

## The effects of season and rearing systems on meat quality traits

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**ABSTRACT:** With the aim to examine the effect of season and rearing system on major broiler meat quality traits appropriate experimental investigations were conducted. Trial material included a total of 800 one-day-old broilers of the Hybro line hybrid. The experiment was organized in two replications, as trial I (conducted in the spring season) and trial II (conducted in the summer season). Two broiler fattening methods were employed, the intensive and semi-intensive one (using free-range rearing). The experimental chicks were slaughtered after seven weeks of fattening. Following the fattening period, 60 broilers (30 broilers from each experimental group) were chosen at random and slaughtered, with the aim of examining major broiler meat quality traits. At the slaughter line, determination of meat quantitative traits was done accompanied by sampling for chemical analyses. The rearing systems (intensive and semi-intensive system) affected significantly ( $P < 0.05$ ) the proportion of class I meat in the broilers reared under the semi-intensive system, whereas in the class II and III meat proportions the rearing system did not exert any statistically significant effect ( $P > 0.05$ ). The broilers reared under the semi-intensive system had a 1.44% higher proportion of muscular tissue on average than the intensively reared ones ( $P < 0.01$ ). The bone and skin proportion was 0.82 and 0.67% lower in the broilers reared by the semi-intensive method ( $P < 0.05$ ). The differences between the results of two trials organised at different seasons were not statistically significant ( $P > 0.05$ ). The broilers reared semi-intensively had a statistically highly significantly higher protein proportion ( $P < 0.01$ ) in breasts, drumsticks and thighs compared to the intensively reared broilers. The broilers reared in the summer season had higher breast and drumstick proportions ( $P < 0.01$ ) as well as a higher thigh proportion ( $P < 0.05$ ). The effect of both the season and the rearing system on the lipid content in the breasts, thighs and drumsticks was statistically highly significant ( $P < 0.01$ ). The lipid content in the breasts, thighs and drumsticks was higher in the broilers during the summer season as well as in the intensively reared chicken. Finally, having thoroughly examined the research results, or more precisely, considering the established advantages in terms of the meat quality, the use of the free-range broiler rearing system can be deemed scientifically and professionally justifiable.

**Keywords:** broilers; season; rearing system; meat quality

Poultry production in the last few decades (Havenstain et al., 1994) has been so intensified that nowadays it has all characteristics of industrial production, including the rearing of highly productive strain hybrids, confinement rearing under strictly controlled microclimatic conditions and balanced nutrition, adequate care and health protection. This intensification in modern poultry has also resulted in high performance. As illustrated, in 1950, the fattening period required to reach the slaughter chicken weight of 1.8 to 2 kg was 12 weeks and it is only a little more than four decades later

that the duration of the fattening period required to reach the same weight is even less than 6 weeks (Remignon et al., 1994). Nevertheless, this development trend in poultry production sets more and more new questions and dilemmas before breeders and researchers. One of the most frequently asked questions is the issue of the quality of products from intensive poultry production.

Broiler meat quality is generally concerned as a very complex issue that can be looked at from several points of view. In terms of meat processing industry and consumers' interests, fattened chicks









