Strains of Rhizobium Effective on Guar,
Cyamopsis tetragonoloba

LEWIS W. ERDMAN

According to McKee (3), Cyamopsis tetragonoloba (L.) Taub., commonly known as guar, is probably native of India and was first introduced into the United States by the U. S. Dept. of Agriculture in 1903. Since that time it has been grown mostly in experimental plantings, but in recent years it has been used commercially as a green manure and seed crop. Esser (2) describes guar as 'an old crop with a new future', a drought-resistant legume, being groomed as a new cash crop for farmers in southwestern United States. Guar seeds are rich in manogalactan gum which is finding many uses in American industry.

A review of the literature indicates that only three workers have studied the nodulation of guar plants. Richmond (5) found that the cowpea nodule organism produced nodules on guar roots, and pure cultures obtained from these nodules formed nodules on cowpea roots. His observation furnished the basis for placing guar in the cowpea "cross-inoculation" group. Raju (4) found that a culture of bacteria isolated from the mat bean, Phaseolus aconitifolius Jacq., one from the pigeonpea, Cajanus cajan (L.) Millsp., and one strain from the cowpea, Vigna sinensis (Torner) Savi. produced a few, very few, and a moderate number of nodules, respectively, on guar plants. Another strain from cowpea failed to nodulate guar, but this was said to be due to unfavorable light conditions when this particular test was made.

Wilson (6) obtained nodules on guar with strains of bacteria isolated from Albizia julibrissin (Durazzini), Apios americana Medic. (A. tuberosa), Crotalaria spectabilis Roth., Dalea alopecuroides Wild., Desmodium canadense (L.) D. C., Sesbania exaltata (Raf.) Cory. (S. macrocarpa), Stizolobium Deeringianum Brot., and Vigna sinensis. All but three of these legumes, Albizia julibrissin, Dalea, and Sesbania, have been placed in the cowpea group. It is to be noted that these reports were based only on nodulation without any information about the effect of the bacteria on the growth of the host plant.

This type of information is certainly insufficient for evaluating strains of Rhizobium for producing inoculants for use under field conditions. Agronomists have become keenly interested in all cultural practices which make for larger guar seed yields, and since proper inoculation is one factor that helps to insure the successful growing of legumes, more information on this subject is needed. Newer knowledge is also desirable because of some apparent recent failures of

1Contribution from Division of Soil Management and Irrigation, Bureau of Plant Industry, Soils, and Agricultural Engineering, Agricultural Research Administration, U. S. Dept. of Agriculture, Beltsville, Md. Also presented before Section III of the Soil Science Society at Cincinnati, Ohio, November 17, 1947. Received for publication December 27, 1947.

2Bacteriologist.

*Figures in parenthesis refer to "Literature Cited", p. 369. Published April, 1948*