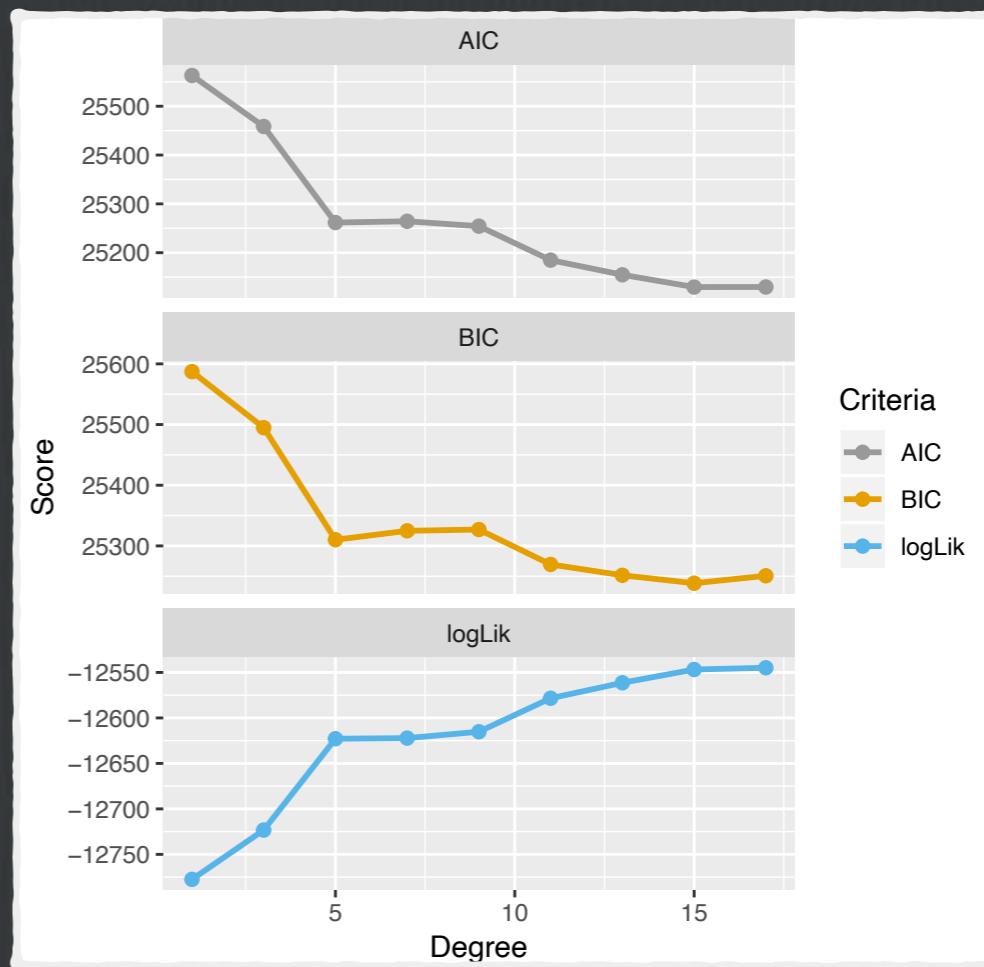
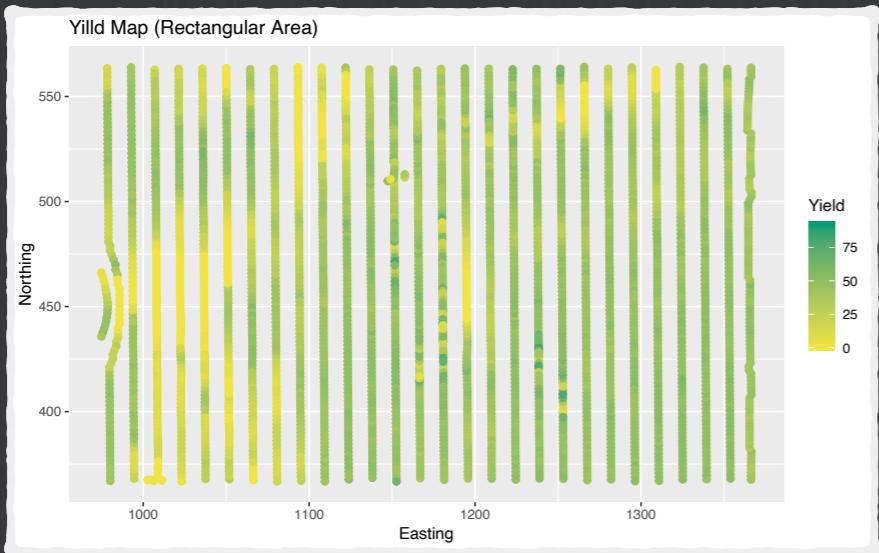
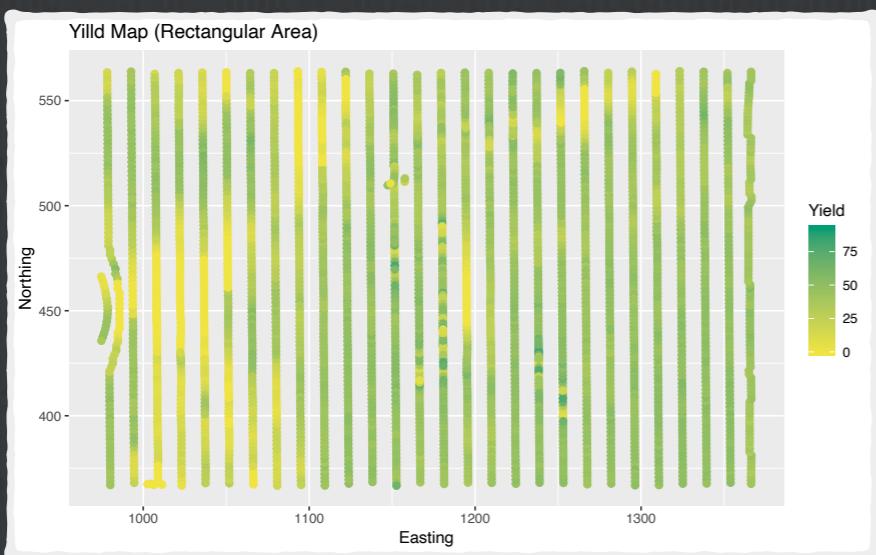
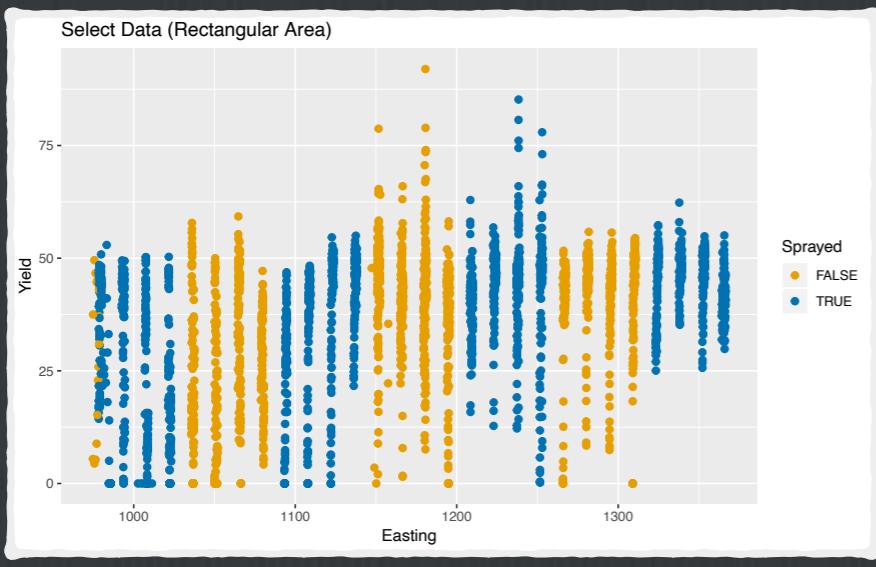


# Model Selection



In 2 dimensions, 5th degree polynomials are sufficient.

# Model Comparison



## Likelihood test to compare 1D and 2D models

### Likelihood ratio test

Model 1: Yield ~ poly(Easting, 5) + Sprayed  
Model 2: Yield ~ poly(Easting, 7) \* poly(Northing, 7) + Sprayed

#Df	LogLik	Df	Chisq	Pr(>Chisq)
1	8	-12623		
2	66	-11700	58	1846.4 < 2.2e-16 ***

## Likelihood test to compare 2D models with and without treatment effect

### Likelihood ratio test

Model 1: Yield ~ poly(Easting, 7) \* poly(Northing, 7)  
Model 2: Yield ~ poly(Easting, 7) \* poly(Northing, 7) + Sprayed

#Df	LogLik	Df	Chisq	Pr(>Chisq)
1	65	-11702		
2	66	-11700	1	3.8295 0.05036 .

## and

$$H_6 : \tau = 0.8762, p(t) = 0.101$$

$$H_{2D} : \tau = 0.787, p(t) = 0.052825$$