

ESTABLISHMENT OF PRODUCTIVE AND SUSTAINABLE LEGUME-CEREAL ROTATIONS IN POTHWAR, PAKISTAN

Safdar Ali¹, W. B. Naseem², Amjad Ali²

ABSTRACT

A legume-cereal rotational field experiment was conducted at UAAR Agriculture Farm during 1996-1997. The treatments for summer legumes included: Soybean, Mungbean, and Mashbean. Maize was grown as reference crop for N_2 -fixation determination by N^{15} analysis. Whereas, wheat was grown with 0 and 100 kg N ha⁻¹ on the same plots previously having legumes. The data indicated that the P_{fix} values for soybean, Mungbean and Mashbean were 16, 31 and 46 percent in 1996 and 31, 37 and 48 percent in 1997, respectively. Consequently, the total N_2 fixed by the above legumes were 5, 54 and 59 kg N ha⁻¹ in 1996 whereas in 1997 these values were 43, 40 and 54 kg N ha⁻¹. Dry matter and grain yields of the legumes were also increased in the second year. The improvement in nitrogen fixation by Soybean in 1997 could be attributed to the seed inoculation. In the first year no increase in wheat biomass and grain yield was expected because of dry spell, however yield increase was almost double in the subsequent year followed by summer legumes. This increase in yield seems due to residual effects of legumes, the timely and well distributed rains in 1997/98.