

Ag 1 Genetics - 39 points

Answer the following questions.

Name:

1. Define Genetics.(2)
2. Explain the difference between Mitosis and Meiosis? (2)
3. Describe a Dominant gene and give an example? (2)
4. Describe a Recessive gene and give an example? (2)
5. What is meant by additive gene effect?(2)
6. Which of the following gene effect uses the punnet square? (1)
  - a. Nonadditive gene effect
  - b. Additive gene effect
7. Explain which sex determines the sex of the offspring for dairy cattle and why this impacts the selection of a bull or heifer for your dairy herd? (5)
8. What is meant by the term Homozygous?(2)
9. What is meant by the term Heterozygous? (2)

10. A cattle rancher receives an extra \$15 per head for polled, black calves. What are the chances that he receives this premium? Use a Punnett square to figure out the probability. Cross a heterozygous polled and black heifer and a heterozygous polled and a heterozygous black bull.

(2- male, 2-female, 6 points- the Punnett square, 4 -Chances)

Polled is dominant to horned, Black is dominant to red.

11. How would the use of this information impact the selection of males and females for this cattle rancher? What genetics (genotype and phenotype) should this farmer be purchasing? (5)