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The Importance of Using Thermal Drones in African Swine Fever Surveillance in Romania

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Abstract: African swine fever (ASF) remains a major challenge for pig production in Romania. This paper examines the potential contribution of thermal drones to wild boar surveillance and outlines their integration into veterinary monitoring. A documentary review of epidemiological data and animal-health guidance was conducted. Thermal drones could support animal localisation and guide ground searches, but cannot confirm infection. Their practical value in Romania requires field validation and coordination between veterinary authorities, farmers and hunting-ground managers.
Keywords: African swine fever, thermal drones, wild boar, biosecurity, Romania.

Introduction

Romania reported 220 ASF outbreaks in domestic pigs in 2024 and 476 in 2025 [1, 2]. These annual figures highlight the need to strengthen surveillance and prevention. Monitoring wild boar near pig holdings may help identify areas requiring attention, while measures addressing contaminated feed, equipment, clothing and vehicles remain essential [3]. The objective is to assess the potential role of thermal drones within an integrated Romanian surveillance system.

Material and method

A narrative review was based on EFSA reports covering Romania and WOAH guidance on ASF transmission and diagnosis [1–3]. No field flights or laboratory tests were conducted. A Romanian pilot is proposed to compare conventional ground searches with drone-assisted searches in comparable sectors near pig holdings. Flight duration, searched area, vegetation, weather, verified observations and total costs would be recorded. Live-animal observations and suspected carcasses would be assessed separately, with ground verification and veterinary notification where appropriate.

Results and discussions

The review identifies potential applications rather than measured Romanian field outcomes. Thermal drones could help locate wild boar in accessible habitats and direct teams towards observations requiring verification. Aerial observations could inform local risk assessment, but the presence of wild boar does not establish infection or prove transmission to a holding. Vegetation, thermal contrast and weather may limit detection; an unsuccessful search cannot demonstrate the absence of animals or disease.

For Romania, deployment should include both commercial holdings and areas with backyard pigs, selected according to local veterinary risk assessments. Performance should be evaluated through confirmed detections per unit of search effort, time to notification and cost per confirmed detection. Suspected carcasses require authorised veterinary follow-up. Equipment and personnel movements must respect biosecurity. Thermal imaging cannot identify ASF virus, and confirmation requires laboratory testing [3]. Any reduction in outbreaks would need separate, longer-term evaluation.

Conclusions

Thermal drones could complement ASF surveillance in Romania by improving the targeting of ground searches. Their effectiveness must be established through a standardised local pilot. Integration with biosecurity, laboratory diagnosis and timely veterinary intervention is essential before wider deployment.

References

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