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# 柚木优良无性系根系养分吸收动力学研究

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## Kinetics of nutrient uptake by root system of teak superior clones

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**摘要** 以4个柚木优良无性系1年生苗木为试材，采用营养液培养和离子消耗曲线模拟方法，测定了根系的$Ca^{2+}$、$Mg^{2+}$、$K^+$、$NO^-_3$吸收动力学参数。结果表明，以根系总吸收面积和总干重计算的$Ca^{2+}$、$Mg^{2+}$、$K^+$、$NO^-_3$最大吸收速率相接近。在$Ca^{2+}$、$Mg^{2+}$、$K^+$、$NO^-_3$最大吸收速率（Vmax）及离子流入速率（α 值）指标上，不同基因型之间差异较大，而在养分离子吸收亲合力（Km）指标上，则没有明显差异。缅甸种源无性系VI-23根系对$Ca^{2+}$、$Mg^{2+}$、$NO^-_3$的Vmax及α值均为最大，而印度种源无性系70-12根系则对K+的Vmax及α值为最大，表明缅甸种源无性系VI-23为Ca、Mg和$NO^-_3$硝态氮高效吸收基因型，印度种源无性系70-12为钾高效吸收基因型。

**关键词：** 柚木 无性系 根系 养分吸收 动力学参数

Abstract: A hydroponic experiment was carried out to measure the uptake kinetics of $Ca^{2+}$、$Mg^{2+}$、$K^+$、 and $NO^-_3$ of one year old seedlings of four teak superior clones. The results show that there are no many gaps between maximum uptake velocities of the four ions (Vmax) calculated either by total absorbing area or by total dry mass of root system of the four teak clones. There are significant differences in Vmax and net influx rates of the nutrients into roots (α value) of the four teak clones, while there are little differences in values of Km of $Ca^{2+}$、$Mg^{2+}$、$K^+$、 and $NO^-_3$ uptake. The teak clone VI-23 from Burma has the maximum of Vmax and α value for $Ca^{2+}$、$Mg^{2+}$ and $NO^-_3$ uptake, while the 70-12 from India has the maximum of Vmax and α value for $K^+$ uptake, which indicates that the clone VI-23 is the special genotype with efficient uptake of Ca, Mg and $NO^-_3$, and the clone 70-12 for efficient uptake of K nutrition.

Keywords: *Tectona grandis* clone root system nutrient uptake kinetic parameters

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