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Morphometric characteristics of "Tinca Gobba Dorata del Pianalto"

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ABSTRACT: Forty six T3 tench from 55 to 100 g, were examined in order to set up a first database on morphological traits. Linear (total, fork, head, trunk, caudal peduncle, muscular body and tail length, height, thickness and circumference) and ponderal (total body, viscera, liver and gonad weight) parameters have been measured. Several morphometric indexes were calculated for each sex. The results showed there was no significant difference for K value between sexes. The relationship between C and M can be described with a quadratic regression ($R^2=0.81$).

Key words: Tench, Body characteristics, Linear and ponderal traits.

INTRODUCTION – Tench (*Tinca tinca* L.) has long been the most important by-fish in conventional European pond carp farming (Billard and Flajshans, 1995) and today is object of a renewed interest in aquaculture world (Wang *et al.*, 2006) because of its quality and taste (Wedekind *et al.*, 2003). In the same way, in Piedmont (N-W Italy), the peculiar interest for tench has increased, developing an important niche market (Gasco *et al.*, 2001). Tench has reach an high commercial value, due to the small quantity of available fish (Zoccarato *et al.*, 1998) and a quality brand has been set up. Within an ample project in order to characterise and valorise this product, morphometric description of tench has been performed. This description, together with a genetic identification, could be useful to protect this niche product and in order to avoid introduction from other Italian regions and or countries. The aim of this research was to collect first indications on linear and ponderal measures and relative indexes on tench.

MATERIAL AND METHODS – Forty six T3 tench from 55 to 100g coming from a semi-intensive farm were examined 3 hours after capture and the linear measures traits were done following the indication of figure 1 using an

Figure 1. Body measurements.

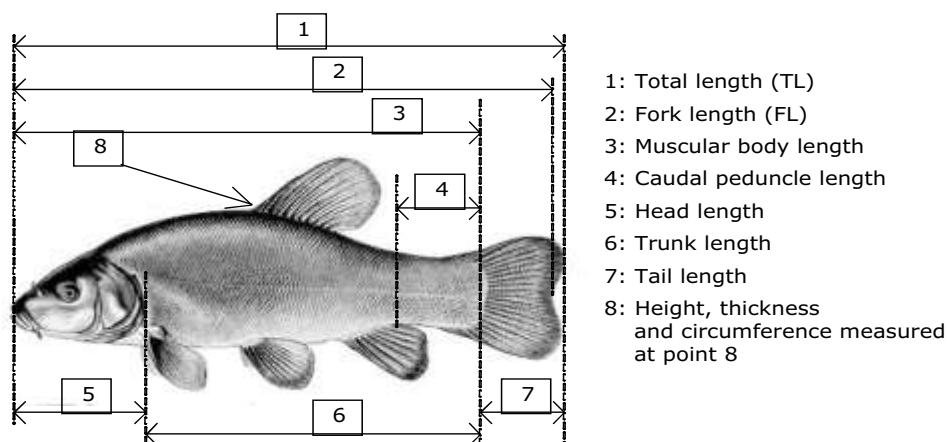


Table 1. Average linear (cm) and ponderal (g) measures.

| | ♀ (26) | | ♂ (20) | |
|------------------------|--------|---------------------|--------|---------------------|
| Total length (TL) | 14.75 | ± 0.21 ^b | 14.86 | ± 0.12 ^a |
| Fork length (FL) | 13.58 | ± 0.54 | 13.55 | ± 0.56 |
| Head length | 2.88 | ± 0.18 | 2.91 | ± 0.11 |
| Trunk length | 8.58 | ± 0.35 | 8.60 | ± 0.26 |
| Caudal peduncle length | 1.51 | ± 0.05 | 1.53 | ± 0.06 |
| Muscular body length | 11.47 | ± 0.41 | 11.56 | ± 0.29 |
| Tail length | 2.40 | ± 0.35 | 2.51 | ± 0.31 |
| Height | 4.32 | ± 0.45 ^b | 4.72 | ± 0.86 ^a |
| Thickness | 2.50 | ± 0.22 ^b | 2.67 | ± 0.33 ^a |
| Circumference (C) | 11.09 | ± 0.80 ^b | 11.72 | ± 1.06 ^a |
| Total body weight (M) | 75.65 | ± 14.07 | 78.20 | ± 15.24 |
| Viscera weight | 7.38 | ± 1.29 ^A | 6.36 | ± 1.10 ^B |
| Liver weight | 2.07 | ± 0.50 | 1.95 | ± 0.50 |
| Gonad weight | 2.56 | ± 0.86 ^A | 1.86 | ± 0.56 ^B |

^{a, b}: $P \leq 0.05$; ^{A, B}: $P \leq 0.01$.

image program (Image-Pro Plus ver. 6.0, Media Cybernetics). The following indexes were calculated: hepatosomatic (HSI=100* liver weight/body weight), viscerosomatic (VSI=100* viscera weight/body weight), gonadosomatic (GSI=100* gonad weight/body weight), condition factor (K=100* body weight/FL³) (FL=fork length) and dressing percentage (DP=100* eviscerated weight/total weight). All data were analysed by ANOVA one way (SPSS, 1999). Differences were considered significant at level of $P \leq 0.05$. Moreover, the relationships between total length (TL) and total weight (M) as well as between circumference (C) and total weight (M) have been evaluated.

RESULTS AND CONCLUSIONS – The results concerning linear and ponderal measurements are shown in Table 1. Total length, height, thickness and circumference of males were significantly higher than those of females while no dif-

Table 2. Linear and ponderal indexes and K.

| | ♀ (26) | | ♂ (20) | |
|---------------------------|--------|---------------------|--------|---------------------|
| Head length/FL | 21.25 | ± 1.30 | 21.51 | ± 1.01 |
| Trunk length/FL | 63.28 | ± 3.42 | 63.62 | ± 3.37 |
| Caudal peduncle length/FL | 11.14 | ± 0.62 | 11.30 | ± 0.72 |
| Muscular body length/FL | 84.62 | ± 4.57 | 85.47 | ± 3.69 |
| Height/FL | 31.89 | ± 3.89 | 34.98 | ± 7.15 |
| Thickness/FL | 18.45 | ± 1.87 | 19.74 | ± 2.87 |
| Circumference/FL | 81.84 | ± 7.60 | 86.71 | ± 9.36 |
| HSI | 2.79 | ± 0.62 | 2.55 | ± 0.70 |
| VSI | 10.01 | ± 2.23 ^A | 8.36 | ± 1.93 ^B |
| GSI | 3.48 | ± 1.38 ^A | 2.45 | ± 0.91 ^B |
| K | 3.07 | ± 0.78 | 3.18 | ± 0.77 |
| Dressing percentage | 79.99 | ± 4.47 ^B | 83.29 | ± 3.86 ^A |

A, B: $P \leq 0.01$.

ferences appeared for others linear measures. As regard to linear and ponderal indexes (Table 2), differences were evident in VSI and GSI indexes that resulted significantly higher in females than in males. Those differences are due to the higher development of female gonads in comparison with testis. Those results lead to a statistical difference for dressing percentage that showed significantly more favorable in males.

Studies concerning biometric features of tench are very few and dated. Our results did not show any difference between sex for K value and were in agreement with those reported by many authors (Bachasson, 1995; Bachasson and Bathelemy, 1988; Kennedy and Fitzmaurice, 1970; Skora, 1964) while were in contrast with the observations of Hermann (1951). K index is reported in literature low when growth rate is very fast, even if some observations have put in evidence high index together with fast growth (Suter and Morand, 1975). Our results did not give any indications in this way, and high values of K could be strictly related to the shape of "Pianalto" tench that is commonly named "gobba" (hump) due to the typical bent form of dorsal profile. This typical shape justifies also the low quadratic regression value ($R^2=0.0005$) showed for TL and M relationship; the total length is then not a useful parameter to estimate the weight of Pianalto tench. This evidence is not in agreement with that of Bachasson (1995) who recorded R^2 higher than 0.8 with T3 tench for this relationship. However, one interesting relationship was found between C and M ($M=-260.67+45.45C - 1.38C^2$; $R^2=0.81$). Nevertheless, no data are available on literature for comparison.

In conclusion, those results are only a first step on the morphometric characterisation of "Tinca Gobba Dorata del Pianalto" and further investigations are needed.

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REFERENCES – **Bachasson**, B., Bathelemy, D., 1988. Etude de la tanche pour l'amélioration de sa pisciculture. Rapport final de la convention 1987 avec la région Rhône-Alpes. IRRRA ed. 25 rue du Plat. Lyon. 87p. **Bachasson**, B., 1995. Etude de quelques aspects de la morphologie, de la biologie et de la pisciculture de la tanche (*Tinca tinca* L.). Thèse de Doctorat, 134p. **Billard**, R., Flajshans, M., 1995. The current state of research and culture of tench, *Tinca tinca* Linnaeus (1978). Pol. Arch. Hydrobiol., 42: 219-225. **Gasco**, L., Zoccarato, I., Lussiana, C., Azzi, L., Julini, M., 2001. Valorizzazione del territorio attraverso l'allevamento della tinca: il caso del Pianalto di Poirino (Piemonte). 36° Simposio Internazionale di Zootecnia "Prodotti di origine animale: qualità e valorizzazione del territorio", Atti del 36° Simposio Internazionale di Zootecnia, Portonovo (Ancona), MG Editori, Milano, 109-114. **Hermann**, G., 1951. Croissance des tanches à la pisciculture de Pertelnicken. Z. Fisch., 3: 121-126. **Kennedy**, M., Fitzmaurice, P., 1970. The biology of tench (*Tinca tinca* L.) in Irish waters. Inland Fisheries Trust. Dublin. Proc. R.I.A. 69(B): 31-83. **Skora**, S., 1964. Characteristics of tench (*Tinca tinca* L.) in the reservoir of Goczalkowice. Acta Hydrobiol., 6(2): 97-118. SPSS, Inc., 1999. **SPSS** release 11.5, Chicago, IL, USA. **Suter**, P.Y., Morand, C., 1975. Analyse du coefficient de condition absolu de trios population de carpes (*Cyprinus carpio*) et de tanches (*Tinca tinca*). Laboratoire d'Ecologie appliquée de l'ENSAIA. Nancy. **Wang**, J., Min, W., Guan, M., Gong, L., Ren, J., Huang, Z., Zheng, H., Zhang, J., Liu, H., Han, Y., 2006. Tench farming in China: present status and future prospects. Aquaculture International 14(1), 203-206. **Wedekind**, H., Rennert, B., Kohlmann, K., 2003. Product quality in different strains of tench (*Tinca tinca*) tested under controlled environmental conditions. J. of Appl. Ichthyol., 19(3): 174-176. **Zoccarato**, I., Gasco, L., Julini, M., 1998. La produzione tipica della tinca dell'altopiano di Poirino: situazione attuale. Atti del Convegno Nazionale "Parliamo di... qualificazione e tipizzazione dei prodotti di origine animale" Fossano (CN), 157-160.