

Evaluation of bait acceptance by wild boar and non-target species - test of different distribution modalities and seasonal variations - implication for oral vaccination efficiency against classical swine fever virus

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Abstract

Field assessment of the proportion of target and non-target individuals that consume baits is crucial to evaluate and optimize the cost-efficacy of a baiting campaign. In our study, different pre-baiting and baiting systems were tested at a long time scale (12 months) to try to improve vaccination efficiency of wild boars against classical swine fever virus. Evaluation of seasonal variation in natural food resources (competition with bait consumption) and life cycle succession of wild boar from piglets to adults is included and consumption of baits by non-target species is discussed.

Keywords: bait consumption, classical swine fever, disease control, oral vaccination efficiency, wild boar

Introduction

The European wild boar (*Sus scrofa*) is a major reservoir host for pathogens that affect humans and domestic animals. Bait delivery of vaccines to this target species is an essential component of disease management strategies worldwide. In spite of the long-term oral vaccination implemented in different European countries since the 1990s, classical swine fever virus (CSFV) may persist (von Rügen et al., 2008). To improve vaccination efficiency in the field, the utilisation of different pre-baiting and baiting systems have been suggested, but no data are available concerning the evaluation of such measures.

Recent studies based on animal immunity by examining the serological status of hunted wild boar from a vaccinated area, suggest a seasonal variability of vaccination efficiency. However, these previous field studies were limited in assessing vaccination efficiency (Rossi et al., 2010; von Rügen et al., 2008).

The objective of this study was to evaluate by camera trapping the bait consumption at a long time scale (12 months) according to different modalities of distribution. We aimed to include all seasonal variation in natural food resources (competition with bait consumption) and life cycle succession of wild boar from piglets to adults.

Materials and methods

A field uptake study was carried out from autumn 2010 to summer 2011 in the Vosges mountains (north-eastern France). Baits were distributed on the ground every 15 days on different pre-baiting and baiting systems: on 6 regular feeding places (2 kg of maize distributed per day on 15 m²) and 3 occasional feeding places (5 kg of maize distributed every 15 days on a transect of 200 m); close to 3 boar's wallows (without maize distribution) and to 3 tracks (without maize distribution).

Bait uptake was determined from examining pictures taken with digital game cameras with infrared illumination. The relative frequency of visits by different animal species was reported at each site.

Results

Up to now, only data from August to November 2010 were analyzed. These results suggest that whatever the site of bait distribution, non-target species such as Eurasian badgers (*Meles meles*), red foxes (*Vulpes vulpes*), mustelids spec. were frequently observed consuming baits (44 of the 305 distributed baits). Sixteen percent of young wild boars (<1 year) and 41% of sub-adults (1-2 years) were consuming baits when being in contact with the baits. Up to now, no consumption by adults was yet observed, but these data are based on very few contact occasions with baits to allow any conclusion (n=2).

Boar's wallows and regular feeding places appeared to be the most efficient areas for bait uptake while very little consumption was observed on occasional feeding places or close to tracks.

Baits consumed by wild boars were all eaten within 3 days after distribution and were mostly consumed within the first day (0.35 day; CI95% 0.08-0.69). As the CSFV vaccine is stable for 3-4 days at ambient temperature (Brauer et al., 2006), those results suggest an optimal vaccination after bait consumption.

Discussion

These first results observed in autumn possibly arise because the natural and artificial food resources were generating moderate bait uptake by wild boar. Analyses of the last aspect is currently in progress. Definitive results including seasonal variation according to the availability of natural food and life cycle succession of wild boar will be presented during the symposium. These findings will provide a basis for the development of new solutions including time tables and different pre-baiting and baiting systems to improve vaccination efficiency. These new solutions may be transferable for the distribution of anti-parasitic drugs, toxicants or contraceptives to wild boar.

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