site by feral pigs may not be required.
- That these evidence-based feral pig surveillance records be provided by the producer for review and sign-off to the herd's veterinarian prior to making them available to the APIQ auditor as part of the herd biosecurity plan.
- That these feral pig surveillance records be used to determine the exposure likelihood rating for each production site, using the matrix agreed by the Voluntary Enhanced Biosecurity Standards (VEBS) (African Swine Fever (ASF)) Working Group.
- That APL consider the potential to build a training resource for industry to support the implementation of feral pig surveillance monitoring.

Purpose

- To provide informed technical feedback for consideration by the Australian Pork Industry Quality Assurance Program (APIQ✓®) management on surveillance options that may be used by pig producers to obtain evidence of absence of feral pigs in their local region and on their properties.

Background

A feral pig qualitative exposure likelihood rating tool, with five criteria, was drafted by the APL ASF Technical Panel to assist jurisdictions with rating the likelihood of ASF exposure of domestic pigs from infected feral pigs (and vice versa). The States and territories have provided feedback on the draft exposure likelihood matrix for disease transmission risks of feral pigs that will then be used to support decision-making on the issue of movement permits (in the event of outbreak of African swine fever).

Feedback received on the exposure likelihood matrix from Victoria involved consolidating the five criteria down to three.

1. Nil

No record of feral pigs in the area

2. Low

Only sporadic sightings of feral pigs in uncontrolled areas (parks, waterways, forests) well away from piggeries (more than 15 km away based on home range out to 10 km in VIC)

3. Moderate to High

Feral pigs considered endemic in the area i.e. sightings made infrequently or commonly in the area or in proximity to piggeries.

It is noted that due to the Japanese Encephalitis Virus outbreak in eastern Australia confirmed on 25 February 2022, the exposure likelihood matrix has not yet been reviewed and finalised by the VEBS (ASF) Working Group.

An optional module is also being drafted for the voluntary industry-managed Australian Pork Industry Quality Assurance Program (APIQ✓®) Standard. This module will detail the APIQ standards and performance standards specific to the VEBS (ASF) that are currently being finalised by the VEBS (ASF) Working Group.

Both the final exposure likelihood matrix and compliance with the relevant VEBS standards will need to be informed by objective evidence collected by each pig producer. From an APIQ perspective, this evidence will need to be provided for review (e.g. by the herd's veterinarian) and be made available to the APIQ auditor to support the auditor's assessment of disease transmission risks to the herd due to feral pigs. It is not considered that auditors will be undertaking or critiquing the feral pig exposure themselves. Rather that they will be reviewing available evidence provided by the producer that has itself been reviewed and approved by e.g., the herd's veterinarian.

It is noted that the most appropriate risk-based approach to an exposure assessment for feral pigs is to assume presence and assess for absence. Assuming absence and assessing for presence is fraught with potential for properties to be inappropriately classified as feral-pig free,

Surveillance methods

Feral pigs can be highly mobile within their home ranges. The home range of feral pigs varies from location to location in response to habitat type, food supply, season, the size of individual animals and population density. Those of sounder groups, comprised of sows, piglets and younger animals, typically have smaller home ranges than boars. Therefore, a landscape-scale, cross-tenure and coordinated approach for their humane management using integrated best practice management is being advocated by the National Feral Pig Action Plan. Coordinated actions by private and public land managers to reduce feral pig populations and their impacts is being encouraged.

There are no resources currently available for land managers to access that enable them to get a robust and confident measure of feral pig presence/absence in their region or on their property. Local knowledge of why, when and where feral pigs move is also unavailable.

Surveillance monitoring will therefore be required on the property, and those of their neighbours, for a pig producer to determine feral pig presence/absence to cover the home range area of feral pigs.

Surveillance methods that could be implemented by producers to enable them to regularly monitor feral pig activity (e.g. monthly) and gather evidence of feral pig risk over time include:

1. Local intelligence from community-led management groups
   - To manage biosecurity and disease transmission risks that feral pigs pose to their businesses, it is recommended that pig producers join and participate in local community-led groups of land managers who are working together in coordinated ways to:
     i. reduce feral pig populations and their impacts,
     ii. support local management initiatives
     iii. obtain local intelligence of feral pig sightings and control outcomes (including through being a member of a closed FeralPigScan group).
   - This information could be used by producers to inform their risk assessment.
   - Data entered into FeralPigScan (or other systems) by members of the local management group may be made available to verify risk assessments.
2. Regular subjective property monitoring of feral pig sign.
   - *Do not* rely on sightings of feral pigs to determine if they are present in the area.
   - Conduct monitoring on a regular basis in areas that are likely to be frequented by feral pigs if they were present and record all information using paper based or electronic forms in a standardised way
   - Sites to monitor include: water courses, dam banks and trees; crops and pastures; fence lines (hair and mud left on wires). A range of areas across the property need to be considered as these areas may change with seasonal conditions and alternate food availability.
   - Fact sheets to assist producers signs to look for are available, including one developed by the National Feral Pig Action Plan as well as in the Glovebox guide for managing feral pigs. Key signs to look for include soil disturbance/rooting/digging, hoof prints, wallows, crop and pasture damage, rub and tusk marks left on trees, faeces/scats, hair and mud, and signs of predation.
   - Baseline data on feral pig damage and presence can be used to compare future data to measure feral pig presence over time.

3. Camera surveillance
   - Field cameras (or camera traps) are widely used to monitor presence and absence of feral animals (and other wildlife) in the landscape. Once set up, they are relatively easy to maintain and use in the field.
   - Support with installation is likely to be needed to ensure that they are in the right places and set up correctly.
   - Remotely activated cameras take pictures when an object in its view is detected by either its motion sensor, infrared sensor, or light beam. The pictures are stored as a digital image.
   - Digital images will need to be routinely inspected, and made available to an auditor to verify paper-based/electronic records, for feral pig presence/absence.
   - The use of an automatic feeder to lure feral pigs into an area under camera surveillance is worth considering – once detected, these animals can then be humanely destroyed (e.g. trapping, baiting).
   - Automated software is available to provide real time alerts to land managers if feral pigs are observed. Mobile connectivity is required for this. An example of how this system is being used can be found here.
   - Technical advice to assist with determining relative abundance index and changes in populations over time, in response to control activities, may be sought.
4. Drone surveillance (using thermal imaging cameras)
   - Can be used to detect feral pigs in the landscape, including under tree canopies
   - Land managers can be trained to use this technology.
   - Standardised methodologies can be implemented to repeatedly fly the same transects of land over time to establish baselines, monitor feral pig presence/absence and, where present, GPS locations can be captured and footage analysed to determine feral pig populations.
   - Digital footage captured can be retained, analysed, records made and provided to the APIQ✓® auditor to verify records
   - Drone pilots must not fly drones higher than 120 metres above ground level without CASA approval. This provides a buffer between the drone and other crewed aircraft.
   - State and territory laws must be complied with when flying a drone near wildlife.
   - Approval is often required to fly over national parks and forest reserves.
   - Prior consent should be obtained from neighbours to fly over any private property and care is required when flying over paddocks to ensure livestock are not disturbed, distressed or injured.
   - Drones cannot be flown over people.
   - Drones should not be flown beyond visual line of sight unless the pilot has necessary licences/approval.
5. Environmental DNA sampling
   - Environmental DNA is genetic material that can be obtained directly from environmental samples, including soil and water, without any obvious signs of biological source material.
   - Locations around the property, and those of neighbours, can be regularly sampled for DNA released by organisms in the environment through faeces, mucus, urine, saliva, skin cells, hair, gametes and bodily remains.
   - eDNA technology is a cost-efficient alternative to other methods of species monitoring
   - Use of an eDNA detection technique provides a sensitive method to find small numbers of individuals that may be elusive using other methods
   - Regular environmental DNA sampling of key sites can be implemented over time by producers, with records retained for auditing purposes by APIQ✓® auditors.
   - This technique allows for surveillance and management of feral pigs which are difficult to monitor or detect by direct observation.

Feral pig management plans

It is recommended that the pest management plans that pig producers have in place has a detailed section that covers feral pig management. The Glovebox Guide for Managing Feral Pigs is a useful resource that provides guidance to all land managers, including pork producers, on what needs to be included and considered in a feral pig management plan. These plans should clearly define the problem, include clear objectives and have measurable outcomes to support management actions in the event that feral pig(s) are detected in the area of interest.

   - It's very important that pig producers, and their neighbours, do not rely on just one control method as no single technique can be reliably applied to completely remove feral pigs from an area.

- Strategic use of different combinations of control methods is recommended to optimise the effectiveness of your management program.
- Best practice management methods that can be used in Australia for feral pigs are:
  - baiting – using sodium fluoroacetate (1080) or HOGGONE® (this factsheet may assist with choosing baiting options)
  - aerial shooting
  - trapping
  - ground shooting
  - exclusion fencing
- Model codes of practice for the humane control of feral pigs and Standard Operating Procedures (SOP) for application of these methods are available on the PestSmart website. The SOP for HOGGONE® can be found here.
- Ensure compliance with relevant state and territory legislation in the use of these control methods
- Further information to assist land managers with baiting options available for feral pigs can be found in this NFPAP factsheet.

Exclusion fencing

- Exclusion fencing is being used to protect high value crops and animal enterprises from feral pigs.
- Other methods of control will also need to implemented as exclusion fencing does not reduce feral pig populations and may redirect pigs to other areas.
- For fencing to be successful, fences need to be constructed before feral pigs get used to crossing an area.
- Fences must be routinely maintained, including regular control of vegetation growing underneath (if electrified) to prevent shorting.
- Fencing will have little effect once feral pigs are aware of a food and/or water source inside the area and are habituated to the source.
- Exclusion fencing can cost between $7,000-$10,000 per kilometre to install.
- Effectiveness of fences are varied depending on the structure of the fence.
  - Its design and fabrication must be robust to exclude feral pigs.
  - Pigs generally will not jump fences but push through at snout level.
  - Existing fences can be modified to pig-proof standard through electrification.
  - Box or hinge joint fences are more effective that plain strand-wire fences
  - The most effective fences are comprised of a combination of high-tensile fixed-knot wire mesh supported on steel posts with an electrified outrigger/trip wire held close to the ground by a plain or barbed wire line. The wire at the bottom of the fence strengthens the fence and stops feral pigs from lifting the mesh.
  - Fences can also be buried 0.5 m underground to manage digging and rooting behaviours.
  - Ensure that gates are hung and hinged in ways that reduce the gap between the gate and the ground.

Useful resources on exclusion fencing:
  - Mitchell, J. (2011) Exclusion fencing for feral pig control, NQ Dry Tropics, Townsville
  - Kondinin Group, Farming Ahead, Research Report January 2016 No. 72