Adaptation of slow- and rapid-growing broilers to alternative diets

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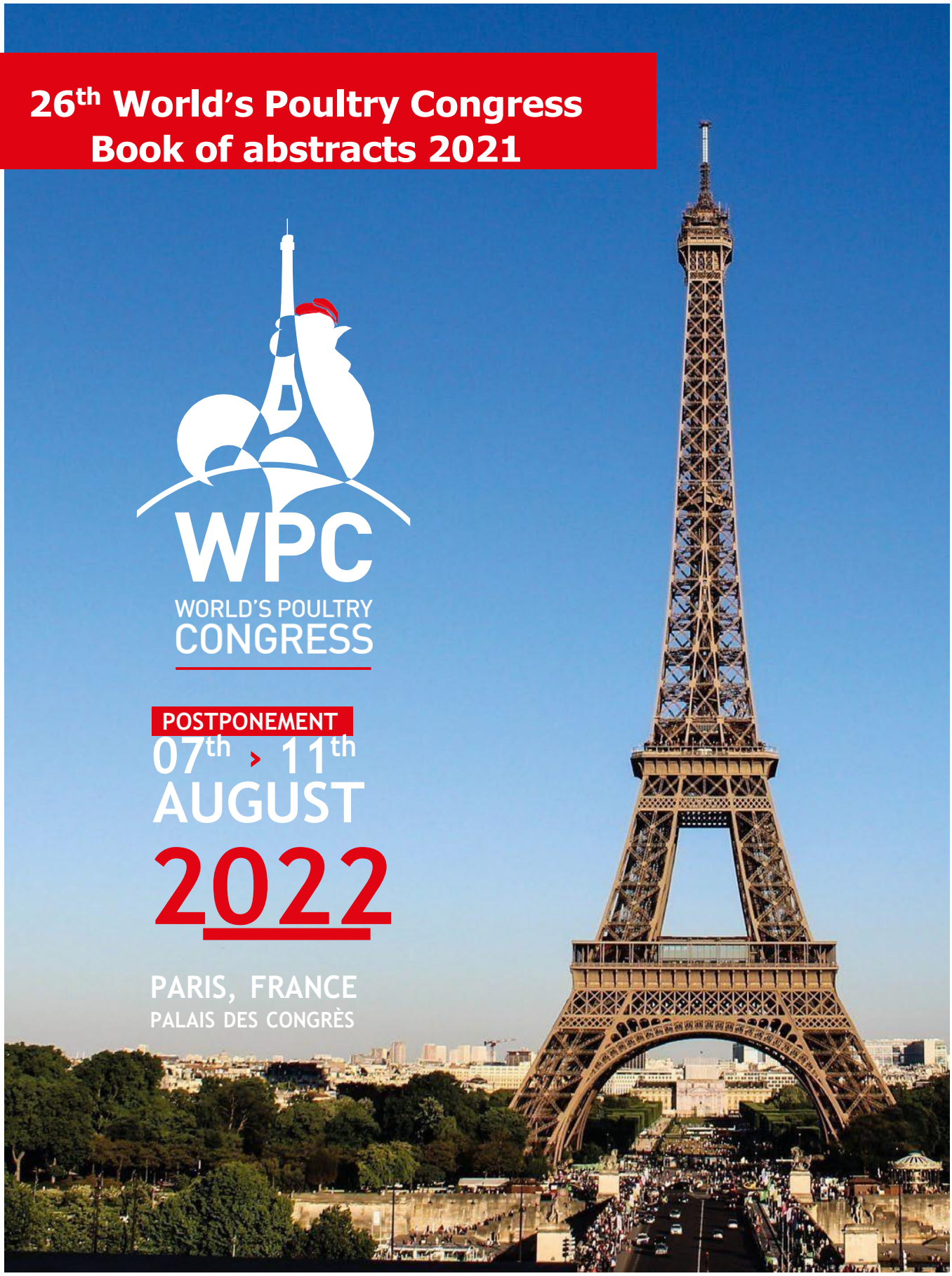
26th World's Poultry Congress
Book of abstracts 2021



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26th World's Poultry Congress

Organized by

French Branch of the World's Poultry Science Association

The 26th World's Poultry Congress - 07-11 August 2022

Publisher

French Branch of the World's Poultry Science Association

Editors

Dr Michèle TIXIER-BOICHARD, chair of 26th WPC

Dr Michel DUCLOS, Chairman of the Scientific Committee of 26th WPC

Professional Congress Organizer (PCO) – Colloquium Group (Paris, France)

ID : 321

ADAPTATION OF SLOW- AND RAPID-GROWING BROILERS TO ALTERNATIVE DIETS

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To refine feed efficiency selection of broilers, we developed an electronic feed station allowing a continuous record of body weight and feed intake of animals reared in group on floor. Using this station, we compared slow-growing Label Rouge (LR) and fast-growing standard (S) chickens fed either with a corn-soybean diet (CD) or with an alternative diet (AD) including DDGS ,fava beans, sunflower and rapeseed meals. Within a genotype, diets were isoproteic, isoenergetic and fulfilled the need of the animals during the three phase of their growth (S birds : 2850, 2900, 2950 kcal.kg-1 and 21.5, 20, 18.5 % CP; LR birds: 2750, 2850, 2900 kcal.kg-1 and 20, 18, 16.5 % CP).
For each genotype, the diet effect was estimated by an ANOVA on daily data of body weight, feed intake and feed efficiency, and on carcass composition and meat quality traits at slaughter (84 and 35 d for LR and S, respectively). The potential effect of the diet on performance homogeneity was checked through an ANOVA on the coefficient of variation including the effects of the period (starter, grower, finisher), the diet and their interaction. Correlations between slaughter traits and daily data were calculated by strain and diet.
LR chickens fed with AD were 4 to 9% heavier and had a 6 to 12% lower FCR during the starter period, but no effect was observed on feed intake nor meat characteristics. For S chickens, AD had no impact on the daily BW and feed efficiency but led to a slightly less acidic (+1.7% for pH), less yellow meat (9.7% for the b* index) and leaner carcass (-14% for abdominal fat yield). Unexpectedly, groups fed with AD were more homogeneous for all traits than with CD. For example, CV was respectively 20 and 22% lower for FCR in LR and S chickens.
Correlations between daily and slaughter traits differed between genotypes and diets. For example, for the group fed with the alternative diet, cumulated FCR was correlated with breast yield in LR chickens (-0.23), but not in S chickens (-0.13). Moreover, these correlations showed that some traits recorded during the starter period could be used as precocious indicators of slaughter traits. For example, bodyweight during the starter phase was positively correlated with fat yield in LR chickens fed with AD.
These first results indicate that animals can adapt to alternative feedstuffs, even those with a rapid growth rate. A complementary study is in progress on pedigree birds from a heavy line of broilers fed with the alternative diet, in order to suggest new criteria of selection related to feed efficiency and adaptability.