

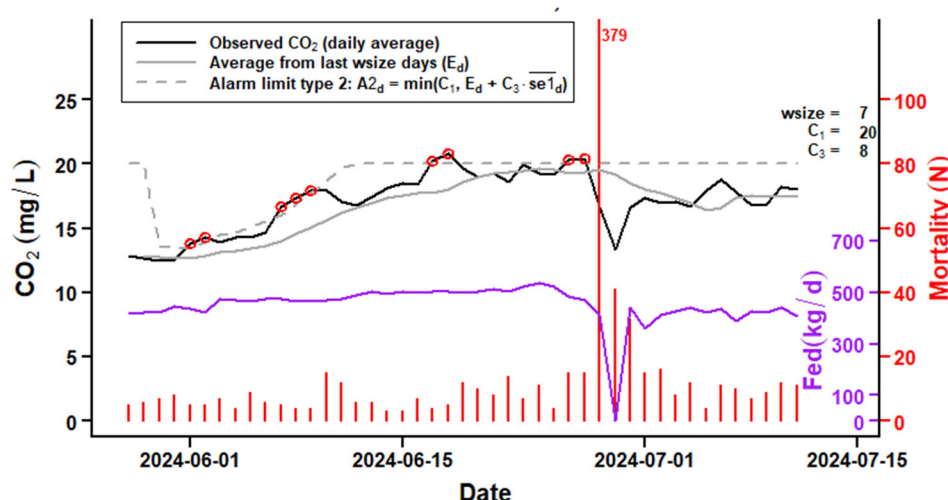
# Controlled feeding controls fish death



## PREDICTION OF MORTALITY IN RECIRCULATION AQUACULTURE SYSTEMS

**Background:** Precision fish farming can increase sustainability of RAS production. Monitoring water quality and predicting mortality may enable early, preventive changes to fish feeding.

**Figure 1:** Mortality, fed feed, and CO<sub>2</sub> in trout tank 2. High CO<sub>2</sub> alarm limit is the dotted line. High CO<sub>2</sub> alerts are red dots.



## Methods & results

### Model construction

- Our case was a land-based Scandinavian rainbow trout RAS farm with outdoor tanks.
- We obtained daily mortality, fed feed, temperature, CO<sub>2</sub>, and oxygen.
- We tried various methods to predict mortality or determine normal water quality variation.
- A control chart provided good information of CO<sub>2</sub> variation.

### Small-scale implementation

- We tested the control chart on 2 tanks in June (Figure 1).
- CO<sub>2</sub> alerts were issued.
- Mortality peaked after local cloudburst.
- More testing is needed to draw robust conclusions.
- Temperature and mortality correlate positively -> temperature will be added to future models.



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