

Exercises: Prediction of breeding values

Exercise 4: animal model with herd effect and relationships.

Assume that the seven bulls in Exercise 3 are related according to the following:

a_1 and a_5 are half sibs with common sire A,
 a_2 , a_4 and a_7 are half sibs with common sire B,
 a_3 and a_6 are half sibs with common sire C.

- a) Set up the numerator relationship matrix (\mathbf{A}) and calculate the inverse using Excel.
- b) What is changed in the assumptions of the model and in the MME compared with exercise 3?
- c) To get unique solutions for the fixed effects, do a reparameterization as in exercise 3 and solve the equation system.
- d) What are the additive breeding values and ranking for the 7 bulls? Is it possible to rank the bulls over herds?