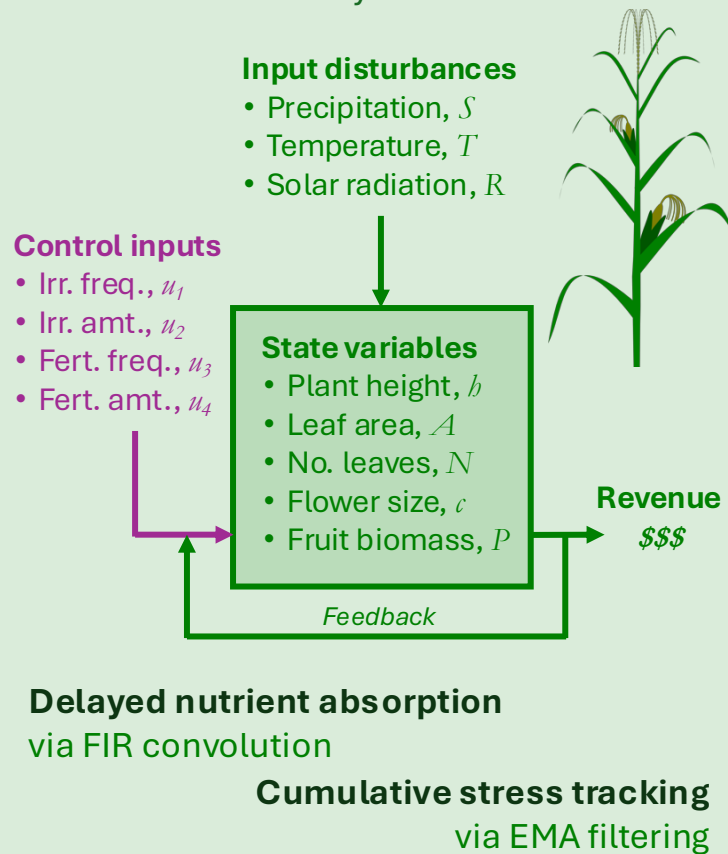


Optimizing Irrigation & Fertilizer Strategy via Crop Model + Genetic Algorithm

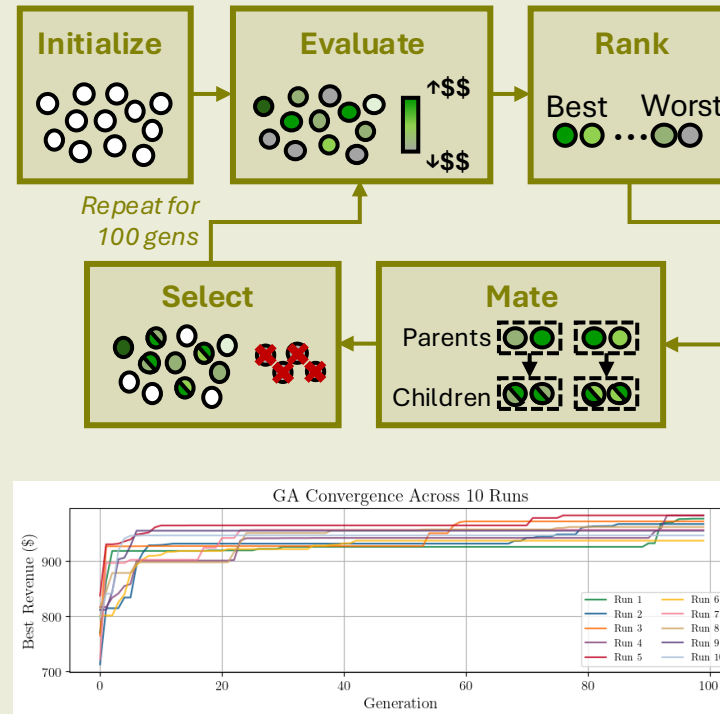
Crop as Control System | Irrigation & Fertilizer as **Inputs**

- Growth modeled with coupled ODEs
- Corn as case study



Find Optimal Irrigation & Fertilizer Inputs with **Genetic Algorithm Optimization**

- Thousands of simulations of crop growth over a season per GA run
- Perform 10 GA runs



Results

- **16% higher revenue**
 - \$999 vs. \$859 per acre
- **17% less irrigation water used**
 - 15 vs. 18 inches
- **32% less fertilizer used**
 - 307 vs. 450 lbs per acre

