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嘎拉苹果对春施^{15}N-尿素的吸收、利用与分配特性

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Characteristics of absorption, utilization and distribution of spring soil ^{15}N-urea application for Gala/*Malus hupehensis*

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摘要 | 参考文献 | 相关文章

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摘要 以7年生嘎拉苹果（*Malus domestica*）/平邑甜茶（*Malus hupehensis*）为试材，研究了苹果对春季土施^{15}N-尿素的吸收、利用与分配特性。结果表明，盛花期以细根的Ndff值最高，粗根次之；新梢旺长期和果实膨大期根部吸收的^{15}N优先向新生营养器官运转；果实成熟期以果实中Ndff值最高，新生器官Ndff值普遍高于贮藏器官；果实采收后 ^{15}N在粗根和细根中的Ndff值最高，地上贮藏器官次之，新生营养器官下降到较低水平，树体吸收的^{15}N开始向贮藏器官回流、积累。不同物候期苹果吸收的^{15}N各器官的分配率存在显著差异，盛花期^{15}N优先分配在根系中；新梢旺长期和果实膨大期，根部^{15}N的分配率不断下降，^{15}N主要向新生营养器官分配；在果实成熟期果实成为新的分配中心；果实采收后^{15}N向贮藏器官回流、积累，^{15}N在树体内的运转随生长中心的转移而转移。春季土施^{15}N-尿素可被树体快速吸收、利用，氮肥利用率随物候期的推移逐渐提高，采收后的当季利用率为27.540%。

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Abstract:

The characteristics of nitrogen absorption, utilization and distribution of seven year old 'Gala' apple trees (*Malus domestica*)/*Malus hupehensis* was studied by the ^{15}N-labelled urea application in soil in early spring. The results show that the Ndff is the highest in fine roots, and then in thick roots at the full-bloom stage. During the shoot rapid-growing and fruit rapid-expanding stages, the Ndff of new organs is higher than that of the storage organs. After the fruits are harvested, the Ndff of thick roots and fine roots is higher than that of the above-ground storage organs, and that of new organs is the lowest. These results indicate absorption of the trees is transferred to the storage organs. The characteristics of ^{15}N distribution are different at the different phenophases. At the full-bloom stage, ^{15}N absorption of the trees is mainly distributed to roots. At the shoot rapid-growing and fruit rapid-expanding stages, ^{15}N distribution ratio to roots is decreased continuously, and ^{15}N absorption of the trees is mainly distributed to new organs. At the maturity stage, fruit organs are the main destinations of ^{15}N. After the fruits are harvested, ^{15}N absorption of the trees is transferred back to the storage organs. The utilization ratio of the N fertilizer is improved gradually with the growth and development of the trees. After the fruits are harvested, the utilization ratio is 27.540%.

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