

GENETIC POLYMORPHISM OF CSN3 AT FOUR ECOTYPES OF SERRANA GOAT

Santos-Silva¹, F., Mineiro, I.¹, Sousa, C.¹, Pereira, F.³, Carolino, I.¹, Carolino, N.¹; José Santos Silva¹.

¹ Instituto Nacional de Investigação Agrária e Veterinária, IP – Estação Zootécnica Nacional. Quinta da Fonte Boa, Vale de Santarém, Portugal

³ ANCRAS, Zona Industrial, R. D, 33, 5370-32, Mirandela, Portugal

K- Casein protein encoded by CSN3 gene reveals high polymorphism in goats that has been associated to protein level and technological properties of milk, like cheese making

Serrana goat the most representative of Portuguese autochthonous goats, with 17703 registered females has a recognized importance in Portuguese caprine breeding with important levels of milk production and several PGI and PDO products as Transmontano goat cheese

There are four ecotypes, Transmontano, Jarmelista, Serra and Ribatejano spread in the North and Center of the Country

OBJECTIVES

- Analyze genetic diversity at CSN3, exon 4 at the four ecotypes of Portuguese Serrana goat
- posterior association with milk traits to support breeding plans

METHODS

SAMPLES

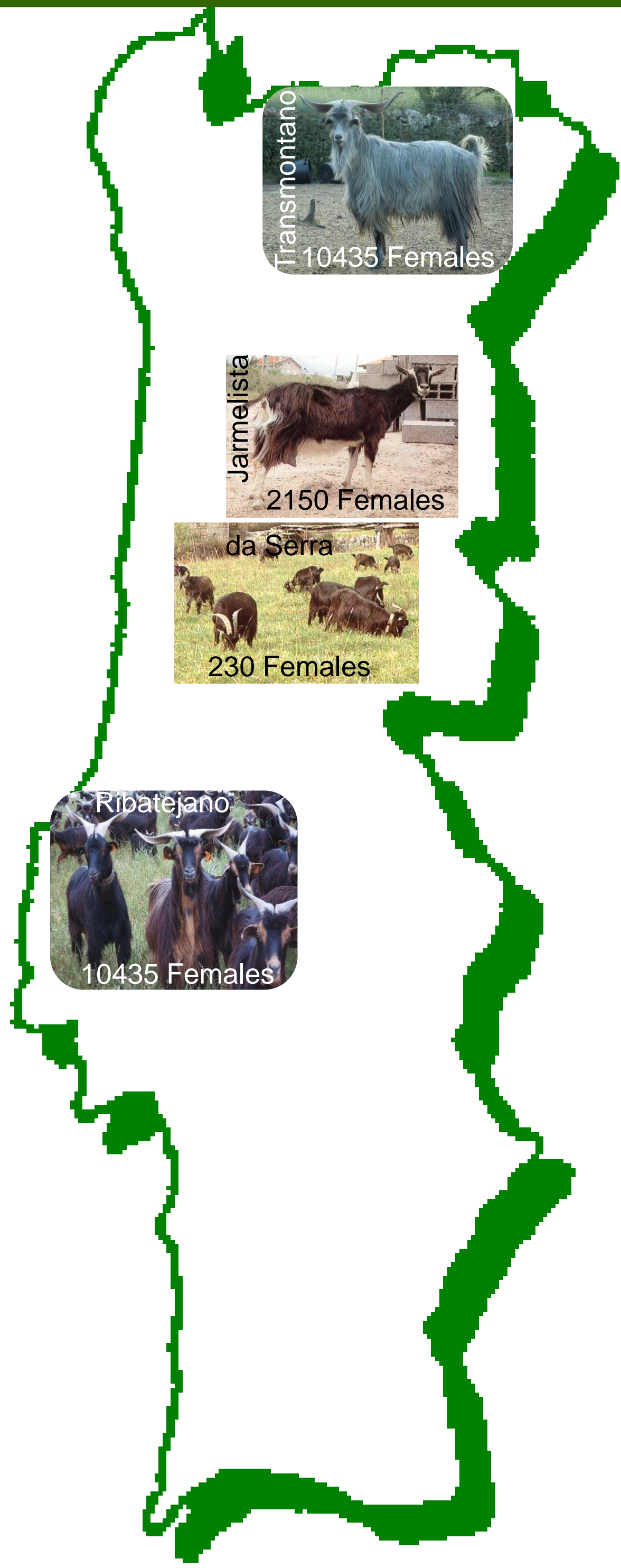
- 180 Individuals, 54 farms

4 Ecotypes

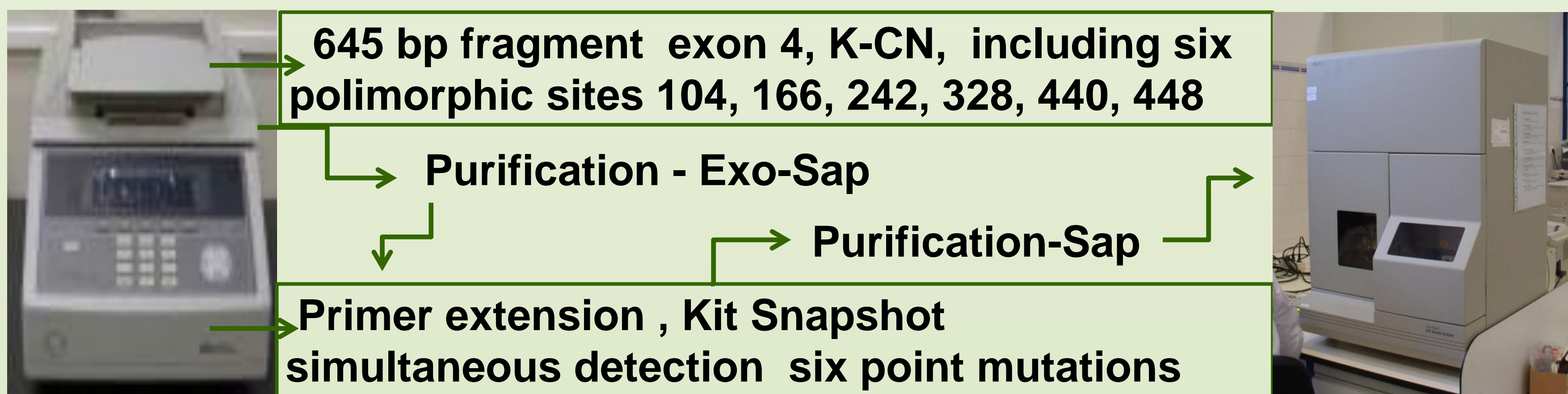
Transmontano-54
Jarmelista – 38
Serra – 54
Ribatejano- 34

DNA EXTRACTION

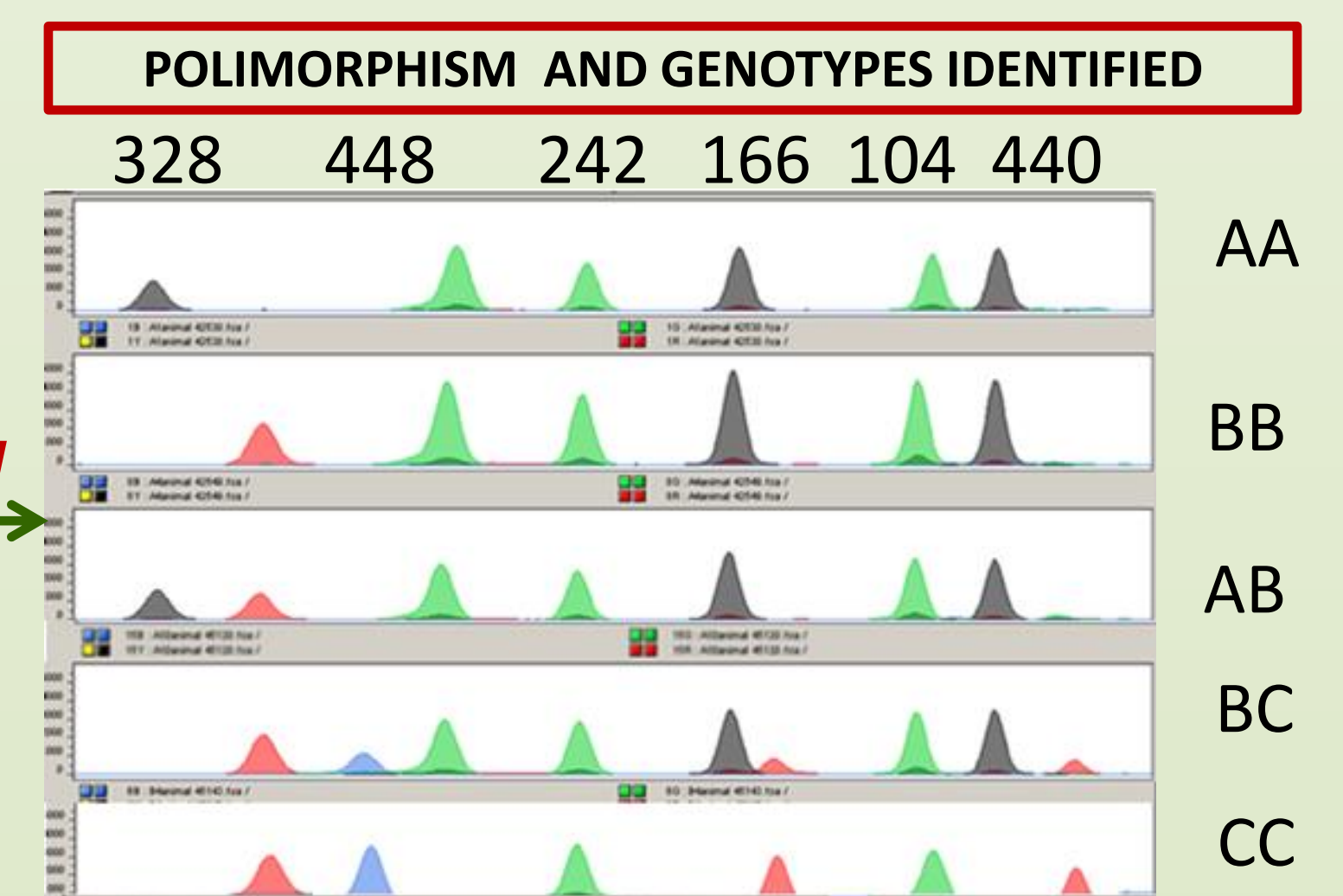
Blood- Comercial Kit



AMPLIFICATION



IDENTIFICATION INTERPRETATION

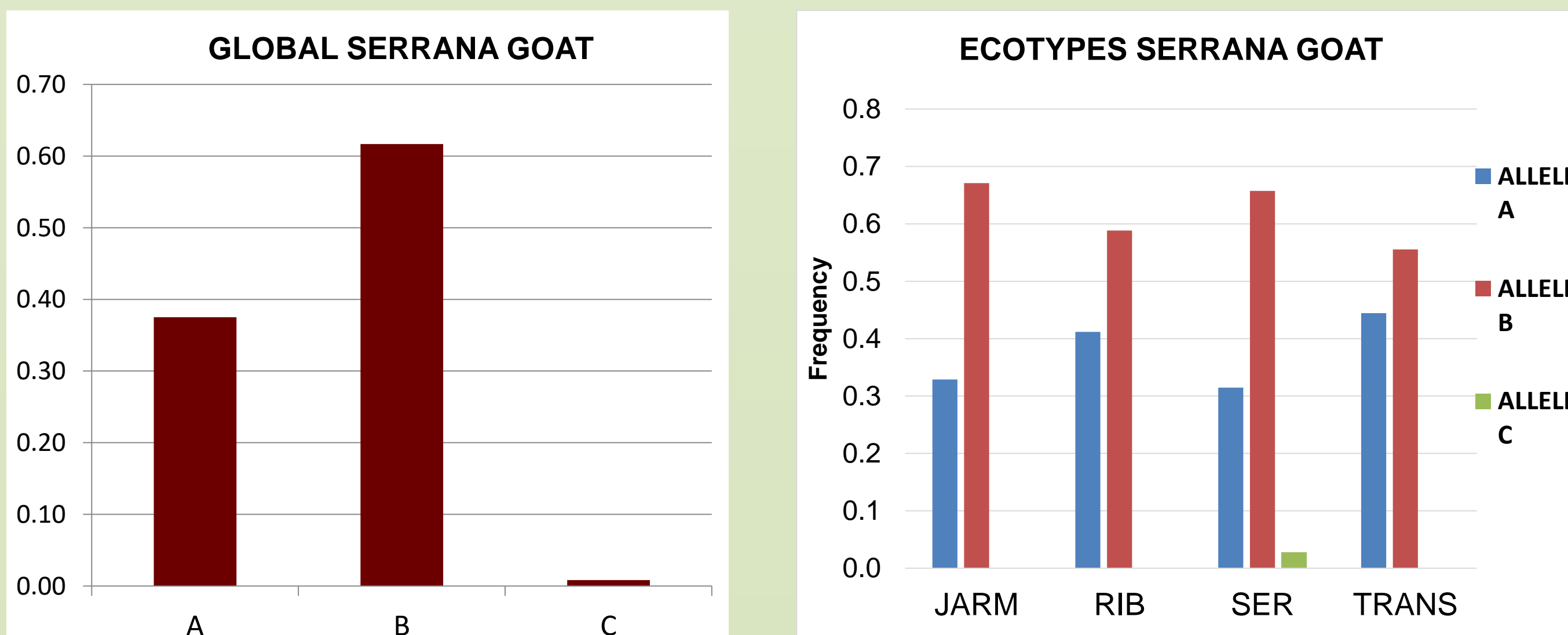


STATISTICAL ANALYSIS: DATA BASE EXCEL, TOOL KITS, χ^2

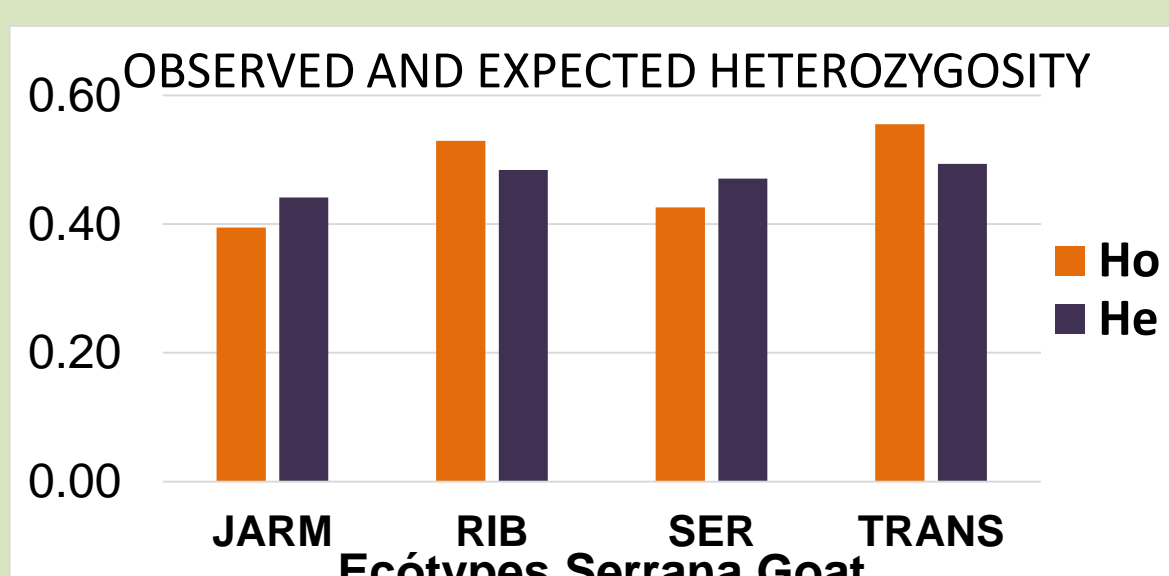
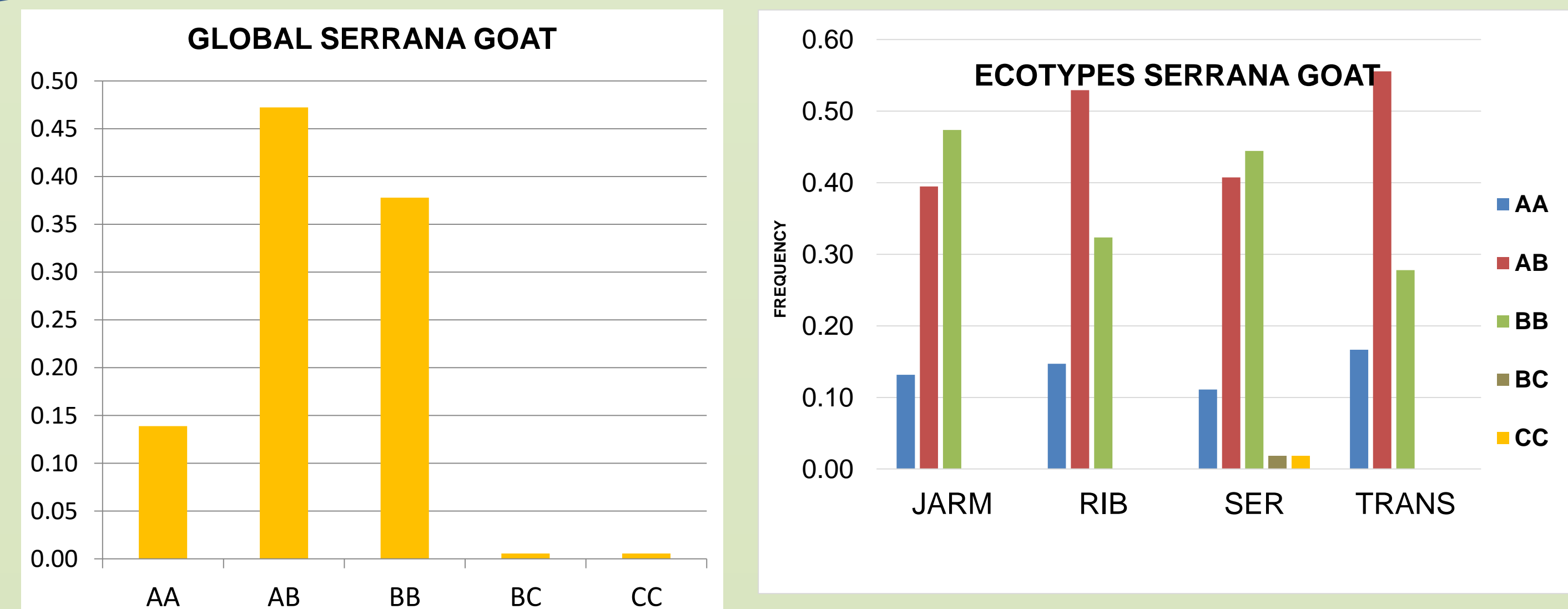
RESULTS

OBSERVED AND EXPECTED HETEROZYGOSITY

ALLELIC FREQUENCY GLOBAL AND BY ECOTYPE



GENOTYPE FREQUENCY GLOBAL AND BY ECOTYPE



- Allelic and genotype distribution pattern are similar to other Portuguese and European Breeds, excepting C allele
- No significant differences between Ho and He excepting for Serra that showed significant deviations ($p > 0.05$) to Hardy-Weinberg Equilibrium

CONCLUSIONS

- Four of the six SNPs analyzed showed polymorphism. Two monomorphic positions (242 and 104)
- From seven possible alleles, three were identified: A, B, and C. B the most frequent, C very low frequency
- Five genotypes identified AA, BB, CC, AB, BC, AB most frequent

Ribatejano and Transmontano

AB most frequent 53-56%

Serra and Jarmelista

BB most frequent 44-47%

Only at Serra - BC and CC - 0.6%

If expected benefits of some alleles such as B, are confirmed

the genetic diversity found, will be a very important tool for future breeding plans, aiming to improve milk abilities for cheese making at Serrana goat