Potassium Supply Rates in a Calcareous Sand Rootzone. (3557)

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Abstract:
Ion exchange membranes can be used to measure nutrient flux in the soil. Such fluxes may be better indicators of nutrient availability than extractable nutrients measured with traditional soil tests. Our objectives were to study the sensitivity of potassium (K) fluxes to K fertilizer addition and the ability of the exchange membranes to aid in K fertility management. We applied six rates of potassium (K) fertilizer (0, 1, 2, 3, 5, and 6 g K m\(^{-2}\) 14 days\(^{-1}\)) to an L-93 creeping bentgrass \([Agrostis stolonifera\) var. palustris (Huds.) Farw.] putting green grown in calcareous sand in central New York during the 2002 and 2003 growing seasons. The 24-hour K supply rate measured with ion exchange membranes 2.5 to 7.5 cm below the surface increased with K fertilizer application. However, the magnitude of the increase in K supply rate varied between sampling dates most likely due to other factors such as soil moisture, temperature, root uptake of K, and soil K activity. The K supply rate had no effect on turfgrass performance as measured by ball roll, visual quality, and leaf chlorophyll. These results suggest that it may be difficult to set target K supply rate values for the sand rootzone tested in the study.

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