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Response of wheat plants to different levels and forms of nitrogen

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ABSTRACT : Indian soils are deficient in nitrogen and nitrogen use effeciency is between 33-50% depending on the crops. The present experiment was conducted to find out the response of wheat to different N supply and forms. It was noticed that wheat is sensitive to ammonia and N limiting conditions. Wheat seedlings (*var*. PBW 343) were grown under four different N treatments and various parameters of growth and N-assimilation were studied. Growth and nitrogen metabolism was enhanced in seedlings under high NO_3^--N when compared to those grown with low and without N. The growth of the wheat seedlings was severely inhibited in terms of biomass accumulation, leaf area in NH_4^+-N and zero–N treatments. Root : shoot ratio was enhanced in zero- N and ammonium grown plants as compared to the nitrate N fed wheat seedlings. There was a relative increase in shoot length by 20% to 40% in the seedlings grown in solution having N salts. In zero-N and ammonium fed plants the nitrate levels, total reduced N and total soluble protein content was significantly lower as compared to both low and high NO_3-N grown wheat seedlings. These parameters directly correlated with low NR activity in zero-N and NH_4^+-N treatments.

Key Words : Nitrogen deficiency, nitrogen use efficiency, *Triticum aestivum*, growth, yield, quality.