



Semi-quantitative risk assessment of ASF virus introduction in outdoor and non-commercial pig farms

African Swine Fever (ASF) was reported in wild boars in Italy, in 2022 in Liguria and Piedmont, and in Latium (in wild boars and pigs). Within the framework of a research project, we developed a semi-quantitative risk assessment to classify pig farms in terms of the probability of introduction of ASFV.



Methods

We used a modified Failure Mode and Effect Analysis (FMEA) to calculate risk priority codes (RPC), indicating increasing risk levels ranging from 1 to 5. In the calculation of RPC, we included the importance of biosecurity measures, as attributed by experts. To consider geographic risk factors, we classified pig farms based on distance from wooded areas, as a proxy of exposure to wild boars (Fig. 1).

A checklist used in commercial pig farms, was modified and adapted to non-commercial and outdoor farms, as these farming systems are normally exposed to different risk factors. Field data collection was carried out in collaboration with public veterinarians.

Results

Forty-five pig farms (35 commercial outdoor, 3 commercial indoor, 7 non-commercial farms) were visited between January and May 2022. Highest risk levels (RPC = 5) were obtained from the evaluation of biosecurity measures associated with farm structure (Fig. 2). In fact, separation of premises from the external environment was often incomplete. Rodent and insect control were rarely carried out, and wild birds had access to the pig areas. 45.5% of farmers administered grass from out of farm areas, where wild boars may be present, with no previous storage or treatment. In 25.6% of outdoor farms, active search for dead pigs was not carried out daily, and this could hamper disease early detection.

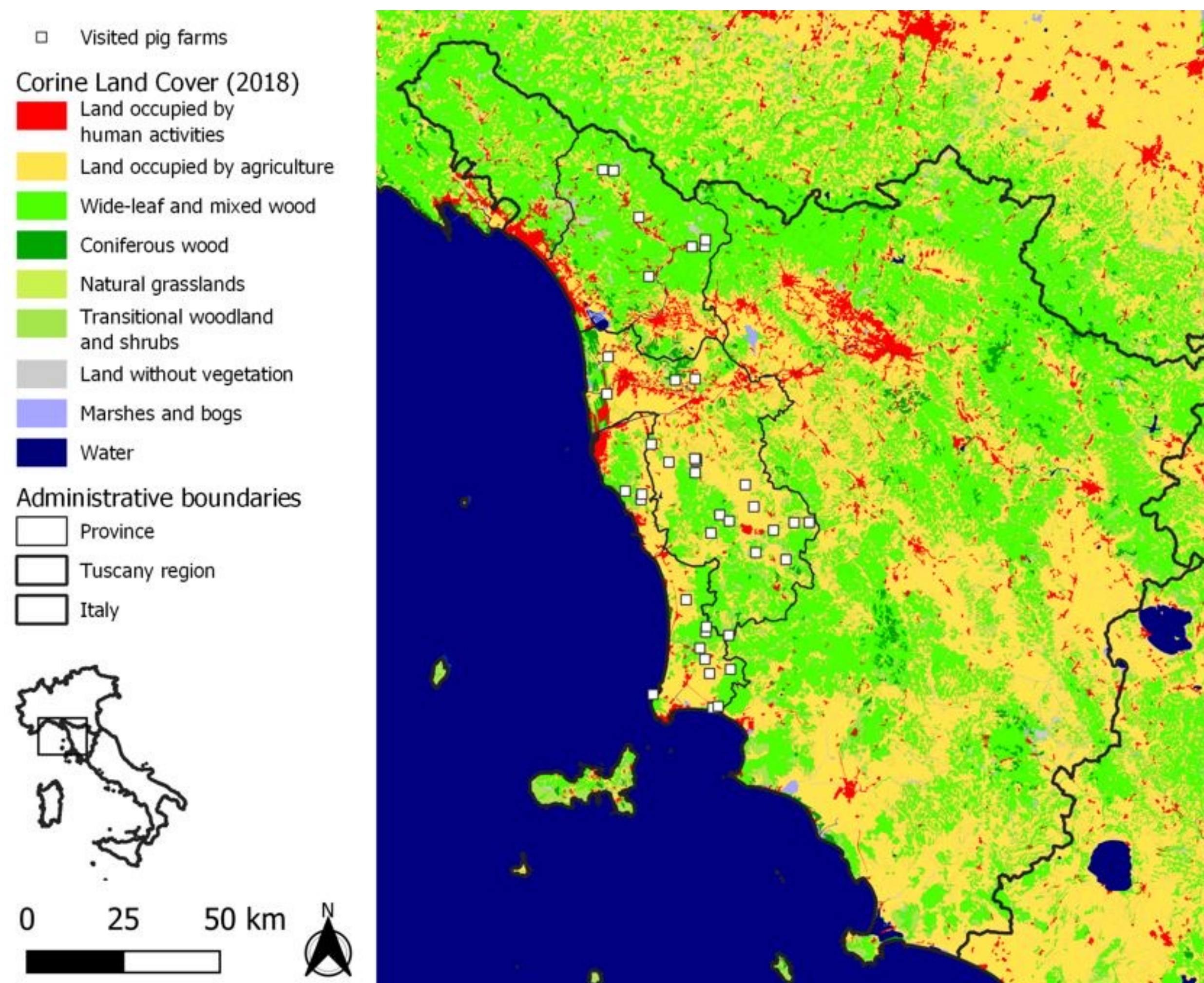


Fig. 1 Location and vegetation cover, of 41 outdoor pig farms, visited in 2022, in northwestern Tuscany.

Entrance to the farming area was rarely delimited by gates, which were absent in 46.7 % of farms. Double fences were present in only three farms (7.3% compliance). This is dangerous for pig farms located in the proximity of wooded areas. Indeed, median distance of visited pig farms from wooded areas was 140.5 m, and all the visited pig farms were located within 2.2 km from woods. On the other hand, employed personnel was usually absent, the introduction of new pigs to the farm was rare, exchange of equipment, tools, vehicles, and feed among farms was very rare, and this was associated with a reduced risk of ASFV introduction.

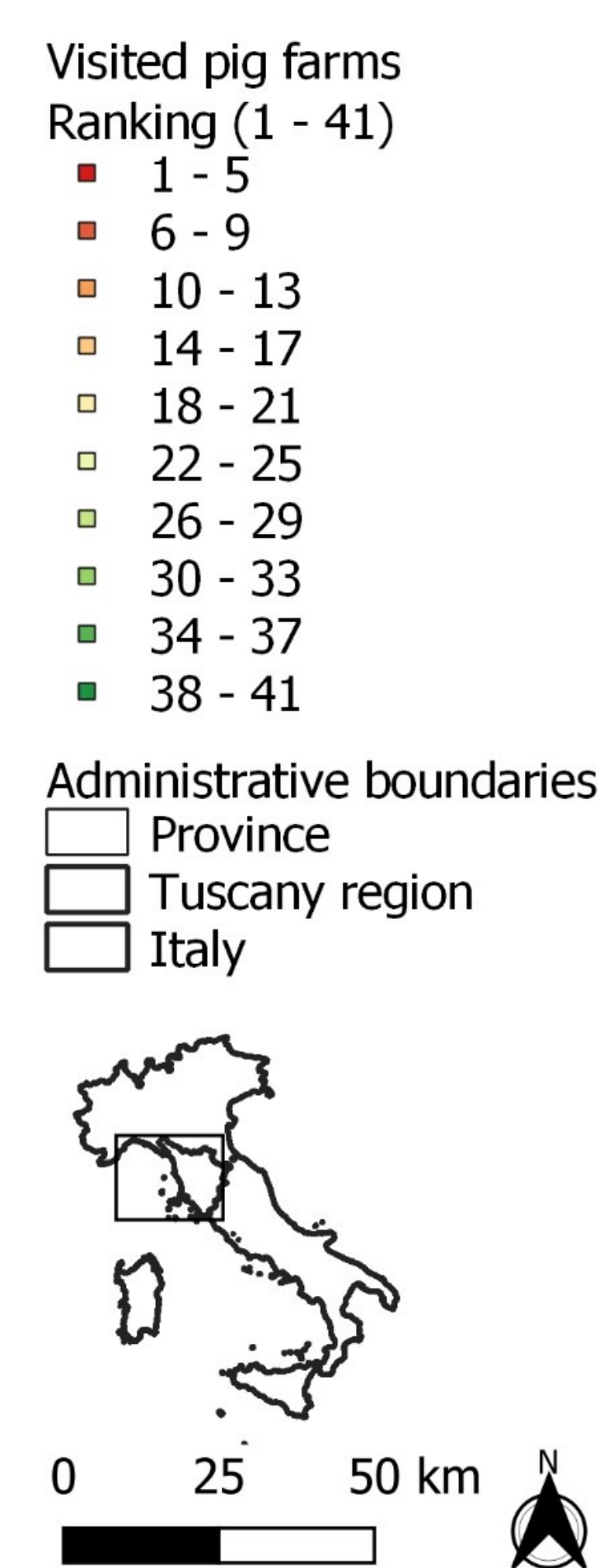


Fig. 2 Geographic locations of visited outdoor pig farms classified by FMEA, including on farm biosecurity compliance, as well as geographic risk factors.

Conclusions

The changes introduced to the FMEA, originally validated in commercial farms, seems applicable to non-commercial and outdoor farms. Recommendations to reduce the risk of ASFV introduction in outdoor and non-commercial pig farms include improving separation from the outside environment by double fences and early detection and removal of dead or sick animals.



S. Bellini¹
A. Rusinà²
F. Valentini²
G. Franceschini²
S. Calò¹
A. Santi¹
B. Bellato²
G. Baiocchi²
A. Mannelli²
A. Scollo²

¹Istituto Zooprofilattico della Lombardia ed Emilia-Romagna, 25124 Brescia, Italy.

²Department of Veterinary Sciences, University of Torino, 10095 Grugliasco, Torino, Italy.



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