PROCEEDINGS

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## A NEW VIEW OF ANIMAL SCIENCE:

## CHALLENGES AND PERSPECTIVES

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## Theme 4 | Genetics, genomics, animal breeding and reproduction

# Principal components analysis for growth traits in Canchim cattle

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The use of multivariate techniques has the main purpose of condensing information from a set of data into smaller variables, with minimal loss of information. The aim of this work was to analyze principal components (PCA) with the genetic values of productive and reproductive characteristics of animals of the breed Canchim.16,946 animal records were used Canchim from the Canchim herd of Southeast-Embrapa Cattle, São Carlos, SP, born between 1941 e 2014. The genetic values for weaning weight (WW), weight at 12 months of age, yearling weight, scrotal circumference weaning (SCW), scrotal circumference 12 months of age, e scrotal circumference yearling of these animals were estimated by the method of maximum likelihood restricted under bi-characteristic animal model, using the *software* WOMBAT(MEYER, 2007). To meet the assumptions of the PCA, The genetic values of the traits evaluated had their variances normalized, so the PCA was performed through the PRCOMP function in environment R. The results of the PCA indicated that 85% of the variation of the dataset related to the additive genes were explained by the first two main components (PC1 e PC2). Linear association was observed between the weights PC1 and PC2 to the scrotal circumference. If the selection is made based on the PC1 there will be a quick response to the indirect selection for the weights measured at different ages. Selection for weight may also affect the scrotal circumference of the animals, however with less emphasis. WW and SCW can be used as selection criteria in Canchim breeding programs, aiming to increase productivity and reproductive efficiency of the herd.

**Keywords:** animal breeding, breeding programs, increase productivity.