

IS IT NECESSARY TO INOCULATE SOYBEAN IN WEST AFRICAN SOILS ?

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Inoculation with Rhizobium japonicum is necessary in all temperate soils where soybean is grown for the first time. By contrast, in West African soils, nodulation of soybeans may spontaneously occur in soils where this plant is newly introduced. Such nodulation was reportedly attributed to native strains of Rhizobium (1).

To answer the question whether inoculation is necessary in such conditions, we initiated a comparative study of the nodulation ability and effectivity of three groups of strains (Rc, Rj, Rm) on three cultivars of soybean (Malayan, which is an asian cultivar; Bossier, which is an american high yielding cultivar; and 44A73, which is an ISRA cultivar related to the american type) and on six tropical legumes belonging to the cowpea group (Macroptilium atropurpureum, Vigna unguiculata, V. radiata, Acacia albida, Stylosanthes humilis, Arachis hypogaea). Groupe Rc included two cowpea collection strains (CB756, 61B9). Group Rj included four USDA strains of R. japonicum (31, 138, 123, 135). Group Rm included five native strains of Rhizobium isolated from soybean cv Malayan grown in a Nigerian soil (Nig) and in Senegalese soils (ORS405, 403, 407, 406).

Rc strains nodulated only the legumes of the cowpea group. Rj strains nodulated not only the three soybean cultivars but some legumes of the cowpea group, including Vigna unguiculata, V. radiata and Macroptilium atropurpureum. Rm strains exhibited the widest host spectrum and nodulated effectively most of the tropical legumes and four out of five nodulated the three soybean cultivars, which differentiates them from Rc group. Whereas all Rj strains were highly effective on the three soybean cultivars, Rm strains appeared to be highly effective on cv. Malayan, moderately effective on cv.44A73 and practically ineffective on cv. Bossier.

Our data lead to the following conclusions, which confirms previous suggestions (2, 3):

a. There is a continuum between typical Rhizobium cowpea strains and typical R. japonicum strains, native strains from Malayan behaving as intermediates.

b. Inoculation of soybean with R. japonicum appears to be necessary when high yielding american cultivars are used. Cote : B 25 JANV 1985

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O.R.S.T.O.M. Fonds Documentaire  
N° 16539 et