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[1] 雍太文, 董 茜, 刘文钰, 等. 施氮方式对玉米-大豆套作体系下大豆根瘤固氮、光合特性及产量的影响[J]. 大豆科学, 2013, 32(06): 791-796. [doi:10.11861/j.issn.1000-9841.2013.06.0791]
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施氮方式对玉米-大豆套作体系下大豆根瘤固氮、光合特性及产量的影响

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Title: Effect of N Application Methods on Nitrogenase, Photosynthesis and Yield of Soybean under Maize-Soybean Relay Strip Intercropping System

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摘要: ?通过田间试验探讨了施氮方式对玉米-大豆套作体系下大豆根瘤固氮酶活性、物质积累、光合特性和产量的影响。结果表明: 与不施氮相比, 施氮促进了大豆根瘤生长和地上部物质积累, 提高了大豆的根瘤固氮能力、光合生产能力和籽粒产量。玉米-大豆一体化施氮相对大豆穴施显著提高了大豆地下部根系和根瘤的干重、单株根瘤固氮潜力和地上部茎叶生物量、叶片净光合速率及籽粒产量, 降低了叶片的蒸腾速率, 以距窄行玉米15~30 cm施氮增产效果最佳, 与大豆间的施氮距离过小和过大均不利于大豆根瘤固氮和籽粒增产。距窄行玉米30 cm施氮处理的大豆单株根瘤固氮潜力(R2期)、叶片净光合速率、籽粒产量及玉米、大豆周年总产量分别比大豆氮肥穴施处理增加29.26%、7.43%、23.88%和6.4%。

Abstract: ?To investigate the effect of N application methods on soybean nodule nitrogenase, dry matter accumulation, photosynthetic traits and seed yield, a field experiment was conducted with different N application methods, such as collaboration fertilization of maize and soybean with diversity distance of fertilization to narrow row maize, and fertilizing in soybean holes. Compared to no N treatment, applying N significantly promoted nodule growth and shoot dry weight accumulation, nitrogen fixing ability of nodules, photosynthesis and seed yield of soybean. Collaboration fertilization significantly enhanced root and nodule dry weight, nitrogen fixing potential, shoot dry weight, net photosynthetic rate and seed yield. Among which the crops yield was the highest when the distance between the fertilization dot and the narrow row maize was from 15 to 30 centimeters. When the distance was 30 centimeters, nitrogen fixing potential at R2, net photosynthetic rate, soybean seed yield and the annual total production of maize and soybean increased by 29.26%, 7.43%, 23.88% and 6.4%, respectively, compared with fertilizing in soybean holes.

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