

# EFFECTS OF FLOODED RICE AS A SUMMER CROP ROTATION IN SOUTH FLORIDA AGRICULTURE PRODUCTION

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Growing flooded rice as a crop rotation can induce positive effects on water management, environmental quality, and benefit the succeeding crops with increased nutrient availability (i.e. sugarcane and vegetables). Cycling water through flooded rice fields gives farmers ability to reduce discharging water which reduces phosphorus loading of their farms. The objective of this study was to determine the impact of flooded rice on nutrient availability in the Everglades Agricultural Area (EAA) farms in deep and shallow muck soils. The effects of flooded rice were investigated by collecting soil samples from 28 farm plots before and after flooded rice cultivation in the EAA. We measured soil depth, various macro and micronutrients and performed microbial sequencing. Statistical analyses were conducted to elucidate the impact of flooded rice in shallow and deep soils on nutrient availability. Potassium (K) and Silicon (Si) significantly decreased after flooded rice production due to the uptake of these nutrients by the rice crop. On average K decreased from 65 kg/ha to 40 kg/ha, and Si decreased on average from 100 kg/ha to 58 kg/ha. P fertilizers are not added normally for flooded rice production in the EAA and available P did not change between pre and post flooded rice in the sampled plots. We observed an increase in Iron (Fe) availability post flooding possibly due to lower redox values. Some differences in nutrient availability were also found between shallow and deep soils. The production of flooded rice as a summer crop rotation in the EAA farm region has the potential to improve nutrient availability for the following crop, reduce discharge flow and P nutrient loading.

**PRESENTER BIO:** Rachelle Berger is a M.S. graduate student in the Soil and Water Sciences Department at the UF Everglades Research and Education Center under the mentorship of Dr. Samira Daroub. She has performed research on field and in the laboratory on various projects dedicated to soil and water quality.