Research Question → Design Experiment
- Resources
- Priority of experiment

↓ Treatment structure
- one-way
- two-way
- factorial

Trt mean

$y_{ijk} = \mu + A_i + B_j + (AB)_{ij} + \varepsilon_{ijk}$

Error

$\varepsilon_{ijk} \sim N(0, \sigma^2)$

$+ b_k + \varepsilon_{ijk}$ $\quad \varepsilon_{ijk} \sim N(0, \sigma_e^2)$, $b_k \sim N(0, \sigma_b^2)$

$+ b_{1c} + w_{j(k)} + \varepsilon_{ijk}$

$\varepsilon_{ijk} \sim N(0, \sigma_e^2)$
$w_{j(k)} \sim N(0, \sigma_w^2)$
$b_k \sim N(0, \sigma_b^2)$
all indep

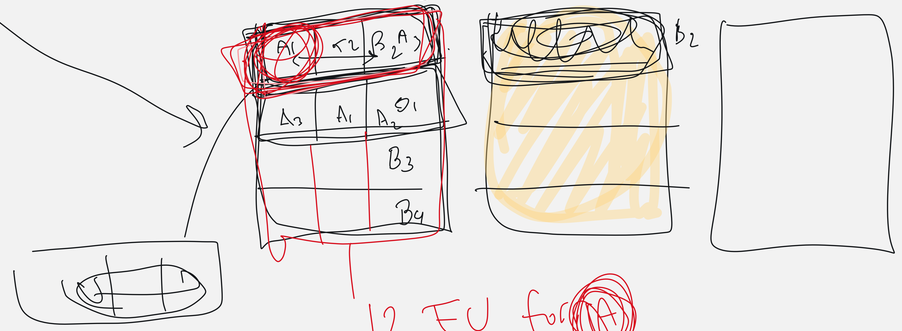
CRD $\quad \sim N(0, \sigma^2)$

RCBD

IBD

Split plot
factorial trt str
3 × 4 fact trt str
$A_1 A_2 A_3$ $B_1 B_2 B_3 B_4$

EU for B: B in the whole plot



$b_k \sim N(0, \sigma_b^2)$
$w_{j(k)} \sim N(0, \sigma_w^2)$
$\varepsilon_{ijk} \sim N(0, \sigma^2)$

$y \sim N(\mu, V)$

$y = \begin{pmatrix} y_1 \\ y_2 \\ y_3 \\ \vdots \\ y_n \end{pmatrix}$ $\quad$ Trt structure $\begin{pmatrix} \mu_1 \\ \mu_2 \\ \vdots \end{pmatrix}$