

INTRODUCTION

- Quality, sensory characteristics and healthy properties of the Iberian pig products are related with the fatty acid profile of the meat and fat, mainly affected by the feeding regime of the animals during the final period of growing, within other factors.
- The Spanish legislation determines different commercial categories according to the feeding regime with different quality and prices.

ACORN-BELLOTA

RECEBO

FEED-CEBO
- NIRS has shown its viability to be a suitable at-line tool for classification purposes of Iberian pig products using melted fat and intact adipose tissues.

OBJECTIVE

Evaluate a handheld NIRS instrument to classify Iberian pig carcasses according to the feeding regime in an on-line application

MATERIALS AND METHODS

- 125 Iberian pig carcasses (41 Acorn-Bellota, 34 Recebo and 50 Feed-Cebo).
- Handheld MEMS digital transform spectrophometer (Phazir, Polychromix Inc.) working from 1600-2400nm (spectral resolution ~ 8nm) (Figure 1).
- Chemometrics calculations performed with WinISI ver 1.5 (Infrasoft International, Port Matilda, PA, USA).
- Standard Normal Variate and Detrending plus second derivative (2,5,5,1) as spectral pretreatments.
- Principal Component Analysis (PCA) to visualize the structure of the data set and detect outlier samples.
- Selection of a training and validation set using the SELECT algorithm by Shenk & Westerhaus, 1991.
- Discrimination models performed with PLS2 (WinISI ver 1.50).



Figure 1. On-line measurement of Iberian pig carcasses

RESULTS

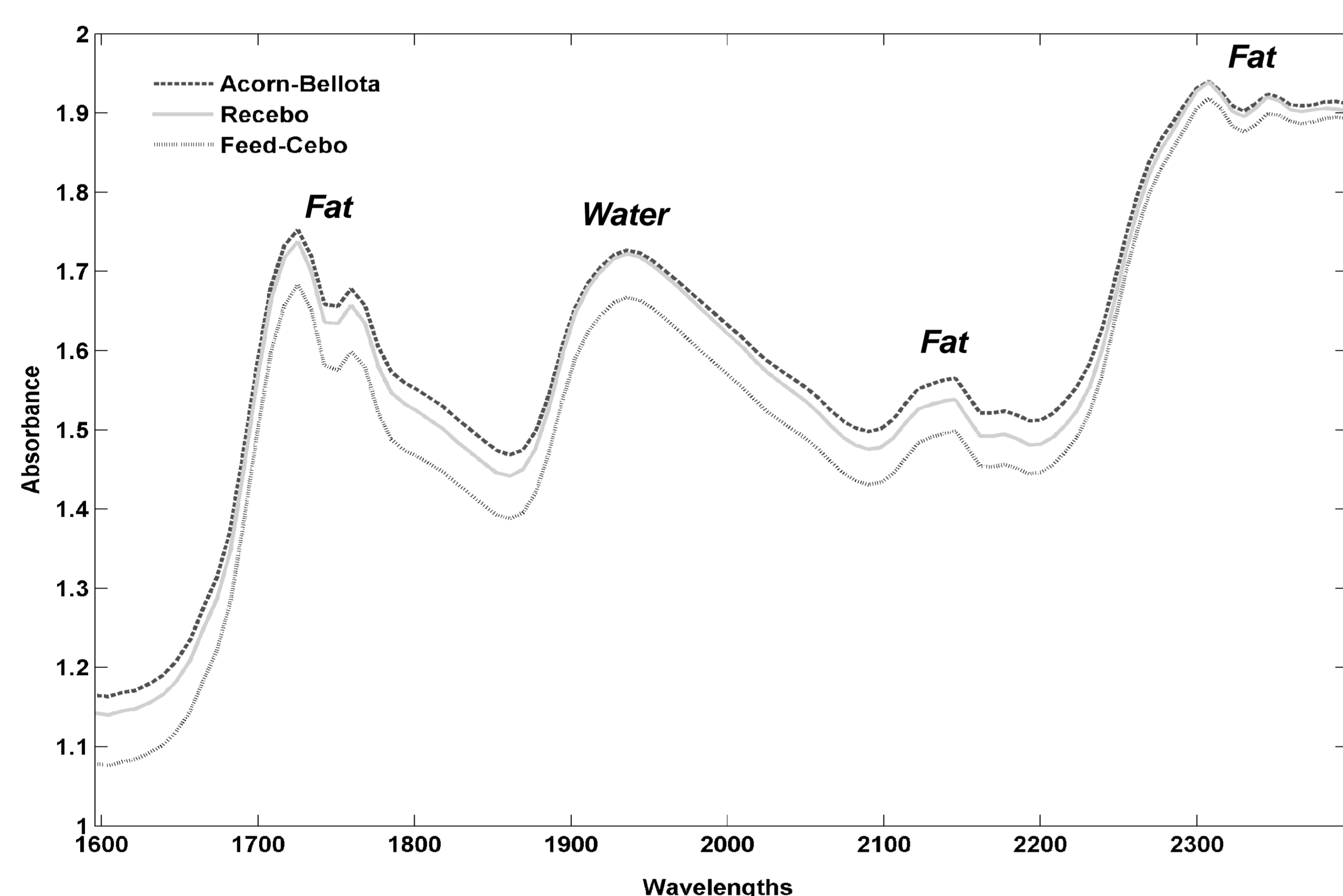


Figure 2. Mean spectra of each feeding regime category

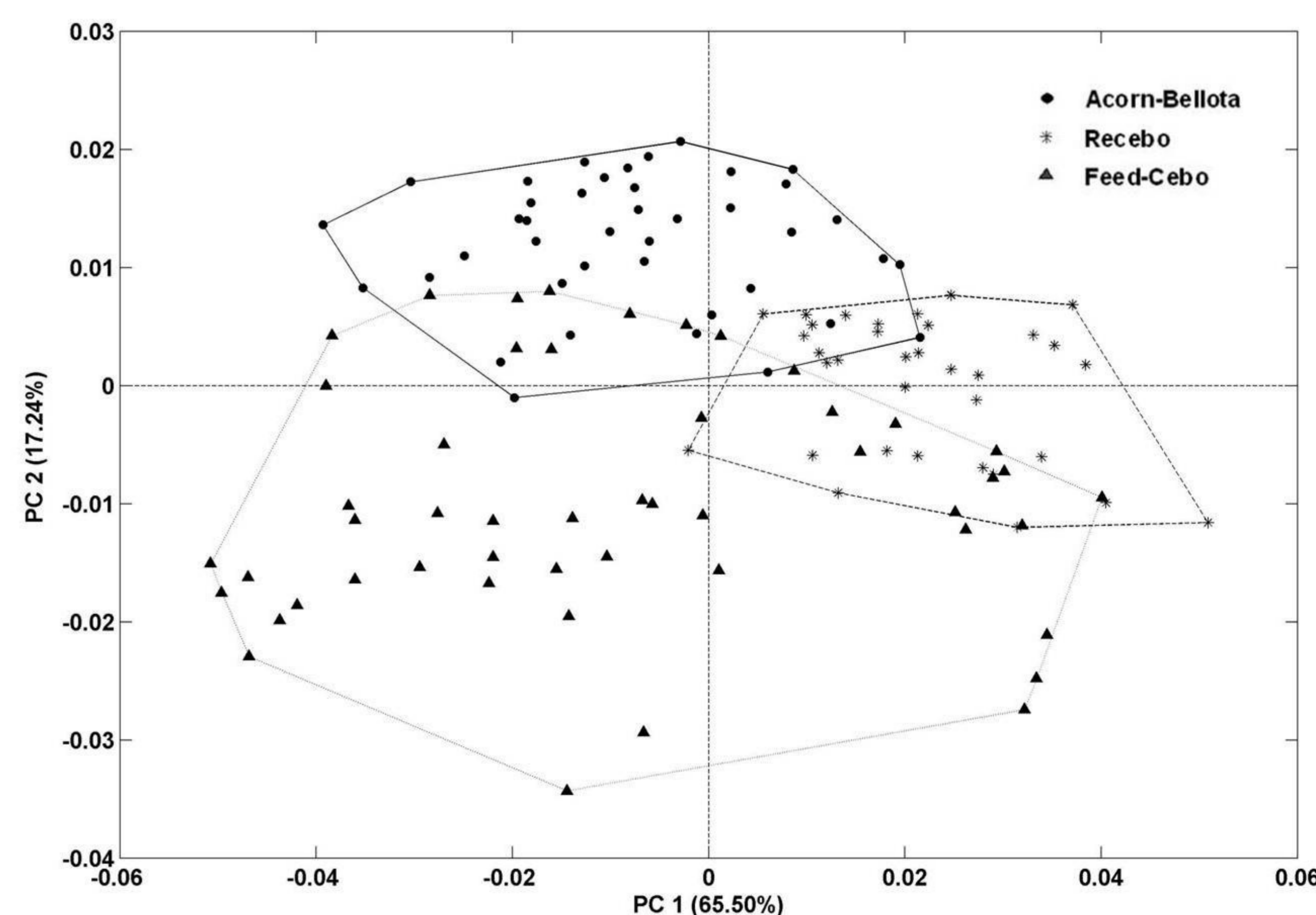


Figure 3. PCA score plot (2nd derivative)

Table 1. PLS discriminant results of the training set.

Training prediction	Number of samples	Classified as		
		Acorn-Bellota	Recebo	Feed-Cebo
Acorn-Bellota	31	30	0	1
Recebo	24	0	24	0
Feed-Cebo	40	1	0	39

Table 2. PLS discriminant results of the external validation set.

External validation	Number of samples	Classified as		
		Acorn-Bellota	Recebo	Feed-Cebo
Acorn-Bellota	10	10	0	0
Recebo	10	0	10	0
Feed-Cebo	10	2	0	8

CONCLUSIONS

These results indicate the viability of an on-line authentication system of Iberian pig carcasses at the slaughterhouse according to the feeding regime of the animals.