

Recap:

□ Variance and Inbreeding

$$\text{var}(u_i) = (1 + F_i) \sigma_u^2$$

with  $F_i$ : inbreeding coefficient  
of animal  $i$

□ All information available to predict breeding values  
using BLUP animal model

$$\text{HME: } \begin{bmatrix} X^T X & K^T Z \\ Z^T X & Z^T Z + A^{-1} \lambda \end{bmatrix} \begin{bmatrix} \beta \\ \hat{u} \end{bmatrix} = \begin{bmatrix} X^T y \\ Z^T y \end{bmatrix}$$

with  $\lambda = \frac{\sigma_e^2}{\sigma_u^2}$  )  $A^{-1}$ : inverse numerator  
relationship  
matrix

□ Predicted breeding values  $\hat{u}$   
are associated with error

→ Need to quantify error of prediction