GENOMIC AND IMMUNOGENIC VARIATIONS OF INDIGENOUS CHICKEN IN THE TROPICS

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RESEARCH QUESTION

What are the differences in genomic and immunogenetic variation of indigenous chicken?

Introduction

✓ Undesirable effects of increased use of disease control measures

✓ Breeding for disease resistance has the potential to reduce or complement use of drugs

✓ Artificial selection using genomic information has the potential to accelerate rate of gain for traits in IC

✓ There is no information on immunogenetic variation for disease resistance in IC

Objective

The study investigated population structure of ICs at both the whole-genome and chromosome 16

Materials

✓ 150 IC were used from four agro ecological zones.

✓ DNA was extracted from blood samples using DNA extraction kit.

✓ Raw reads were obtained by GBS

Methods

Analysis of Population Structure

✓ was performed by genotypic clustering at whole genome & at chromosome 16.

✓ PCA & Admixture analysis was performed using all SNPs (n = 65,945).

Conclusion

❖ There is no significant genomic diversity in IC populations, when classified based on chromosome 16 (MHC region) & whole genome classification grouped IC into two genetic clusters.
❖ Conservation programme be implemented to ensure increase in genetic diversity in indigenous chicken

Results

• Genetic diversity at whole genome & chromosome 16 revealed two & one genetic groups, respectively.
• At chromosome level, that there may be significantly less genetic variation than the variation within the whole genome of a population.
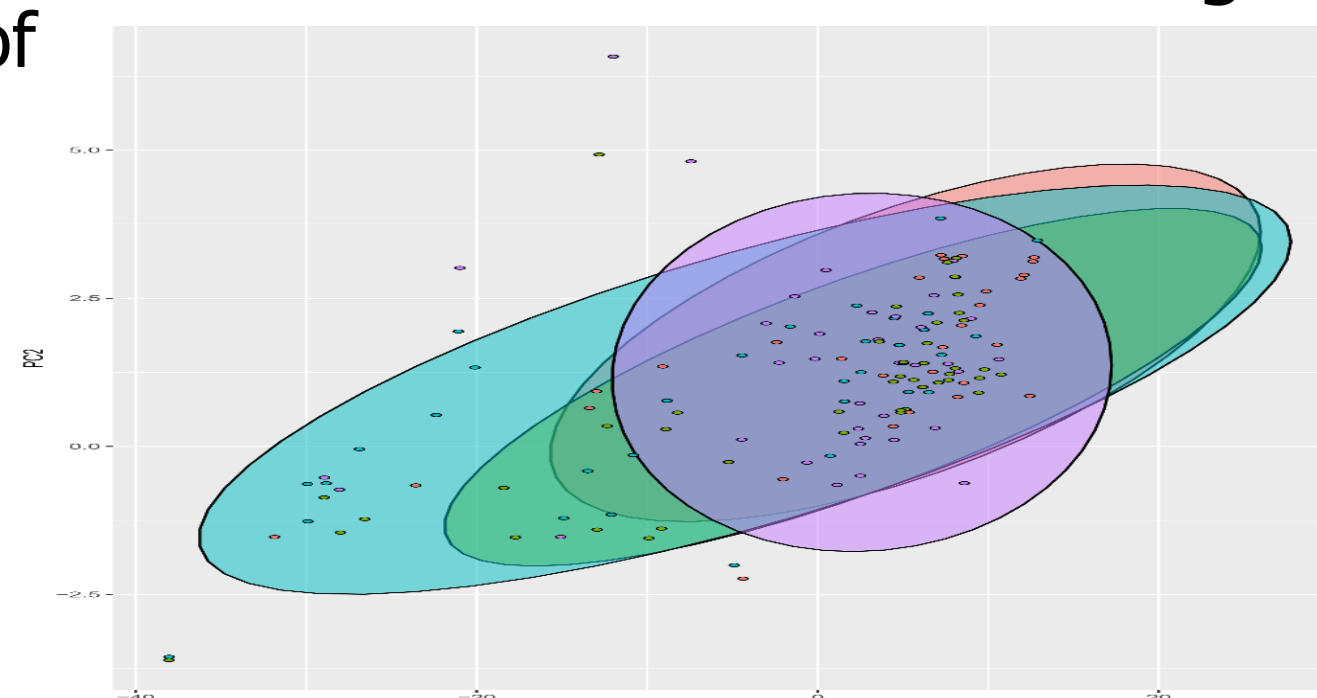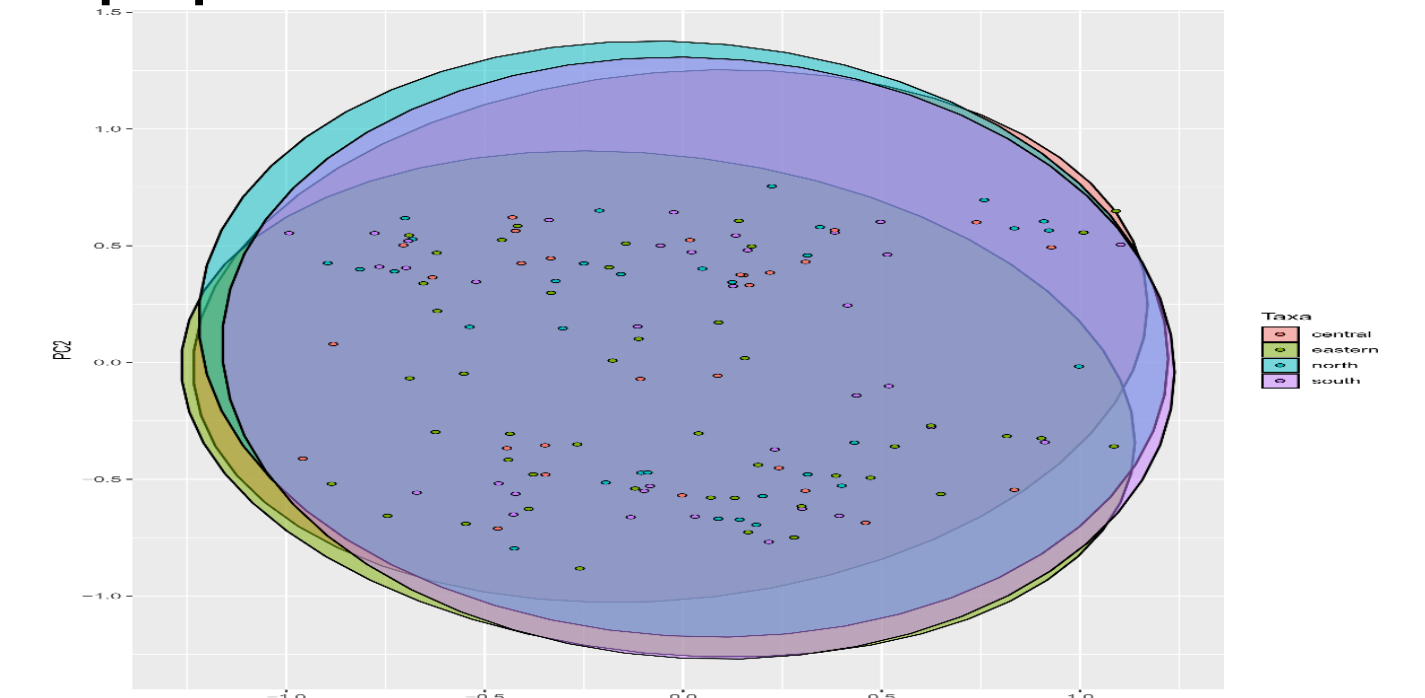

Figure 1   **Figure 2**
Figure 1&2: PCA plot at the whole genome & at chromosome 16
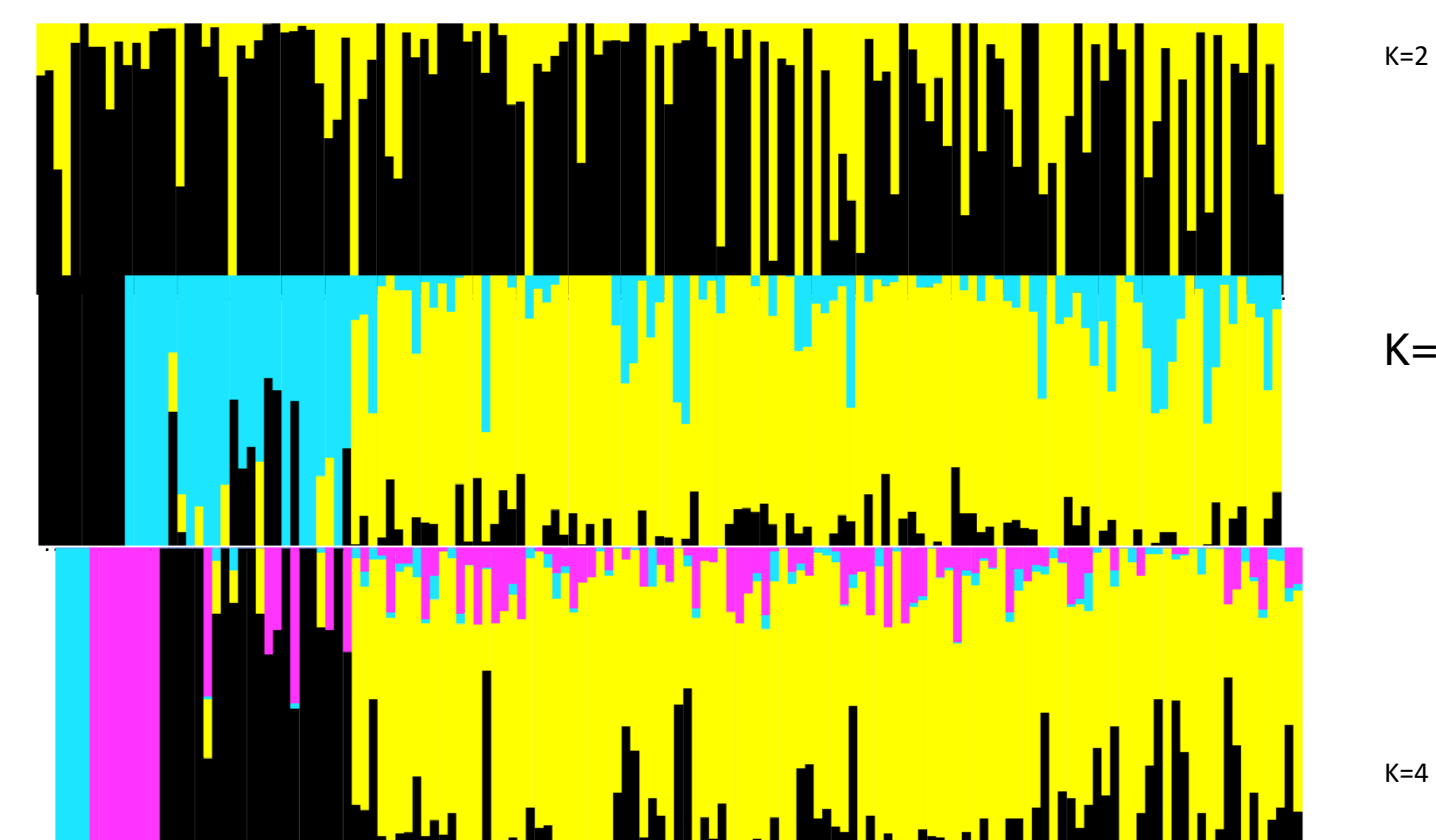

Figure 3   **Figure 4**
Figure 3: Bayesian posterior probability of membership K-values of 2 to 4. & **figure 4:** showing the cross-validation errors of the k- clusters
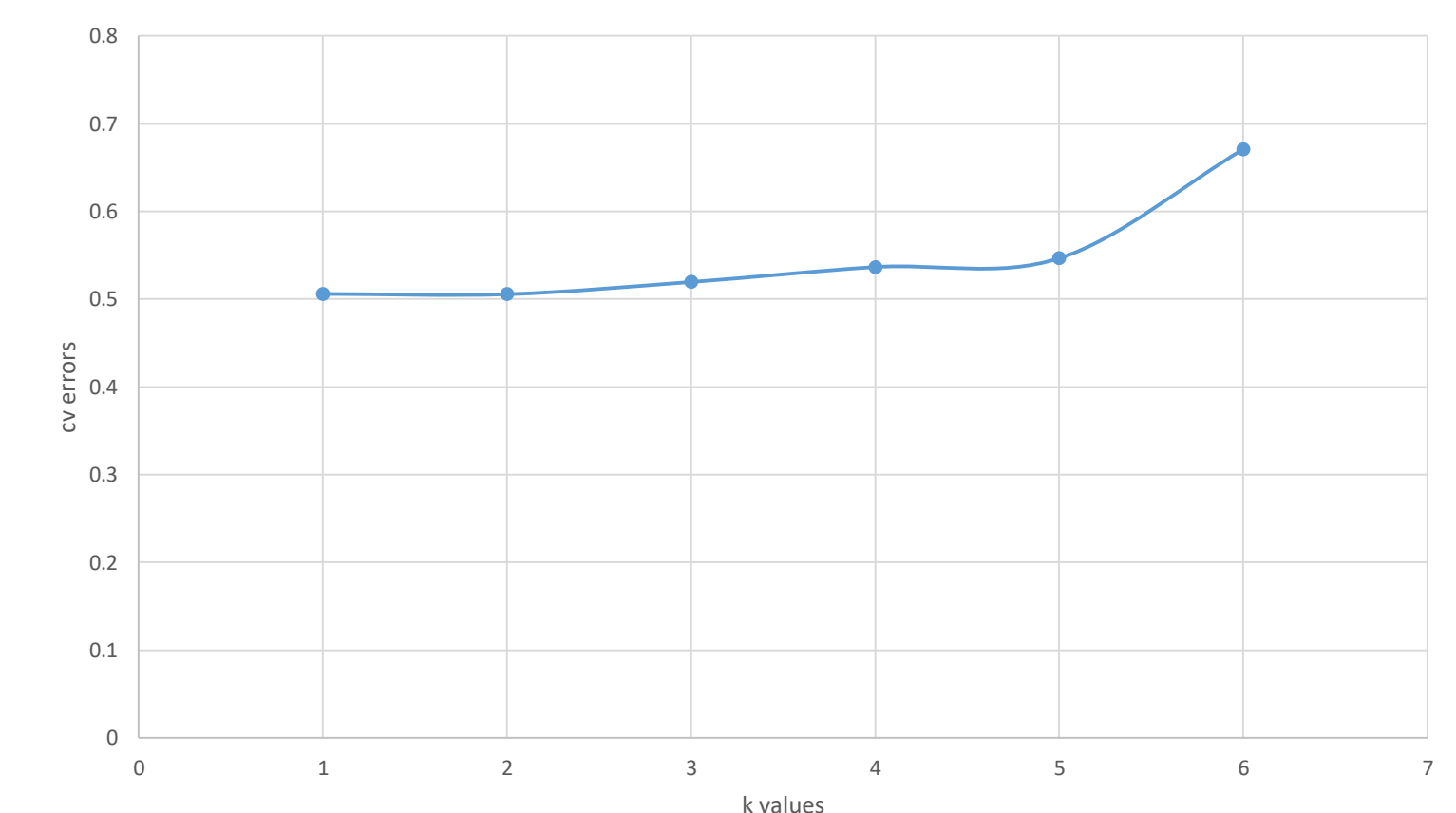
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