## Role of Phosphobacterin in the Uptake of Nitrogen in Rainfed Sorghum

Indian soils are deficient in nitrogen and phosphorus and hence a good crop response may be expected for these nutrients. The utilisation of nitrogen and correspondingly the uptake pattern of the same in crops will be in proportion to the uptake of the phosphorus from the soil as these two go together always (Menkinar 1956, Stefan and Boti, 1960). The role of phosphobacter in augmenting P uptake in plants has been recognised.

An experiment to study the effect of rainfed sorghum (CO 20) inoculated with phosphobacterin with and without nitrogen and phosphorus to study N uptake was laid out in the New area adjoining the Millet Breeding Station. The gross and net plot sizes were  $6.75 \times 3.30$  meters and  $5.85 \times 3.00$ meters respectively. Split plot design with four replications was chosen without phosphobacterin (Bo) and with phosphobacterin (B1) and at three levels of nitrogen viz., 0, 20 and 40 kg N/ha. Nitrogen content in the plant sample taken on the 45th day, 90th day and 135th day and in the grain was analysed separately by micro-Kjeldahl method.

The per cent of nitrogen in the plant at all the stages of the crop growth (Table I) showed higher uptake in the phosphobacterin applied plot than in the control plot.

The summary of results for the nitrogen uptake of the plant at harvest is presented in Table II.

The data clearly reveal that nitrogen uptake was significantly high in the presence of phosphobacterin. It should be admitted that phosphobacterin had no direct influence on the uptake of nitrogen. However, higher levels of phosphorus uptake due to phosphobacterin inoculation helped N uptake. Increase in the uptake of nitrogen due to phosphobacterin was reported by Sundara Rao et al. (1963). Subramanian et al. (1974) and Kundu et al. (1980).

It is concluded that phosphobacterin indirectly helped nitrogen uptake in sorghum.

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TABLE I Plant Analysis for total nitrogen at different stages of growth.

			Nitrogen (per cent)								
		95	45th day		Gr	ain	90th	day	135th day Straw		
			Во	B <sub>1</sub>	Bo	В1	Во	В1	Во	B <sub>1</sub>	
	Po	0	.708	0,736	0.392	0.420	0.805	0.875	0.294	0.309	
N.	P <sub>1</sub>	0	.82	0.944	0.308	0.420	0.868	0.875	0.294	0,322	
	P <sub>2</sub>	0	.680	0.988	0.364	0.392	0.854	0.861	0.287	0.294	
	Po	C	.680	0.736	0.420	0.420	1,113	1.190	0.336	0.441	
N <sub>1</sub>	P <sub>1</sub>	O	.644	0.960	0.476	0.364	1.225	1.155	0.315	0.441	
	P <sub>2</sub>	0	.980	0.960	0.308	0.420	1.274	1.379	0.364	0.434	
N <sub>2</sub>	Po	0	.820	0.988	0,308	0.420	1.204	1.267	0.378	9.469	
	P <sub>1</sub>	. 0	.848	0.848	0.392	0.392	1.435	1.169	0.378	0.422	
	P <sub>2</sub>	0	.736	0.848	0.392	0.420	1.316	1,253	0.420	0.546	

		TABLE II Effect of Phosphobacterin treatment on the Nitrogen upta								[Vol. 68 No. 7		
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