

Questions for Population Genetics and Quantitative traits

Questions:

1. let's consider a hypothetical population of 100 frogs with the following genotypes

64 dark green frogs with the genotype GG

32 medium green frogs with the genotype Gg

4 light green frogs with the genotype gg

Calculate genotype and allele frequency

2. Encircle the correct answer for the followings:

A. Continuously varying traits are called

1. Quantitative traits
2. Qualitative traits
3. Metric traits

B. Phenotype value determines by equation

1. $P = G + E$
2. $P = A + D + I + E$
3. $P = A + D$

C. Every alleles A and B increasing milk yield by 1 liter also, every alleles a and b giving no increase in milk yield. Therefore, the genotype AABb contribute:

1. 4 liters
2. 5 liters
3. 3 liters
4. 2 liters

D. Heritability is represented by

1. G/P
2. P/G
3. V_A/V_P
4. V_p/V_G

E. Heritability

1. The proportion of phenotypic variation in a population attributable to genetic factors
2. $h^2 = V_A / V_P$
3. $P = G + E$

F. Phenotype value determines by equation

1. $P = G + E$
2. $P = A + D + I + E$
3. $P = A + D$

G. The Hardy-Weinberg Law

1. $p^2 + 2pq + q^2 = 1$
2. $p + q = 1$
3. $p^2 + q^2 = 1$

H. _____ Heritability is represented by

1. G/P
2. P/G
3. V_A/V_P
4. V_p/V_G

3. Answer the followings:

Calculate of genotype and allelic Frequencies from following:

	AA	AS	SS	CS
No	400	300	200	100

4. Correct the following:

- A. Continuously varying traits are called quality traits or metric traits
- B. Example, there are two alleles at this locus, allele a increasing milk yield by 1 liter and allele A giving no increase in milk yield
- C. The performance of an animal for a particular is called its genotype value
- D. Population genetics is the field of genetics that studies heredity in groups of individuals for traits that are determined by only one gene.

5. Determine whether the following statements are true or false:

- A. _____ Continuously varying traits are called quality traits or metric traits
- B. _____ Example, there are two alleles at this locus, allele a increasing milk yield by 1 liter and allele A giving no increase in milk yield
- C. _____ The performance of an animal for a particular is called its genotype value
- D. _____ Population genetics is the field of genetics that studies heredity in groups of individuals for traits that are determined by only one gene.
- E. _____ Hardy-Weinberg assumes no migration
- F. _____ Natural selection may result in increasing or decreasing genetic variation, depending on environmental conditions.
- G. _____ The performance of an animal for a particular is called its phenotype value.

- H. _____ Heritability, The proportion of phenotypic variation in a population attributable to genetic factors.
- I. _____ Milk production, fleece weight and egg production a certain distance are just a few examples of continuously varying traits.
- J. _____ Phenotype value determines by equation, $P = A + D + I + E$