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玉米—花生混作体系中不同施氮水平对花生铁营养及固氮的影响

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Effects of different nitrogen levels on iron nutrition and nitrogen fixation of peanut in maize-peanut mixed cropping system

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摘要 盆栽试验结果表明,不同氮水平条件下玉米—花生混作可明显改善花生铁营养。与单作相比,混作花生新叶绿素SPAD值明显提高,新叶活性铁浓度提高12.4%~27.1%,同时花生根瘤数和固氮酶活性显著增加。在本试验种植密度下,施氮水平和种植方式对单株花生生物量无显著影响,而施氮对玉米根际土壤活性铁浓度的提高有一定的促进作用,并且花生根瘤数和固氮酶活性受施氮水平影响较大。说明石灰性土壤上玉米—花生混作对花生铁营养改善及提高花生的固氮能力具有重要作用;施氮水平对花生铁营养影响不大,但随施氮量增加对花生共生固氮有抑制作用。

关键词: 玉米 花生 混作 氮水平 铁营养 固氮 玉米 花生 混作 氮水平 铁营养 固氮

Abstract: Maize-peanut mixed cropping could obviously improve iron nutrition of peanut under different nitrogen levels in pot experiment. Compared with sole cropping peanut, not only the chlorophyll SPAD value was (increased), but also active iron concentration was increased by 12.4%—27.1% in young leaves of mixed cropping peanut, at the same time the excisable nodule number and nodule nitrogenase activities (ARA) per plant peanut also were increased significantly. Both the nitrogen level and planting pattern had no great effect on peanut dry weight in this experiment. The more nitrogen fertilization could increase active iron concentration in the rhizosphere of maize, but inhibit excisable nodule number and nitrogenase activities of peanut. The results showed that maize-peanut mixed cropping played an important role in improving iron nutrition and nitrogen fixation function of peanut on calcareous soil. The different nitrogen levels had no great effect on iron nutrition of peanut, but it restrained symbiotic nitrogen fixation of peanut with nitrogen application increase.

Keywords:

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