Recap: 2023-10-27

- Own performance record

Animal	y_i (Weight)
1	y_1
2	y_2
⋮	⋮
N	y_N

$$\mu = \frac{1}{N}\sum_{i=1}^{N} y_i$$

Regression Method

$$\hat{u}_i = h^2(y_i - \mu)$$

$$h^2 = \frac{\sigma_u^2}{\sigma_p^2} \; ; \; \mu = E[y_i]$$

population mean

σ_u^2: genetic (additive variance); $var(u) = \sigma_u^2$

σ_p^2: phenotypic variance; $var(y_i) = \sigma_p^2$

h^2: heritability → how easy to select for a given trait

traits with high h^2 are easier to select for.

- Repeated Observations

$$\hat{u}_i = \frac{n h^2}{1+(n-1)t}(\bar{y}_i - \mu)$$

repeatability

$\bar{y}_i$: average over repeated observations for animal i ⇒ each animal has n observations

- Progeny Records: For parent animal i with offspring records

$$\hat{u}_i = \frac{2n}{n+k}(\bar{y}_i - \mu)$$

$\bar{y}_i$ → average of observations from progeny of animal i.