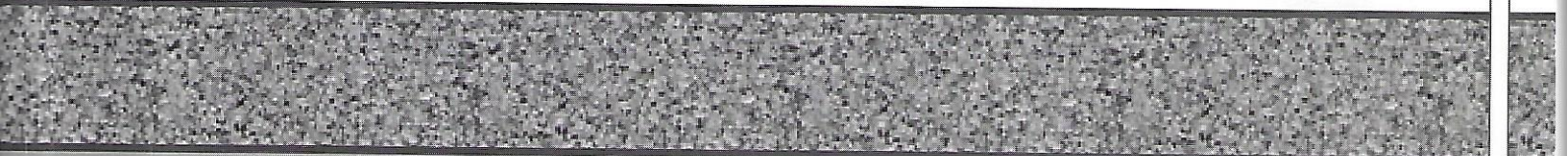




# Biological Food Safety & Quality

Proceedings of the International Conference

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## **Biological Food Safety and Quality BFSQ 2012, 4-5 October 2012, Belgrade**

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## Comparison of pig carcass quality between Mangulica and Landrace

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### Introduction

Pig meat production is based on the application of modern methods of growing and highly specialized breeds. Intensive farming and index selection has resulted in, among other things, a big difference between Mangulica and Landrace breeds. Mangulica (M) are generally the result of natural selection and the conditions of rural households, which applied classical veterinary preventive and curative care and medicine, as the race itself was very simple for breeding. Because of their pronounced resistance, pigmented skin and ability to consume large amounts of roughage (grazing), Mangulica are very convenient for keeping in the open, especially for organic production, the traditional technology of low investment (Senčić et al., 2011; Egerszegi et al., 2003). Landrace are usually selected according to a specific weighted index, where more weight is given to litter size, and somewhat less weight to growth, feed conversion and meat content and quality. The traits of growth are controlled by the proportion of additive genes on middle level, while the relationship of some tissues in the structure of the carcasses is highly heritable. Selection effects by now are different in both breeds, being higher in Landrace (Vidović and Lukač, 2010 and Lukač et al., 2012).

### Materials and Methods

The trial was completed on a farm producing Mangulica (M) and Landrace (L) pigs in the period 2010 – 2012. Data analysis included 432 M and 712 L litters. The mass selection was used to select M in all traits. Meanwhile, L were selected using a selection index with more pressure on litter size and less for growth, feed conversion and meat content and quality. To analyze growth and carcass traits, the trial included 168 M and 224 L animals. Conditions for the different pig breeds were similar during the gestation and lactation periods. MME was used to analyze year-season breed and parity as fixed effect and sire as a random effect. Weaned animals of both breeds were grown under the same conditions on the same farm.

### Results and Discussion

**Table 1:** Phenotypic differences for growth and carcass traits

Traits	Landrace		Mangulica		Differences $\bar{x}$
	$\bar{x}$	$\delta$	$\bar{x}$	$\delta$	
Live gain to 100 kg (g/day)	579	154	203	160	376**
Live gain up to 132 kg (g/day)	584	160	242	160	341**
Age at 132 kg (days)	227	12	540	24	- 313**
Feed conversion (kg)	3.1	0.9	5.2	1.3	- 2,1**
Meat content in carcass (%)	57.9	8	29.0	6	29,6**
Meat content in carcass (kg)	46.2	4,6	23.2	6.8	23,0**
Protein content in meat, %	23.1	2.9	20.4	3.1	2,4**

For fattening up to 132.0 kg, M pigs were 544 days old, whereas Landrace were younger at only 224 days. No losses occurred among either M or L pigs during the fattening period. The live gain among M pigs was 242 g/day, while since L pigs gained 587 g per day. The Feed conversion (FC) ratio for M was 5.4 kg, or a total 684 kg of concentrate, but L had a FC of 3.2, in total 424 kg. The difference of 260 kg more feed conversion was statistically significant. Taking a value of 0.25 euro

cents for each kg of food, it is clear that M pigs, on average, cost 66 € more than L (Zekić et al., 2011). Dissection of carcasses was conducted following EU Procedure 92. The carcasses of Mangulica had an average meat content of 29.0%, while in Landrace this was 57.9%. This difference of 28.9%, or 23.2 kg is in favour of L and statistically significant. Protein content was measured at four carcass points, following EU standard, for both breeds. The estimated average protein content in M carcass was 20.6% while for L it was 23.1% or 2.5% more. To improve genetic potential in M pigs, there is a great need to develop a specific breeding program, and invest knowledge and money in order to obtain a better result through generations. The strategy of mass selection was inefficient and inferior in M pigs compared to the index selection strategy for L pigs, where aggregate genotype included five different heritable traits.

### Conclusions

- Different selection criteria significantly results superiority of Landrace compare to Mangulica.
- Mangulica showed economically a very poor result compared to Landrace. The differences are about 106 € per head in favour of Landrace.
- Mass selection showed inefficiency and inferiority in Mangulica compared to the index one used for Landrace where the aggregate genotype included five different heritable traits.

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