Abstract Submitted
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Modeling Sugar Allocations in Plants using Radioisotope Tracer Data MINGRU BAI, Duke University Trinity College — The allocations of carbon and nitrogen are major factors in determining growth priorities in plants. The mechanisms that regulate resource allocation in plants are poorly understood. We use radiotracer techniques to identify and quantify dynamical feedback responses of plants to changes in environmental conditions. A major goal of this research is to investigate shifts in sugar allocations as part of the plant's response to changes in environmental conditions. These observations are used to develop mechanistic models that simulate the feedback for adjustments to resource allocations based on the environment-plant interface. By writing a software module in C++ based on the models, we are able to conduct a computer simulation of plant's intake of carbon dioxide and sugar allocation inside plant body. By comparing and matching the simulation results and experimental data through adjusting model parameters, we are able to gain knowledge of the mechanisms that regulate resource allocation in plants.

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