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Part-II, Paper-III (Group-B)

Genetics

Interaction of genes:

Codominance

CODOMINANCE

In codominance, both the genes of an allelo-morphic pair express themselves equally in F_1 hybrids. It means a heterozygote for codominant genes exhibits both the characters side by side. These follow the law of segregation and F_2 progeny exhibits 1:2:1 ratio both genotypically, as well as phenotypically.

Example 1. Codominance of coat colour in cattle

In cattle, gene R - stands for red coat colour; gene W - stands for white coat colour.

When red cattle (RR) are crossed with white cattle (WW), the F_1 hybrids have roan coloured skin (not the intermediate pink). The roan colour is actually expressed by a mixture of red and white hairs, which develop side by side in the heterozygous F_1 hybrid. In F_2 generation red, roan and white appear in the ratio of 1:2:1. The phenotypic ratio coincides with the genotypic ratio RR, RW, WW (1:2:1)

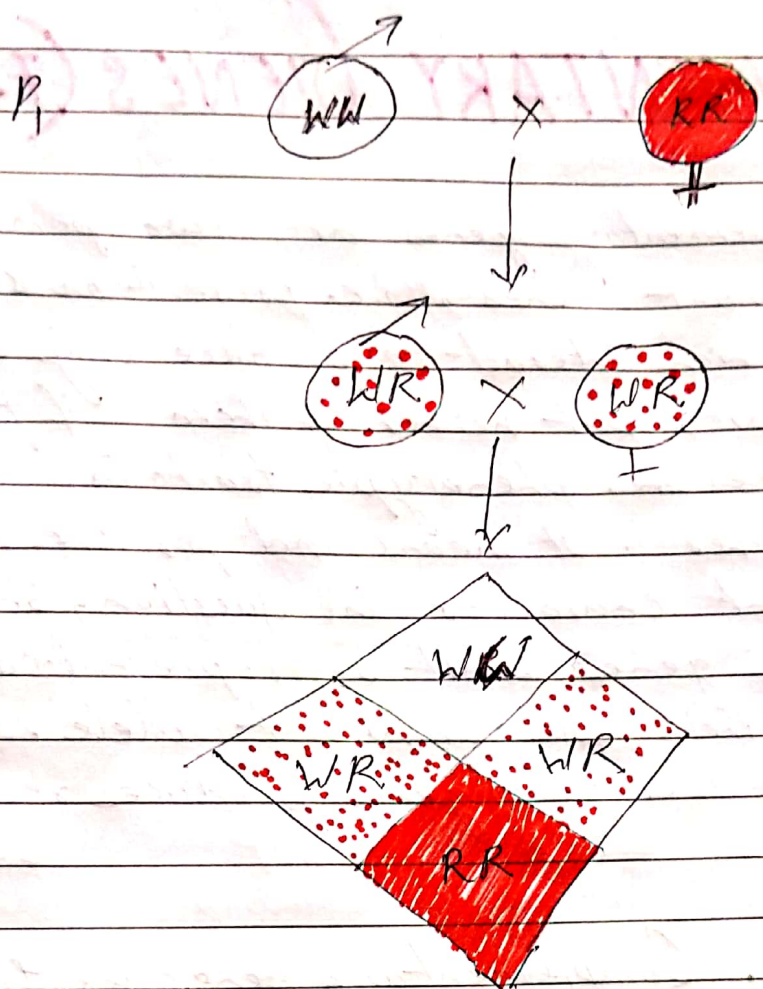


Fig:- Inheritance of coat-colour in cattle

Example 3: Codominance of Blood Alleles in Man.

* MN blood type in man is an example of codominance. The persons with MN genotype produce both antigen M and N indicating that both the genes are functional at the same time.

* In ABO blood group system gene A and B are responsible for blood group A and B are codominant. The hybrid has AB blood group.