
INCLUDING POPLAR TREES IN PASTURE BASED ORGANIC PIG PRODUCTION – ANIMAL BEHAVIOUR AND NUTRIENT EFFICIENCY

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FREE-RANGE SOWS CURRENTLY A PASTURE BASED SYSTEM

CHALLENGES IN ORGANIC PIG PRODUCTION - ENVIRONMENT

- ❑ Compared to conventional indoor production
 - ❑ Nitrate leaching/hot spots
 - ❑ Ammonia volatilization
 - ❑ Requires more land: 10 m² vs 6.6 m² per kg pork produced

comparable in terms of green house gas emissions



CHALLENGES IN ORGANIC PIG PRODUCTION

- ANIMAL WELFARE

Heat



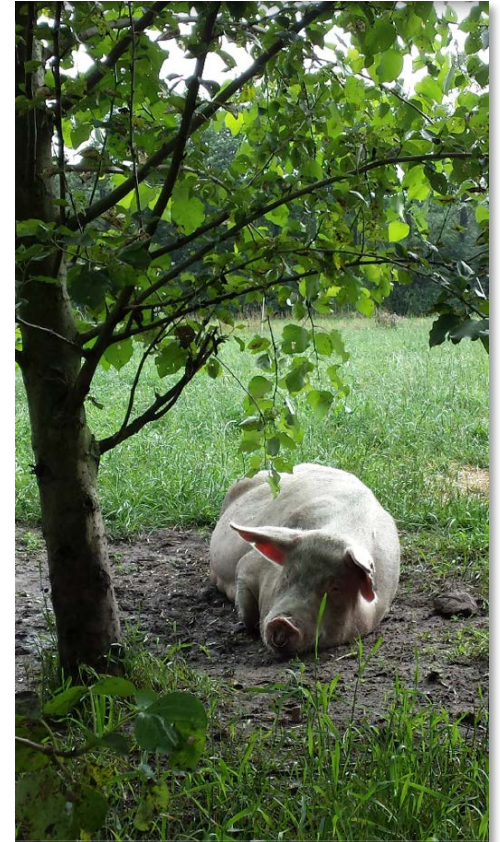
Ring in the snout



Sunburn



TREES IN SOW PADDOCKS – A POSSIBLE SOLUTION?



OVERALL PURPOSE

Environment:


- ❑ Reduced nitrate leaching
 - ❑ Uptake of nutrients by energy crops
 - ❑ Uptake of nutrients is perhaps independent of grass cover

Productivity:

- ❑ On the same area: production of both pork and energy crops (biomass)

Animal welfare:

- ❑ Shelter during cold periods and shadow during hot periods
- ❑ Enriched environment (feral pigs prefer to range in and near forest)
- ❑ Eliminate ringing?
- ❑ More growing pigs free-range outdoors

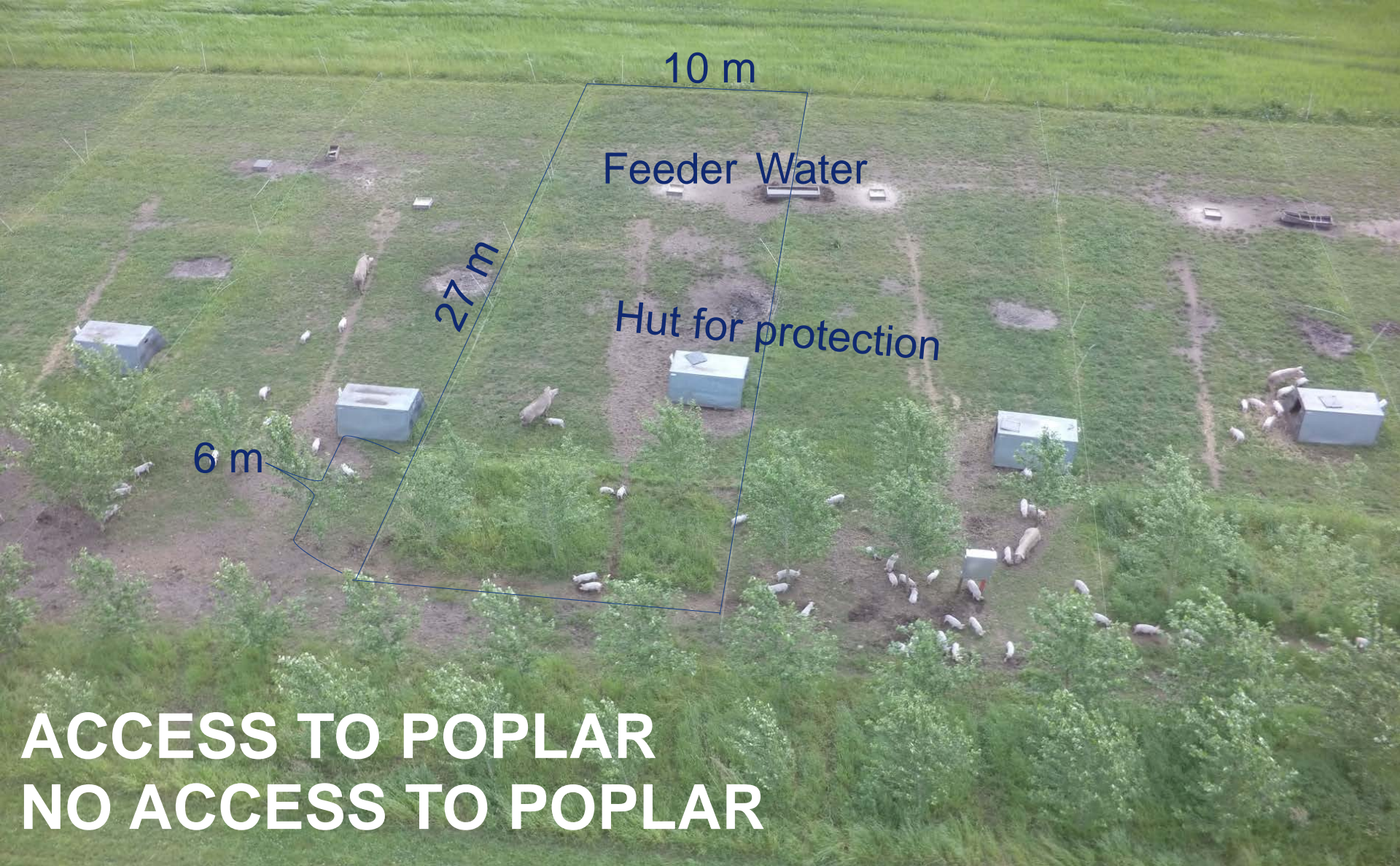


Experiment: Lactating sows May 2015 – March 2016

4 batches of sows
21 sows in each batch
(individual paddocks)

3 treatments:

1. **Access** to poplar
2. **No access** to poplar
3. No poplar (**control**)



ACCESS TO POPLAR
NO ACCESS TO POPLAR

PADDOCKS WITH NO TREES (CONTROL)



General behaviour + activity level + location in the system

One whole day every 2nd week during 7 weeks of lactation

Every minute registrations (observing two sows at a time)

Environment: soil water nitrate + soil inorganic nitrogen

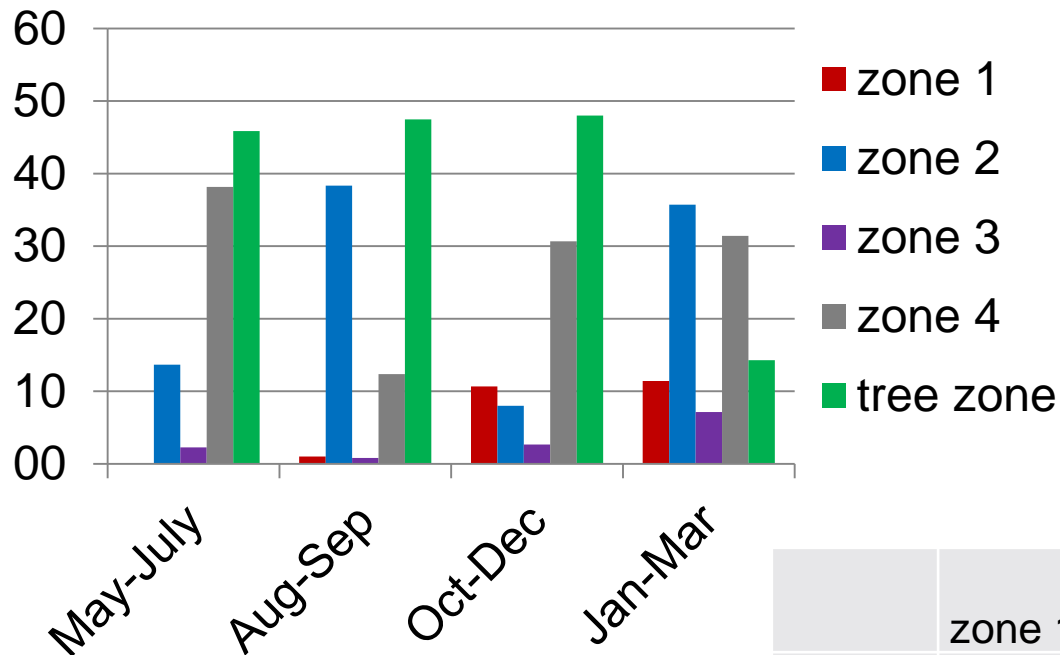




ACCESS TO POPLAR NO ACCESS TO POPLAR

BEHAVIOUR: LYING

% of obs. time sows spent lying in paddock zones of total time spent lying

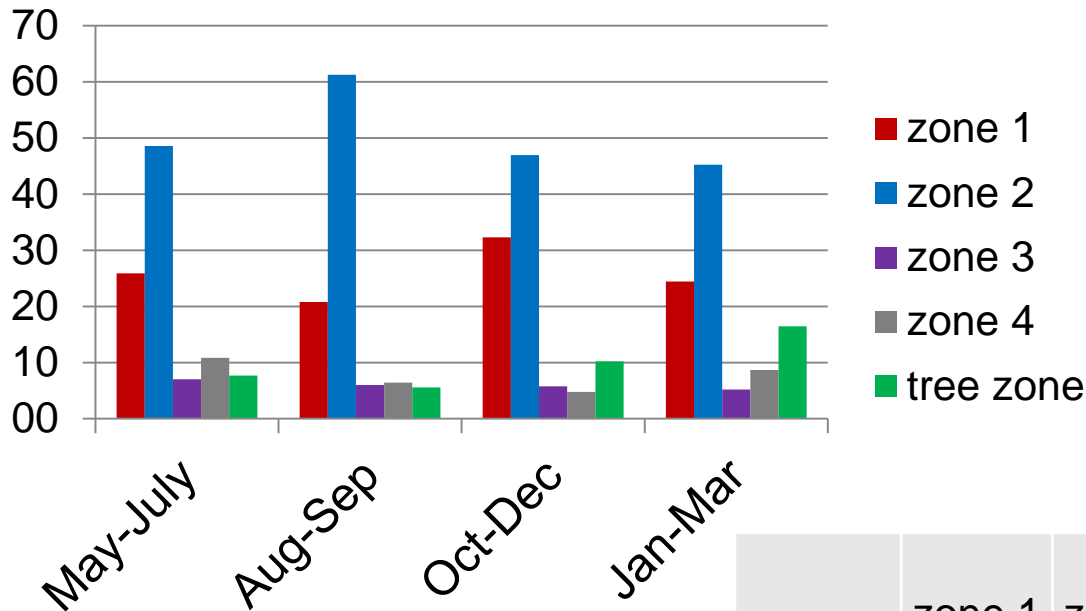


Time of year	% of obs. time in hut		
	Trees	No trees	Control
May-July	61	69	71
Aug-Sep	50	53	57
Oct-Dec	89	77	92
Jan-Mar	92	94	94

	zone 1	zone 2	zone 3	zone 4	tree zone	total
Relative area (%)	27	27	14	12	19	100

BEHAVIOUR: ACTIVITY

% of obs. time sows were active in paddock zones of total time spent active



	zone 1	zone 2	zone 3	zone 4	tree zone	total
Relative area (%)	27	27	14	12	19	100

SUNBURN

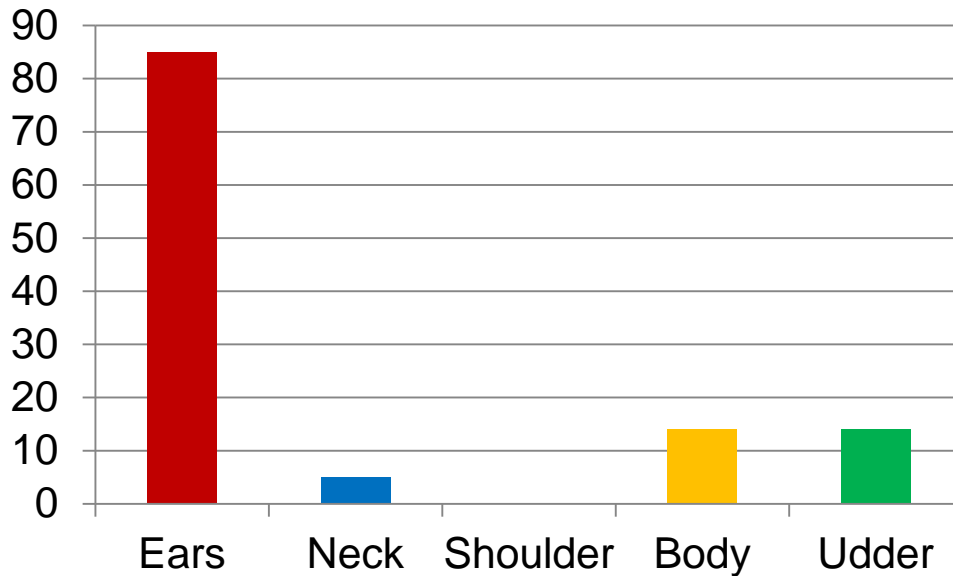
HYPOTHESIS: Access to trees → less sunburn

Scoring **body parts** according to a **4 level scale**

1. Ears
2. Neck
3. Shoulder
4. Body (side and hind)
5. Udder

SUNBURN

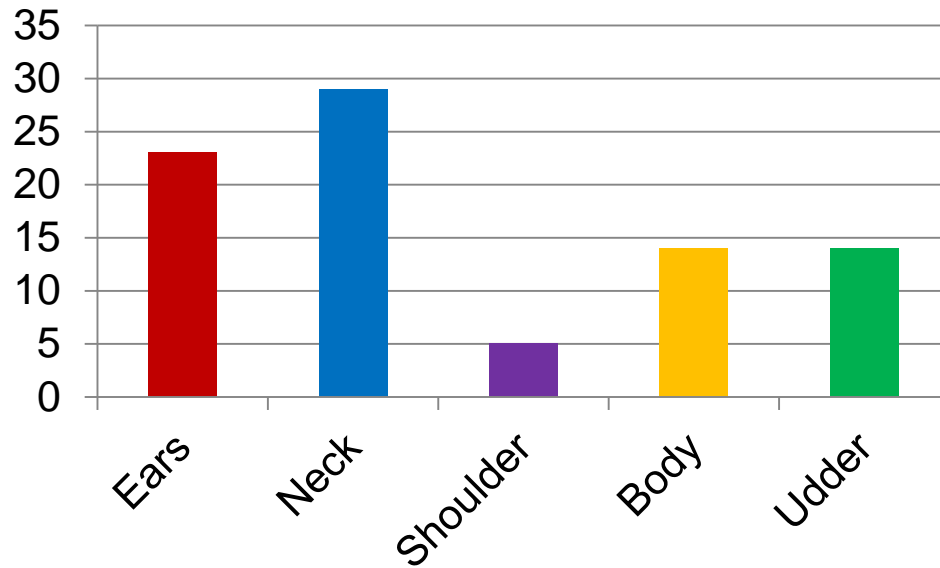
% of sows with score 3 out of total number of sows scored



	Average daily temperature, degrees Celsius
June	12.7 (min. 2.2° ; max 26°)
August	17.4 (min. 2.8° ; max 31.5°)
September	13.2 (min. 0.7° ; max 23.8°)

SUNBURN

% of sows with score 2 out of total number of sows scored



	Average daily temperature, degrees Celsius
June	12.7 (min. 2.2° ; max 26°)
August	17.4 (min. 2.8° ; max 31.5°)
September	13.2 (min. 0.7° ; max 23.8°)

CONCLUDING REMARKS

Preliminary results indicate

- ❑ When resting outside the hut sows prefer to rest in the tree zone
- ❑ When active, sows spent more obs. time in the tree zone during winter time compared to other seasons.
- ❑ The tree zone (2 rows of poplar trees) is not enough to prevent sunburn and possibly heat stress → more tree-cover needed
- ❑ Nutrient losses
 - ❑ Soil water nitrate (suction cups)
 - ❑ Soil inorganic N (soil samples 50, 100 cm depth)



THANK YOU FOR YOUR ATTENTION!



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