



# Flash presentation of posters

*Session 48 - How can poultry farming systems evolve to meet the major societal and environmental challenges?*



# Effect of gallic acid supplementation to corn-soybean-gluten meal-based diet in broilers performance

J.H. SONG – Abstract #41065

- Gallic acid (GA) is a functional phenolic molecule that has physiological advantages including oxidative, anti-inflammatory, anti-allergenic, anti-carcinogenic, and antimicrobial characteristics.
- In a 32-day feeding trial, 576 1-day-old Ross 308 broiler chicks (male) were arbitrarily assigned an average body weight of  $41 \pm 0.5$  g. The experiment had 1 of 4 dietary treatments with 8 repetitions of 18 birds per cage and a basal diet administered with 0%, 0.02%, 0.04%, and 0.06% of GA.
- The dietary supplementation of GA linearly improved the body weight gain of broilers by promoting voluntary feed intake and nutrient digestibility (dry matter and energy) and enhanced the color of meat quality. However, the fecal score, footpad lesion score, and tibia ash presented no significant effect.
- This study confirmed that the addition of GA at increasing doses to broiler diets increased growth efficiency, nutritional absorption, and meat quality. In poultry production, GA administration can be used as a viable alternative to antibiotics for improving the performance and welfare of broilers.

**Table 1. Growth performance in broilers<sup>1</sup>**

Items	CON	TRT1	TRT2	TRT3	SEM <sup>2</sup>	P - value <sup>3</sup>
d 9 to 21						
BWG, g	603 <sup>b</sup>	632 <sup>a</sup>	635 <sup>a</sup>	637 <sup>a</sup>	7	0.0032
FI, g	823 <sup>b</sup>	867 <sup>a</sup>	870 <sup>a</sup>	875 <sup>a</sup>	13	0.0127

**Table 2. Meat quality in broilers<sup>1</sup>**

Items	CON	TRT1	TRT2	TRT3	SEM <sup>2</sup>	P - value <sup>3</sup>
Breast muscle color						
Yellowness(b*)	13.69 <sup>b</sup>	14.66 <sup>a</sup>	15.89 <sup>a</sup>	16.16 <sup>a</sup>	0.48	0.0055

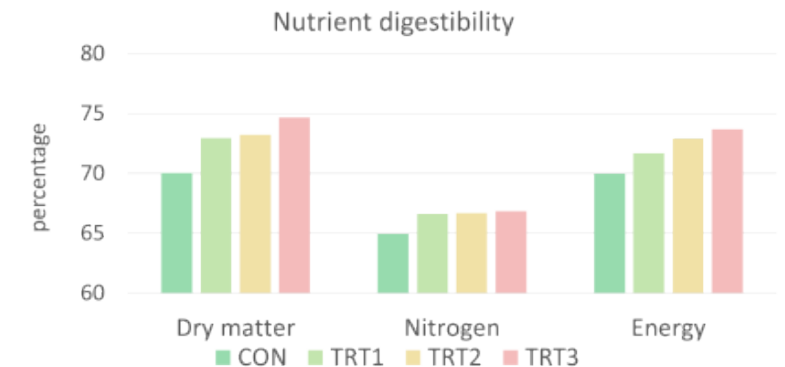
<sup>1</sup>Abbreviation: CON, Basal diet; TRT1, CON + Gallic acid 0.02%; TRT2, CON + Gallic acid 0.04%; TRT3, CON + Gallic acid 0.06%.

<sup>2</sup>Standard error of means.

<sup>3</sup>Means in the same row with different superscript differ significantly (P<0.05).

<sup>a,b</sup>Means in the same row with different superscript differ significantly (P<0.05).

**Figure 1. The effect of Gallic acid supplementation on nutrient digestibility of broilers**



# Veterinary coaching to stimulate biosecurity compliance

Arthi AMALRAJ – Abstract #41359

- Biosecurity requires the adoption of a set of attitudes and behaviors by people.
- “Coaching” a non-directive questioning, and interaction method was validated in 18 Belgian poultry farms.
- Farm biosecurity status was quantified using Biocheck.ugent scoring system.
- Benchmarking farms (figure) helps to provide tailormade advice.
- Farmer profiling ADKAR model used to assess perception towards biosecurity.

• Identification: BE\_01\_Tur  
• Entry date: 18/07/2022 - 13:03

Subcategory	Your score	World average
<b>External biosecurity</b>		
A. Infrastructure, location and housing	69 %	70 %
B. Organization of the farm and supply of materials	46 %	56 %
C. Visitors and personnel	53 %	62 %
D. Purchase of turkey poults	74 %	63 %
E. Depopulation of adult turkeys	57 %	58 %
F. Feed and water supply	74 %	72 %
G. Manure and carcass removal	87 %	83 %
Subtotal External biosecurity	65 %	66 %
<b>Internal biosecurity</b>		
H. Disease management	82 %	77 %
I. Measures between compartments	88 %	74 %
J. Cleaning and disinfection	77 %	71 %
Subtotal Internal biosecurity	82 %	74 %
Total	70 %	69 %

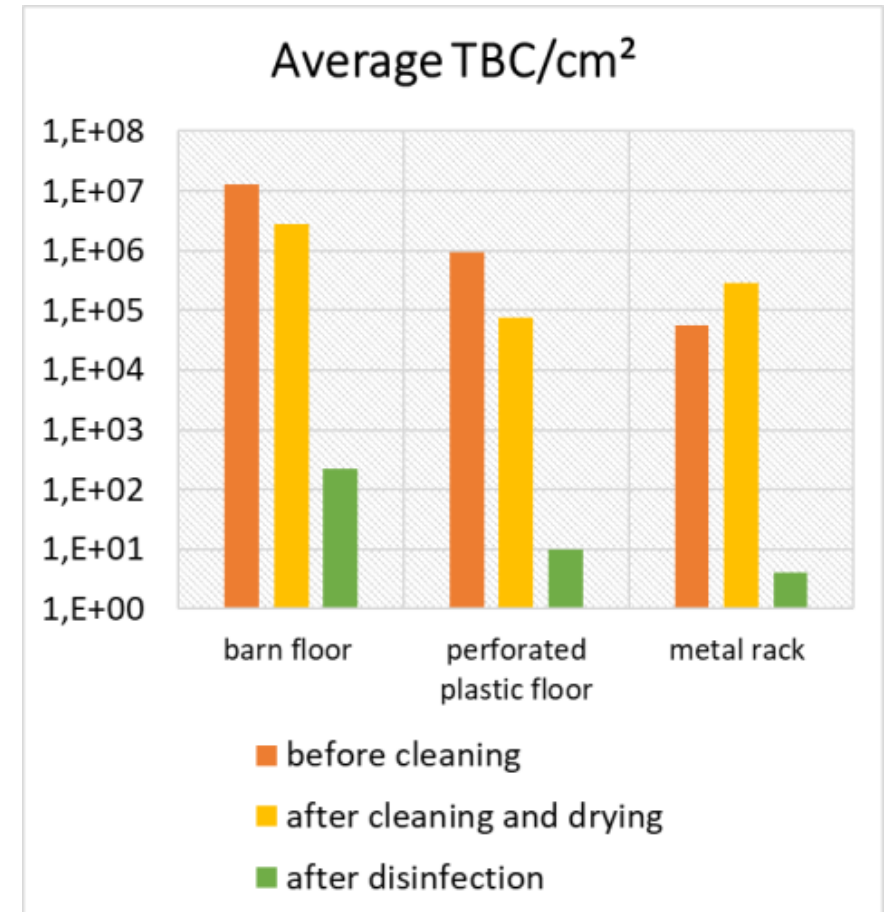
Figure. Biocheck report of farm scores for a turkey farm



# Establishing elevated perforated platforms (EPP) in broiler chicken housing – is hygiene a barrier?

Björn SAKE – Abstract #41439

- Areas on the EPP have a lower TBC than the barn floor
- After disinfection all tested locations showed a TBC reduction of 4 to 6 log levels
- ET & EB are nowhere detectable after C&D at the EPP
- Although C&D took considerably more time and required additional cleaning tools, the procedure was performed efficiently
- The hygiene measure is apparently suitable to reduce risk of pathogen transmission to the next production cycle

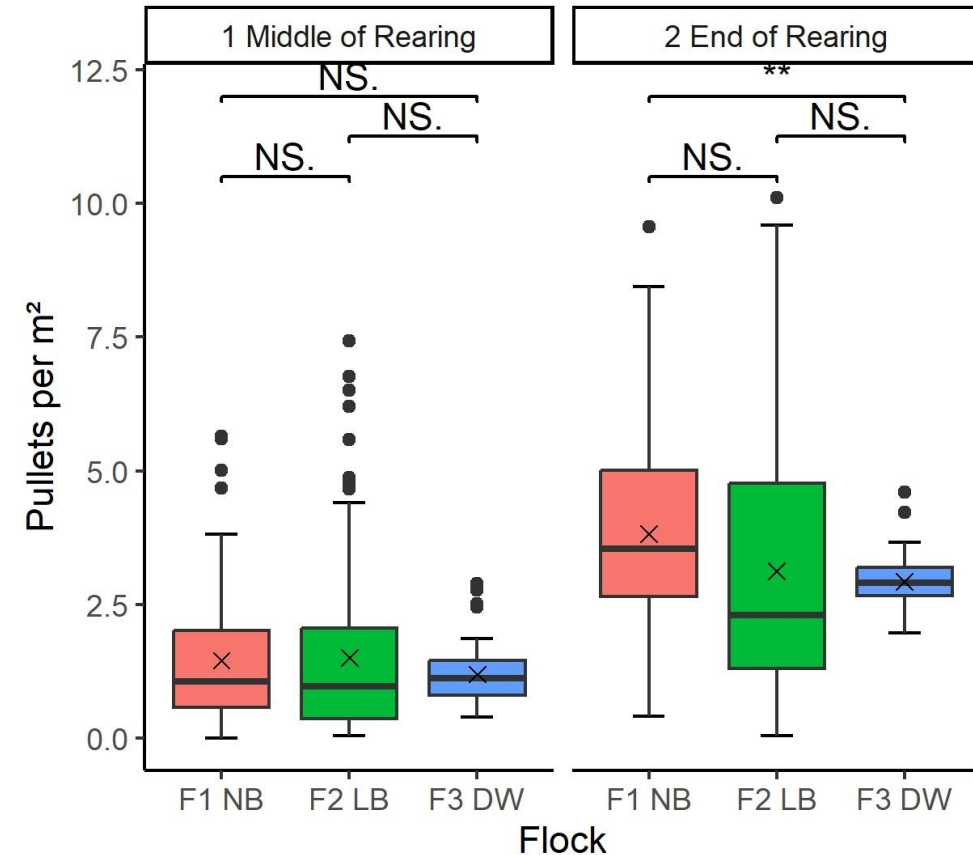




# What's going on outside? Use of winter gardens by pullets of different genetics

Anna RIEDEL – Abstract #41532

- Usage of the winter garden (WG) by rearing hens in three flocks, assessed by photo analyses
- On average, 2.3 pullets/m<sup>2</sup> in the WG-area
- More pullets in the WG with increasing age
- Differences between genetics at the end of rearing
- Daytime differences (higher usage in the evening)

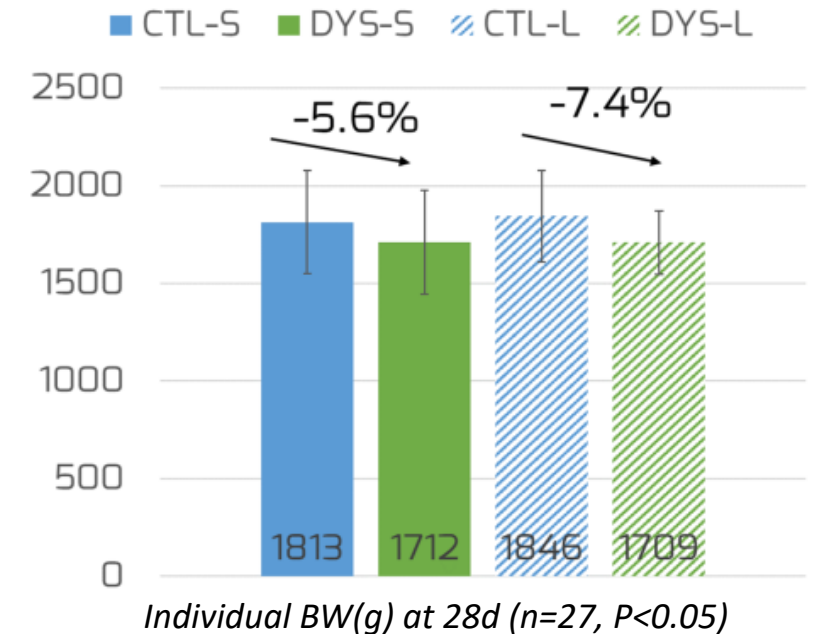




# Housing conditions do not influence the effects of a nutritional challenge for broilers

Virginie MICHEL – Abstract #41700

- **INTRO** : 3R's rules are the pillars of the ethical and animal welfare considerations
  - ➔ Crucial to develop new innovative designs and experimental structures to ensure a sustainable animal experimentation.
  - ➔ Flexible and adaptable experimental cages to adapt the number of birds per cage and repetition numbers per diet.
- **OBJECTIVE** : to determine the possibility to reproduce a nutritional model in different cages, and to confirm that the housing conditions do not impact the effects of this challenge for broilers.
- **RESULTS** : no significant interaction between diets and cage are observed on all parameters. Performance are only significantly and negatively impacted by the diet; no effect of cage is shown.
- **CONCLUSION** : dysbiosis challenge effects can be successfully reproduced with both tested housing conditions. The decrease of performance is at the same level as previous findings reported on the same challenge using around 2000 animals on floor.
- **This cages models allow to increase the number of experimental replicates while reducing the required animal numbers.**



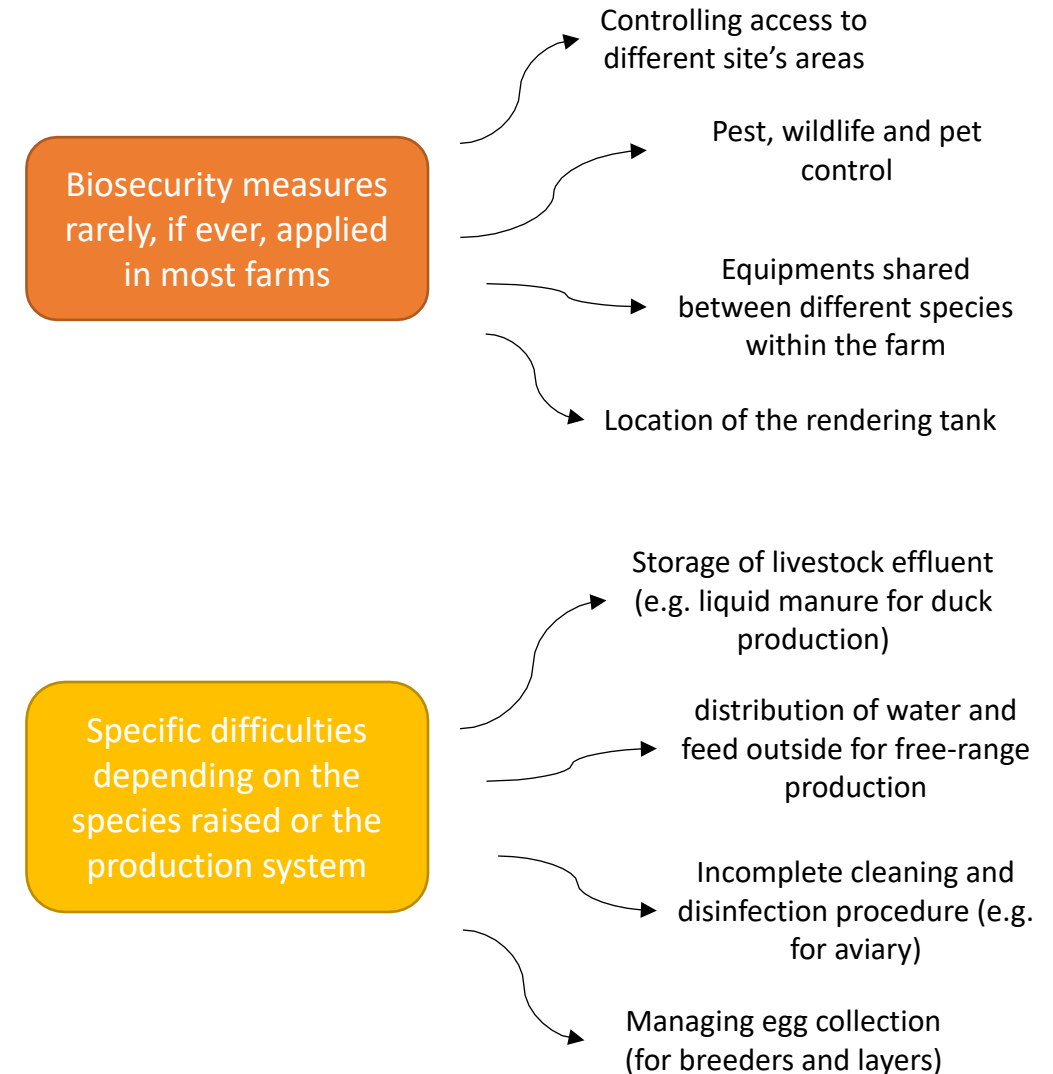


NetPoulSafe

# Compliance of biosecurity in poultry farms in France: Remaining obstacles and levers for improvement

Nathalie ROUSSET – Abstract #41848

- Objective: to obtain a qualitative overview of biosecurity compliance in France and its determining factors, by comparing the opinions of farmers and advisers
- Certain biosecurity measures are rarely, if ever, applied in most farms
- There are specific difficulties depending on the species raised or the production system, both in terms of measures applied or not, but also in terms of barriers to compliance
- Efforts to raise awareness, provide information and training seem to have paid off, but farmers' expectations are growing towards personalized advices, adapted to their farm's particularities

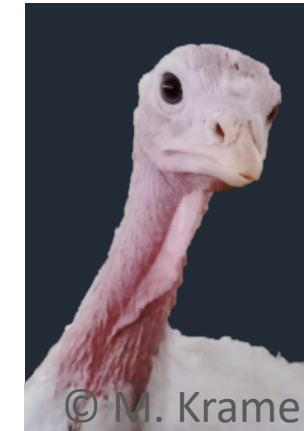




# Untrimmed beaks in turkey hens: effect on injuries and mortality rate

Marie KRAMER – Abstract #41999

- Two fattening batches each (cf. Fig. 1):
  - 1) B.U.T.6 turkey hens with untrimmed (UT) beaks in an optimized housing environment,
  - 2) control group with trimmed (T) beaks under conventional conditions
- Enrichments: elevated platforms, hay baskets, metal mobiles and feed dispensers → well accepted
- Frequent animal control
- Highest prevalence of injured birds in both batches at the end of fattening (UT: 72% | 52%; T: 13% | 10%)
- UT hens: mortality rates nearly twice as high (UT: 8.65% | 4.39%; T: 3.98% | 2.26%) and a higher prevalence of injuries despite the enriched housing environment and extensive separation management

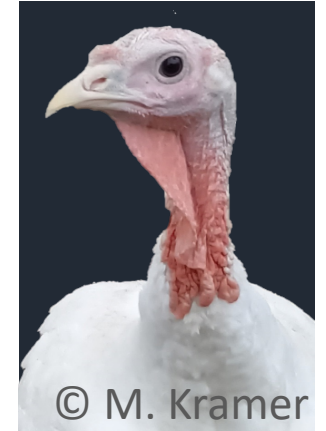


T beaks  
(control)

repetition

1<sup>st</sup> batch

2<sup>nd</sup> batch



UT beaks +  
enrichment

repetition

Fig.1: Setup fattening batches (each n=5400 B.U.T. 6 turkey hens) with T (=trimmed) and UT (=untrimmed) beaks

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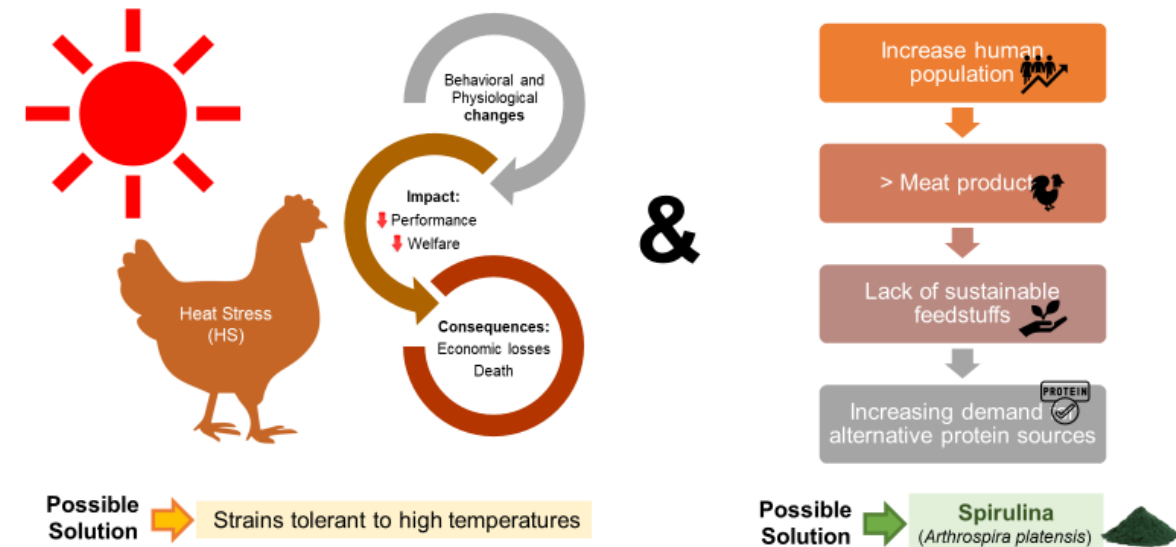
# Effects of heat stress and spirulina on meat traits of two slow-growth broiler strains

Elisabete Augusto FERNANDES – Abstract #42270



- Challenges in poultry production: Heat stress and lack of sustainable feedstuffs
- Two slow-growth broiler strains: Fully feathered (FF) and Naked neck (NN)
- Two diets: 15% Spirulina (SP) vs. Control diet (C)
- Effect of Heat Stress and SP on different meat traits:
  - Carcass and Breast muscle yield
  - Drip loss, Thawing loss, and Cooking loss
  - Organoleptic Characteristics: Color
- The incorporation of Spirulina influenced meat traits regardless of the strain used

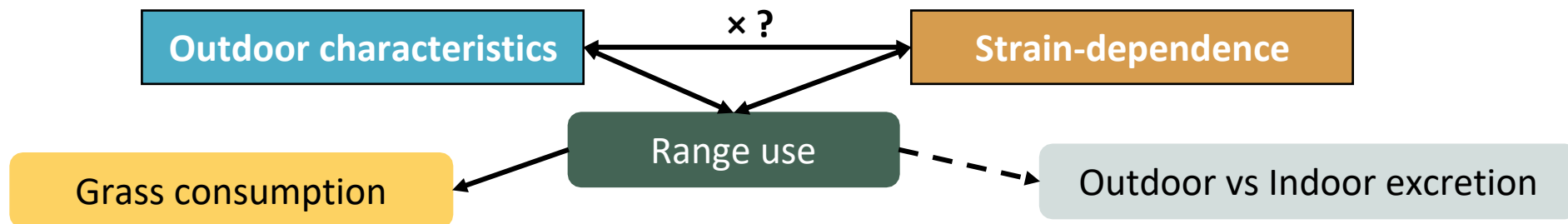
## Main challenges in poultry production



# How does broiler range use impact forage intake, outdoor excretion and gaseous emissions?

Anne Collin– Abstract #42441

- Free-range broilers both eat and excrete outdoors. How does range use in different strains impact forage intake and N emissions ?
- Three strains, JA757, S757N and Dual-purpose (DP) of average daily gains of 36 g/d, 26 g/d and 16 g/d respectively, with access to a grassy outdoor run under mature trees from d36 to d86, 100 and 121 of age, respectively
- The S757N strain spent about twice as much time outdoors and consumed about 144% and 56% more grass than the JA757 and DP chickens
- The S757N chicken outdoor excretions of N per day of outdoor access per kg of produced chicken were about 50% and 93% greater while their indoor N losses by volatilisation were about 33% and 41% lower than those of JA757 and DP chickens, respectively



# Heritability of the number of crossovers as proxy of recombination rate in chicken

Valentina RIGGIO – Abstract #42626

- Recombination has direct impact on evolution by shuffling genetic diversity.
- Genetic control of recombination better studied in mammals than avian species
- Number of crossovers calculated with FindHap used as proxy of recombination and as repeated records of the parents
- Heritability and repeatability moderate and significant
- Number of crossovers can potentially be used to make predictions of their incidence and impact on genetic variation

Variance components of number of crossovers	
$\sigma_a^2$	16.123
$\sigma_{pe}^2$	19.699
$\sigma_e^2$	29.284
$h^2$ ( $\pm$ s.e.)	0.25 $\pm$ 0.02
$r$ ( $\pm$ s.e.)	0.55 $\pm$ 0.01



# Pre-slaughter fasting changes the antemortem muscle proteolysis levels and postmortem meat quality

Sachi KATSUMATA – Abstract #41242

- Pre-slaughter fasting increased plasma N<sup>τ</sup>-methylhistidine\* levels at slaughter.
  - Pre-slaughter fasting did not affect muscle free glutamic acid concentration at slaughter.
  - On the other hand, pre-slaughter fasting increased muscle free glutamic acid concentration after 48 h storage (aging).
  - Plasma N<sup>τ</sup>-methylhistidine concentration correlated with the glutamic acid concentration of chicken meat.
  - Muscle proteolysis levels in live chickens affected their postmortem meat quality.
- \* an indicator of muscle proteolysis (protein degradation) of broiler chickens

