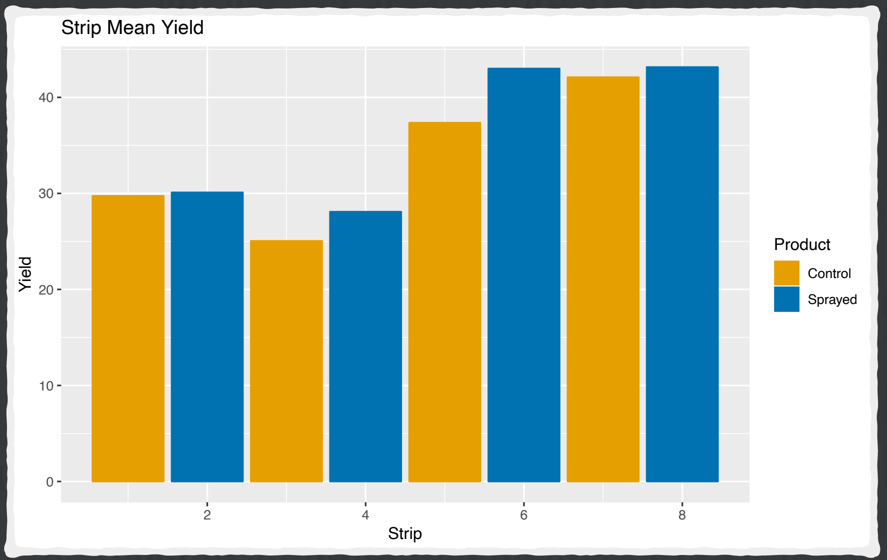
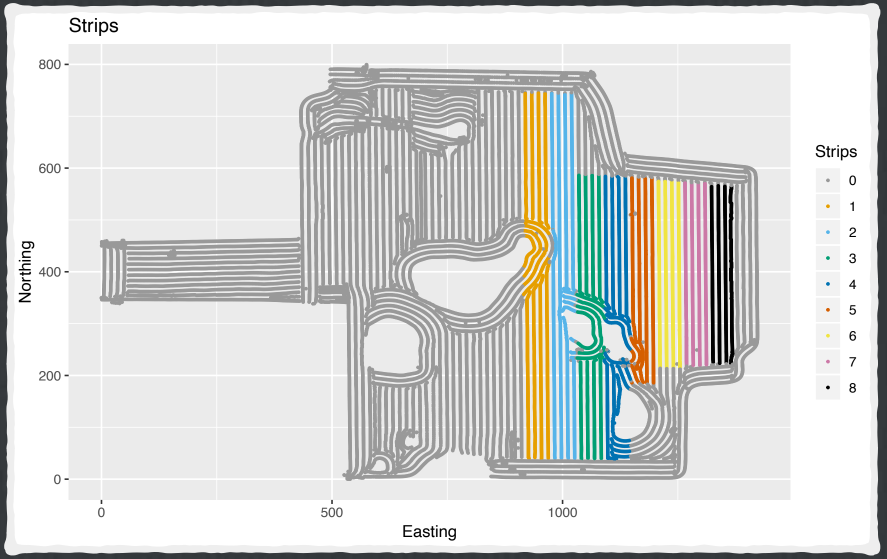
Naive Analysis

(Naive in the sense of ignoring aspects of experimental design)

- Each treated strip covers 4 harvest passes.
- Pair each treated strip with an adjacent strip of untreated harvest passes.
- Calculate mean yields for all yield data points in each strip.
- Analyze as if each strip were a plot in a small-plot experiment (RCB, 2 treatments, 4 replicates)
- Write a model
  $y_{ij} = \mu + \rho_j + \tau_i + e_{ij}$
  $\tau_0 =$ **unsprayed**, $\tau_1 =$ **sprayed**, $\rho_1 \ldots \rho_4 =$ **pairs**, $e_{ij} \sim \mathcal{N}\left(0, \sigma^2\right)$
- State a null hypothesis
  $H_0 : \tau_1 = \tau_2 = 0$

Results






- ```
  > wilcox.test(Yield ~ Product, paired=TRUE,…)
          Wilcoxon signed rank test
  data:  Yield by Product
  V = 0, p-value = 0.125
  ```
- ```
  > t.test(Yield ~ Product, paired=TRUE, …)
          Paired t-test
  data:  Yield by Product
  t = -2.1319, df = 3, p-value = 0.1228
  sample estimates:
  mean in group Control mean in group Sprayed
               33.56637              36.09020
  ```
- ```
  > friedman.test(Yield ~  Block | Product, …)
          Friedman rank sum test
  data:  Yield and Block and Product
  Friedman chi-squared = 6, df = 3, p-value = 0.1116
  ```
- ```
  > anova(Yield ~ Block + Product, …)
          Analysis of Variance Table
  Response: Yield
            Df Sum Sq Mean Sq F value   Pr(>F)
  Block      3 363.52 121.173  43.230 0.005732 **
  Product    1  12.74  12.739   4.545 0.122791
  Residuals  3   8.41   2.803
  ```