

1 Hypothesis

What do you want to test?

2 Approach

What plots would you construct? With which variables? Expectations?

3 Evaluate

Does your plot support hypothesis? Compare what you'd expect with what you see.

① Hyp: We can model inoculation (or aeration) on/off as Dichotomous process

⇒ SubHyp. (a)

Aeration period AND inoculation period are approximately exponentially distributed

②a ^{Plt} Histograms of aeration/inoculation period

Expectation: exp. pdf will decently model histogram

⇒ SubHyp. (b)

Aeration/inoculation period can be modeled by gamma dist.

②b histograms

Expectation: gamma functions will be more precise fits

↓ Evaluate:

When inundation (or aeration) period is split into days inundated (or aerated) and waiting times between inundated (or aerated) events

⇓
days inundated is decently well approximated by an exponential distribution, depending on the threshold selected

⇓
This means it may be reasonable to approximate the switch between inundated and aerated as a Dichotomous Markov process!



Does the waiting time between events matter?

→ Can we ignore 0 day waiting events?

When 0 day waiting events are included, exponential distribution fit appears to be less compelling