

## EVALUATION OF SOME SOYBEAN SELECTIONS FOR N<sub>2</sub>-FIXATION CAPACITY

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### ABSTRACT

*In Pakistan, soybean has been grown from the time immemorial on the hills of Northern area. Presently soybean covers about 6350 hectares in Pakistan. Although testing of soybean in Pakistan on small scale has been in progress since long, the development efforts on this crop along with other non-traditional oilseeds prompted by extremely short supplies of edible oils, is of recent origin. Consequent upon the initiations of Oilseed Development Program at Pakistan Agricultural Research Council, Islamabad in 1977, extensive research work for the development of early maturing, high yielding, drought and disease resistant varieties of soybean is in progress at different research stations including National Agricultural Research Center, Islamabad. The nitrogen fixation capacity of soybean has not been used in the selection criteria. The assessment of nitrogen fixation by soybean could be one of the important selection criteria for superior soybean varieties because N<sub>2</sub> fixation is a major factor of soybean productivity. Research was conducted to assess the N<sub>2</sub> fixation of ten different soybean varieties already under investigation for economic yield by the scientists at Oilseed Research Program, NARC. The N<sub>2</sub> fixation was assessed by using xylem solute technique. Selection S-69-94 showed highest the germination count followed by NARC-6, while the selection PSC- 56 was the lowest in germination count. Selections NARC-6 and NARC-7 were the best for nodule number/grade and total nitrogen fixed, while the selections Davis and S-72-60 showed the lowest nodule number/grade. Cultivar NARC-6 showed maximum % P<sub>fix</sub> of (relative proportion of nitrogen derived through N fixation) of 49% following by NARC-7 (32%) while lowest by Davis (1.31%) and S-72-60 (2.6%). The cultivar NARC-6 fixed 48 kg N/ha followed by NARC-7 (36 kg N/ha). Although selection Ajmeri produced highest grain yield, but the differences in grain yield amongst all selections were not significant with the exception of V-1 and SOY-95-1. Based on their N<sub>2</sub> fixation trait, it is recommended that NARC-6 and NARC-7 be considered for growing in the barani tract of the Punjab.*