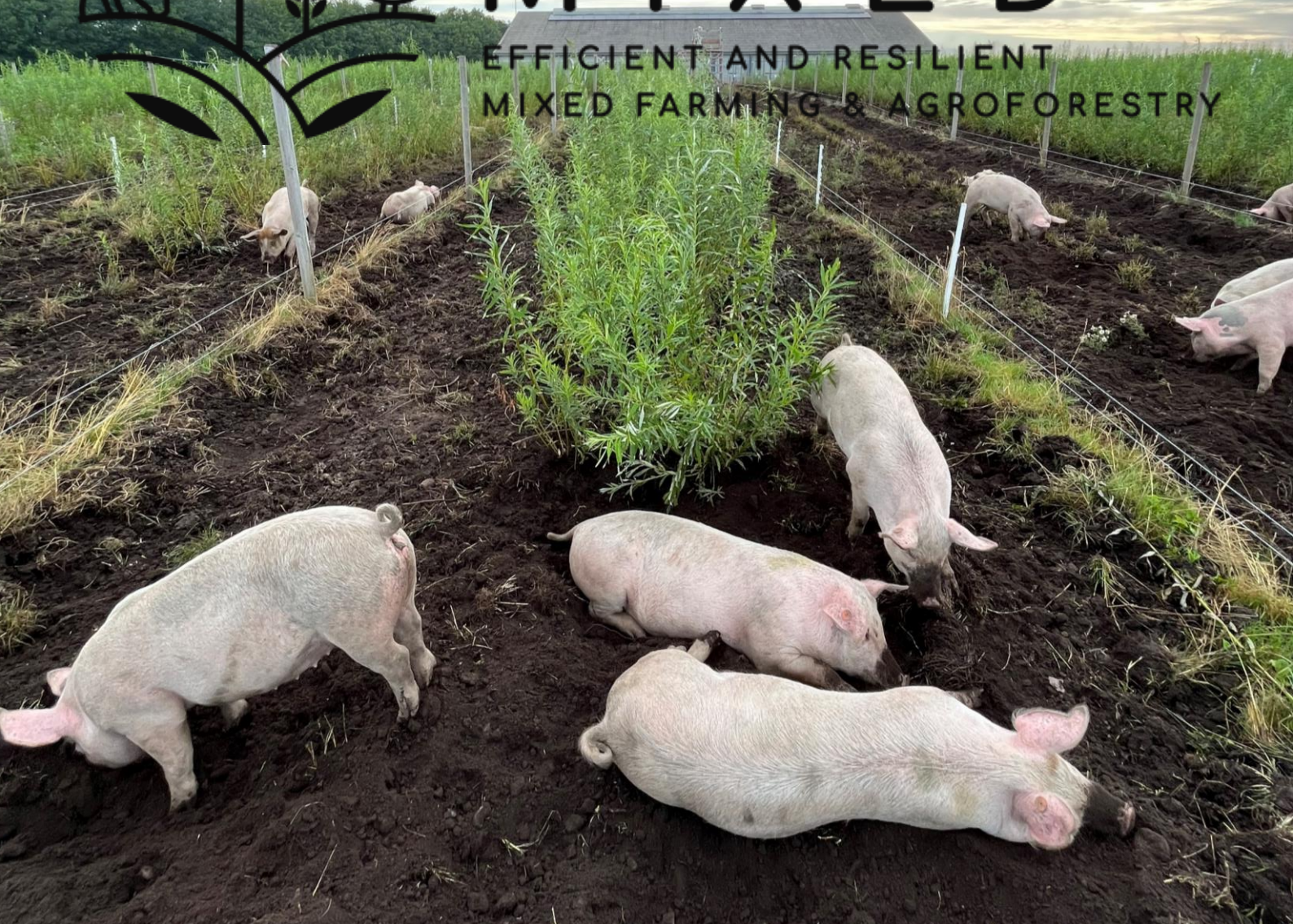




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Integrating fattening pigs and willow

Exploring a novel summer concept for organic pigs in Denmark



AARHUS UNIVERSITY

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Background



Nearly all organic fattening pigs are raised in indoor housing systems with outdoor concrete runs. This system enables the collection of manure for use in the arable crop rotation. However, it does not align with the organic principle of naturalness, as the pigs have no access to pasture. Producing fattening pigs on pasture poses challenges for nitrogen (N) cycling as the pigs destroy the vegetation increasing the risk of N leaching.



Willow is expected to be more robust to pig activity compared to pasture. Thus, introducing a willow-planted area will enhance the naturalness and environmental stimulation for the pigs and reduce risk of N leaching compared to pasture-based systems.



Trials in Denmark with fattening pigs in a willow-system, tested the impact on pigs' growth rate, soil N load and willow regrowth.

Methodology



Rows of the willow clone Torhild ((*Salix schwerinii* × *S. viminalis*) × *S. viminalis*) were established in 2019. The first batch of pigs gained access in 2021. The willow were coppiced in February to ensure fresh shoots and sprouts for the spring.



Feeding strategy (2021). Fattening pigs were introduced at approx. 92 kg in June, (200m² willow area/pig). They were in groups of eight pigs and either fed according to the norm or 70% of the norm.



Animal density (2022-2023). Fattening pigs were introduced at approx. 30 kg in May. They were in groups of either 4 or 8 (100 m² or 50 m² per produced pig).

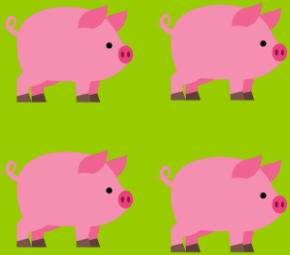


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When introduced in May the pigs had a high intake of willow. Analysis of the willow leaves and branches shows a relatively high crude protein content (Crude protein 20 % of dry matter).



The stocking density did affect the available biomass, as the pigs continually pruned the willow throughout the production period (< 250 kg dry matter/ha for $50 \text{ m}^2/\text{pig}$ and > 1500 kg/ha for $100 \text{ m}^2/\text{pig}$, measured in July after the pig production period)



The stocking density affected the soil nutrient load. Samples taken after the production period, show that providing 50 m^2 willow area/pig gave a soil inorganic N load (0-100 cm) of more than 2.5x the load compared to the lower stocking density ($100 \text{ m}^2/\text{pig}$).



The willow was robust against the pig activity and had strong regrowth after the pig production periods.



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The system was a combined system with indoor straw bedded area and a willow range.

In the range the pigs found fresh shoots and leaves highly palatable, they used the shade of the willows, and they got the benefit of the naturalness to root deep in the soil.

