

“NERO SICILIANO” PIGS REARED IN PLEIN AIR AND LIVED IN EXTENSIVE CONDITION: DATA ON TISSUE SEPARATION OF FRESH HAM AND SHOULDER.

Liotta L., Chiofalo V., Zumbo A., Chiofalo L.

Dept. MO.BI.FI.PA. – Sect. Zootechnica e Nutrizione animale, Faculty of Veterinary Medicine, University of Messina, 98168, Italy

Background

Pork production system, which in the past was interested in animal body weight, almost exclusively, now is pointing out its attention to percentage and form of the main lean cut tissues and to organoleptic characteristics of the meat and, in particular, on the lipidic fraction. The necessity of a qualification of this sector is underlined by the introduction of the SEUROP carcass classification for the qualitative evaluation of pigs carcasses (Bittante et al., 1990). In specific environments autochthonous genetic types are raising particular importance for the zo-economic role that they can play thanks to their capacity to produce in critical environment and to give food products called “typical” and genuine. Then their function is very important to attain a real rural development, through the innovation of productive processes, so as to promote the utilization and the management of every endogenous resources of the territory (Matassino e Grasso, 1996). Nero Siciliano pig, living in absolute freedom in the woods of the mountain areas of the Nebrodi and Madonie (Messina and Palermo provinces), lives thanks to its ability to use the alimentary potential of the undergrowth, of the glades and of the perimetrical areas. Different kind of oaks, which abound in the territory, chestnut-trees, hazel-trees of many neglected areas, produce a considerable quantity of fruits eaten by pigs, which live free in extensive condition, and use them to produce a meat with good organoleptic characteristics. These animals are characterised by a strong resistance to illness, zootecnical adaptability to very different climatic conditions, great ability to procure food, thanks to their inclination towards pasturing, frugality and energetic temperament. In these animals the tendency to fat deposition is not considered negatively, such as in the industrial breeding, since it is precious to sustain animals in those periods of deprivation, caused by environmental difficulties, and also considering the new economic perspectives (Chiofalo L., 2000). Moreover this pig, apart from providing high quality production, could allow a wider and more rational utilization and exploitation of marginal areas, too.

Objectives

The aim of this study was to evaluate the effect of the breeding system, extensive condition and plein air, on the composition and on the characteristics of the fresh ham and shoulder of the Nero Siciliano pigs, considering the role these cuts play for the issue of the seasoning and of the quality of the final product.

Methods

The trial was carried out on 30 “nero siciliano” pigs (16 castrates and 14 gilts), divided into two groups of 15, homogeneous for age (4 months) and body weight (39 ± 2 kg), called Outdoor (OD) and Plein air (PA). Animals of OD group were allocated in a woody area of 12 hectares, appropriately enclosed, within Nebrodi Park areas (Messina), where they fed the spontaneous fruit of the undergrowth (acorns, tubers, chestnuts, hazel-nuts etc.) variable in relation of the season and the year.

Pigs of PA group, reared in plein-air system in the same rural area, had to their disposal shelter, water *ad libitum* and concentrate (3% of B.W.). The chemical composition of the concentrate was: 87.7% DM; on a DM basis: CP 17.90 %, EE 5.99%, CF 3.42% (Martillotti et al., 1987). The animals were slaughtered, previous 18 hours of fasting (A.S.P.A., 1991), at 71 kg, OD group, and at 80 kg, PA group. Right half carcasses were chilled at 4° C and jointed 24h post mortem, according to A.S.P.A. (1991) recommendation, in the lean cuts (ham with foot, loin, shoulder with foot, neck, and lean residuals), fat cuts (backfat, jowl, belly, kidney fat) and bone cuts (head, feet). From ham and shoulder fat cuts, bone cuts and lean cuts, together with intramuscular fat, were separated and weighted. Data were processed by statistical analysis. A model including two factors was used: breeding system and sex, with the relative interaction. ANOVA (proc. GLM by SAS, 1999 – 2001) put in evidence that interaction were not statistically significant. Therefore, the following reduced model was considered: $y_{ijk} = \mu + \alpha_i + \beta_j + \epsilon_{ijk}$, where μ = general mean, α_i = breeding system (Outdoor, Plein air), β_j = sex (male, female), ϵ_{ijk} = random error.

Results and discussion

Data, obtained from tissue separation of ham and shoulder showed a significant effect as regards the breeding system, but no significant difference was observed between male and female. Ham of PA group showed: a total weight significantly ($P \leq 0.05$) higher than OD group, no significant difference of the weight in lean and bone cuts, but a significant difference ($P \leq 0.01$) of the weight in fat cut (table 1). Shoulder of PA group showed a total weight significantly ($P \leq 0.001$) higher than OD group but, unlike ham, a significant ($P \leq 0.01$) higher weight of lean cut (table 1). The lean and bone cuts of the ham and shoulder showed a higher percentage in OD group and in PA group a higher percentage of the fat cut was observed (table 2). Ham total weight, in both groups, was less than that reported by Matassino and Grasso (1996) in other autochthonous pigs, as Calabrese (13.9 kg), Casertana (13.5 kg) and Nero delle Madonie (12.6 kg); in our opinion, these differences would be justified from the theory of the differential development of the different parts in the animal body, suggested by Hammond (1932) for the ovine species and confirmed by Mc Heckan (1940) for the pigs. For these Authors, ham could be a part of the body that develops much more slowly (Russo e Guizzardi, 1976). This fact could explain the higher percentage of the lean cut of ham in the experimental groups (table 2), than that observed in Calabrese (52%), Casertana (45%) and Nero delle Madonie (49%) pigs (Matassino and Grasso, 1996) even if these animals showed a higher total weight. Whereas the ham total weight of PA group was similar to that of “Iberic pig” (Elias and Sabio, 1995). The percentage composition of the ham in OD group showed similar values to those observed by Franci et al. (1994) in Large White x Cinta Senese pigs (Lean: 60.60%; Bone: 10.47%; Fat: 28.92%). The percentage of the lean cut of shoulder (table 2) showed a mean value between those observed in Calabrese (68%) and Casertana (41%) pigs. Our results suggest that the plein air breeding determines a higher lean and bone cut weight in ham and shoulder; whereas the animals lived in extensive condition showed a percentage composition of shoulder similar to that of some selected races (Matassino and Grasso, 1996).

Pertinent literature

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Table 1. Ham and Shoulder tissues (mean \pm SE)

	Plein air	Outdoor	<i>P</i>
Half carcass (kg)	31.6 \pm 4.8	24.26 \pm 3.2	**
Weight ham (g)	5744.7 \pm 112.7	4636.9 \pm 108.9	*
Lean	3116.9 \pm 202.6	3076.8 \pm 204.6	ns
Bone	587.8 \pm 35.02	567.7 \pm 35.3	ns
Fat	2040 \pm 147.7	1290.7 \pm 149.2	**
Weight shoulder (g)	4919.8 \pm 234.8	3315.8 \pm 195	***
Lean	2347.5 \pm 121.5	1846.35 \pm 122.7	**
Bone	533.4 \pm 37.4	540.2 \pm 37.8	ns
Fat	1756 \pm 58.2	969.7 \pm 58.8	**

ns: not significant; * $P \leq 0.05$; ** $P \leq 0.01$; *** $P \leq 0.001$ Table 2. Ham and Shoulder tissues percentage (mean \pm SE)

	Plein air	Outdoor	<i>P</i>
Weight ham (g)	5744.7 \pm 112.7	4636.9 \pm 108.9	*
Lean	54.32 \pm 1.76	62.20 \pm 1.77	**
Bone	10.21 \pm 0.41	11.59 \pm 0.42	*
Fat	35.45 \pm 1.91	26.19 \pm 1.9	**
Weight shoulder (g)	4919.8 \pm 234.8	3315.8 \pm 195	***
Lean	50.47 \pm 1.19	54.71 \pm 1.20	*
Bone	11.31 \pm 0.56	16.16 \pm 0.578	**
Fat	38.21 \pm 1.19	29.12 \pm 1.20	**

ns: not significant; * $P \leq 0.05$; ** $P \leq 0.01$; *** $P \leq 0.001$