Corn lab report

Science, Biology



Corn Kernel Color Lab Report Corn Kernel Color Lab Report Introduction The primary aim of this laboratory exercise was to investigate the inheritance of corn kernel color (blue vs. yellow) and whether it is determined by only two alleles. Variations in the color of corn kernels normally follow the principles of Mendelian genetics and are widely known to be controlled by particular gene pairs (alleles). According to Ford (2000), the gene combinations (genotype) of the kernels can be deduced by simply observing their appearance (phenotype).

Methods

The simulated exercise involved monohybrid crossing of corn by breeding a true breed blue corn kernel parent with a true breed yellow corn parent. The resultant F1 generation was then crossed to produce F2 generation. Finally, the progeny from all the crosses were then examined and analyzed using a Punnet square to determine which of the two alleles were dominant as well as whether kernel color is only controlled by the two alleles.

Parent 1 X Parent 2 Phenotype Yellow Blue Genotype bb BB ↓ F1 generation Phenotype Blue Blue Genotype Bb Bb ↓ F2 generation Results When a true breed blue corn kernel parent was crossed with a true breed yellow corn parent, the resultant offspring (F1 kernels) were all blue.

However, when the F1 generation kernels were crossed, the offspring (F2 generation kernels) consisted of some blue as well as some yellow kernels as shown below:

Shown Below.

Punnett Square

Variations in the color of corn kernels normally follow the principles of

Mendelian genetics and are widely known to be controlled by particular gene pairs (alleles). Inspection of the F1 generation reveals that the Blue kernel allele is dominant while Yellow kernel allele is recessive. In addition, a preliminary inspection of both the F1 and F2 generations in conjunction with each other suggested that the Kernel color is most likely to be controlled by only one single pair of alleles (blue and yellow allele) (Ford, 2000). On the other hand, the chi square statistical analysis test showed that the data obtained from the crosses fitted the predicted values. For example, the value of was found to be less than 3. 84 (Ford, 2000).

Conclusion

In conclusion, based on the results of the analysis of progeny from all the crosses, it can be concluded that the Blue kernel allele is dominant while Yellow kernel allele is recessive. The results of the lab exercise have also confirmed that the Kernel color controlled by two alleles (blue and yellow allele). Finally the chi square test confirmed the null hypothesis for both ear#1 and ear#2. The inheritance of corn kernel color, therefore, follows the principles of Mendelian genetics.

References

Ford, R. (2000). Inheritance of Kernel Color in Corn: Explanations & Investigations. The American Biology Teacher 62, 3, 181-188.