# The Effects of Potassium Fertilizer Rate and Rice Uptake on Soil Potassium Pools During the Season. (S04-pugh171044-Oral)

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## Abstract:

In the USA little or no research has been conducted to characterize the K nutritional requirements of rice or the relationships between soil K and K uptake by rice. Our objectives were to characterize K uptake by rice and the concentrations of soil solution and Mehlich 3 K pools in response to K fertilizer rate across time. In 2001, K fertilizer was applied at five rates (0 to 224 kg K/ha) to a DeWitt silt loam at Stuttgart, AR. Mehlich 3 extractable K (M3K), soil solution (SSK), and whole-plant samples were collected weekly between flooding and maturity. Data was analyzed as a RCB, split plot where the whole plot was time and subplot was K rate. The 2-way interaction between sample time and K rate was significant for SSK and M3K. In general, M3K and SSK increased as K rate increased, but decreased with time until 34 days after flooding when stable, but low concentrations were reached until the flood was drained. The SSK and M3K concentrations were highly correlated. Total K uptake by rice increased with time and as K rate increased. Data suggests that under flooded soil conditions SSK can be predicted by soil extraction with Mehlich 3, which may be a valuable tool for assessing K requirements for rice during the season.

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