



Égalité Fraternité









High-throughput phenotyping to characterise range use behaviour in broiler chickens

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SABRE-TP 2024: Phänotypisierug im digitalen Zeitalter

Chicken's range use

How do we evaluate individual range use ?

- I. Behavioural observation
- 2. Passive RFID
- 3. Active RFID



C. Bonnefous, ©INRAE



Active RFID

7 antennae collecting signals sent by the RFID chips every 10 seconds









Active RFID

System test with 3 "slow-growing" strains

100 Q and 100 d per strain





Active RFID

Located each chicken in one of the 10 zones every 30 seconds by Linear discriminant analysis (LDA)

	Z7 ~ 300 m ²	Z8 ~ 900 m ²	Z9 ~ 300 m ²
	Z4 ~ 100 m ²	Z5 ~ 300 m ²	Z6 ~ 100 m ²
	Z1 ~ 100 m ²	Z2 ~ 300 m ²	Z3 ~ 100 m ²
ual-Purpose		Barn	
>73%			
>91%			

	Label	Certified	Dual-Purpose
Fully well-placed	>72%	60%	>73%
Almost well-placed	>89%	>78%	>91%
In/Out misplaced	<3%	<15%	<2%

Result: where do chickens spend time ?



Result: Measuring range use

	Description	R [CI] *
Barn time	Time spent in the barn	0.75 [0.71, 0.79]
Outs	Number of times a bird went out	0.64 [0.58, 0.69]
Range	Number of zones explored [0-9]	0.35 [0.30, 0.41]
Gregariousness	Time spent where other birds go	0.93 [0.91, 0.95]
Zone changes	Number of zone changes	0.61 [0.55, 0.66]

* repeatability (R) and their associated confidence intervals [CI]



Result: Measuring range use



FiBL

all p values < 0.001

Result: Range use indicators vary with age



FiBL

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Result: Range use indicators vary with temperature and rainfall





Result: Range use indicators vary with temperature and rainfall





Result: Range use indicators does not vary across sexes



Conclusion on high-throughput phenotyping to characterize range use behaviour in broiler chickens

- Continuous and individual data over a large number of animals
- Characterize a complex behavior into two indicators
- Range use varies with age, environmental conditions but not across sexes
- Indicators precise, reliable, repeatable







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Next step

600 pure-breed (S77N) chickens in spring 2023



On going genetic analysis



Thank you for your attention !





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