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Difference in Tolerance to Potassium Deficiency between Two Maize Inbred Lines

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Abstract: Northeast China produces an abundance of maize (*Zea mays* L.), and improvement of maize yield at this region correlates closely with ensure food supply safely of China. In recent years, deficiency or relative deficiency of potassium (K) in the soil is an important limitation to maize production. Maize inbred lines tolerant to K deficiency (T) and sensitive to K deficiency (C) were hydroponically grown in 1/2 Hoagland solution to study the possible mechanism of maize tolerance to potassium deficiency from physiological point of view. With the reduction of K^+ concentration, DW of the plant became apparently greater in T than in C, the symptom of potassium deficiency advanced in C. Under K deficiency, the taproot elongation increased and root top ratio decreased to a greater degree in C than in T, C had fawer lateral roots. T had a stronger K^+-uptake ability than C, and the difference was more obvious in culture solution with a lower K^+ concentrations of culture solution. K^+ dependent H^+ extrusion from the root treated with K^+ deficiency was larger in T than in C.

Keywords: K^+/H^+ exchange activity, K^+-uptake, Maize, Tolerance to K deficiency

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