MULTIPLE ACCEPTANCE OF SPECIES OF RHIZOBIUM
BY PHASEOLUS COCCINEUS

J. K. Wilson

Leguminous plants that have been placed in a certain plant-bacteria group may be placed in another if exposed to other strains of the symbiont. Under favorable conditions, the scarlet runner bean (Phaseolus coccineus) will accept the bacteria from members of most of the recognized plant-bacteria groups. Whether it will accept two or more such strains of the symbiont simultaneously, has not been extensively reported. By dividing the root system of a sterile seedling and placing each portion in an individual container, it has been possible to tell whether the plant will accept only one strain or simultaneously, several strains. A typical experiment may be described. The root system of a plant was divided into five portions. Each portion was placed in an individual container and inoculated with the bacteria that was isolated from certain host plants. One-fifth portion of the root system was maintained as control, one-fifth was exposed to the root-nodule bacteria isolated from lespedeza (Lespedeza sericea). One-fifth was exposed to the root nodule bacteria isolated from the white bean (Phaseolus vulgaris); another fifth was exposed to the organism isolated from red clover (Trifolium pratense); and one-fifth was exposed to the organism isolated from the soybean (Soja Max). The root system in the control container developed no nodules while those in the other containers all bore nodules.

Such experiments have been performed numerous times and the root nodule bacteria representing different plant-bacteria groups have been employed. The results show that the plant will accept almost any strain of the root nodule bacteria that happens to be present in the rhizosphere. Since this is true it is impossible to tell the previous symbiitude of the organism that may be isolated from a nodule. It may be suggested, therefore, that such findings may offer an explanation for many of the irregularities recorded in the literature concerning the salient characters of cultures whose source is an individual host plant.

1 Cornell University, Ithaca, New York.

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