

## 7. Summary

### **Comparative study for objective assessment of product quality with focus on the quality of pork to ensure that market requirements and consumer demands are met at pork producers**

Specimens from three pork producers were subjected to comparative investigations of slaughter pig, carcass and pork quality to characterise the quality of pork as a product. The starting materials used were eight genotypes bred and slaughtered under standardised conditions in the Land of Brandenburg. The following populations were tested: L x L; L x E; L x Du; L x Pi; L/E x Pi; E x Ha/Pi; S x S, and S x E. Data and specimen materials (*M. long. dorsi*) were studied for a total of 461 animals or carcasses considered suitable for the investigation. Data of official meat inspection, as well as carcass warm weight, muscle and backfat thickness (Fat-O-Meater) were considered for evaluation. The pork quality was tested 45 min p. m. assessing the criteria of pH<sub>1</sub> and Lf<sub>1</sub>. Moreover pH<sub>2</sub>, water-retention capacity (Beutling's direct method), remission (Spekol) and intramuscular fat content (Weibull/Stoldt disintegration method; Soxhlet fat extraction) were determined 24 hours p. m..

- Own studies revealed an affected respiratory system in 10 to 25 percent depending on the producers. For conventional keeping with adequate range to move, endoparasitic invasion was found to be 38 percent.
- Evaluation of the overall material showed that, as the carcass warm weight increased, the thickness of backfat grew as well ( $r = 0.42^*$ ). For the populations of L x Du ( $r = 0.61^*$ ), L x Pi ( $r = 0.69^*$ ) and L/E x Pi ( $r = 0.68^*$ ), this correlation was enhanced.
- For the overall material, the average amount of muscle determined was 54 percent and the backfat thickness averaged 18 mm. The L x Du population having a mean carcass warm weight of 96 kg and 54 percent muscle exhibited good or even very good results. The saddle-back populations achieved 45 percent muscle, with mean backfat thickness ranging from 27 to 29 mm. The antagonism of criteria, i.e. between backfat thickness and amount of muscle, was confirmed in particular for the Pietrain cross-breeds ( $r = 0.90^*$ ). For all other criteria studied and relating to the quality of carcasses, statistically significant differences were found as a function of the sex of the slaughter pigs.

- For the overall material, the mean  $pH_1$  of 6.41 and grading into the classes of "PSE" and "suspected PSE" each being as low as 4 percent yielded a good level. The L x Pi and L/E x Pi populations exhibited a proportion of 7 and 13 percent, respectively.
- The  $pH_1$  measurement provided a high degree of certainty in assessing the quality of pork. The unbiasedness achieved was greater than that seen with  $Lf_1$  measurements. Variations in  $pH_1$  must be checked 24 hours p. m.
- In collecting the  $pH_2$  data, the mean value determined for the overall material was 5.61. A markedly high percentage of grading into the "PSE" class was noted for the saddle-back pig populations, being greater than 50 percent. For the material of the E x Ha/Pi population studied, the occurrence of the "Hampshire effect" was confirmed on the grounds of clearly low  $pH_2$  values.
- Studying the water-retention capacity of pork for the overall material revealed a mean of 0.26 mL/g, a finding within the normal range. An elevated proportion of "PSE pork" amounting to 7 percent was found for the L x Pi cross-breed. Very high proportions in the "PSE" range were noted for the S x S and the S x E populations, being 19 and 27 percent, respectively.
- The remission levels for the overall material yielded a mean of 18.08 percent, a finding within the normal range. The highest proportion in the "PSE" class was seen for the L x Du population being 5 percent, and in the "DFD" class the highest proportion was noted for the L x L breed which amounted to 7 percent.
- For the intramuscular fat content, the mean value of the overall material was 1.71 percent, thus being less than the specified normal level of 2.0 percent. In overall comparison, the heterogeneity for the markedness of this criterion was reflected by the means seen for the Pietrain cross-breeds in the area of 1.50 percent. In contrast, the S x S; S x E, and L X Du populations attained levels above 2.0 percent. The best quality finding in respect of marbling and amount of muscle was obtained for the L x Du population.
- Referring to the demands on product quality, the saddle-back pig populations have to be considered separately.
- With a view to quality meat schemes and quality assurance systems, the populations studied offer a sound basis such that consumer demands and market requirements can be met by increasingly targeted approaches.