SUMMARY

In 1975-76 and 1976-77 during Rabi seasons, field experiments were conducted at the experimental Farm of Meerut University, Meerut (India). Two varieties of *Toria* viz. ITSA and Sangam, with four levels of nitrogen (0, 20, 40 and 60 Kg/ha) and three row-spacings (30x10, 45x10 and 60x10 cms) were grown in rotation with wheat (HD 1981). The experiments were laid out in split plot design with 24 treatment combinations. The study revealed the following results:

1. The variety $V_1$ produced significantly more seed per hectare than $V_2$ variety. Among the various characters contributing to superiority of this variety over $V_2$ were more number of branches per plant, large amount of dry matter accumulation per plant, more leaf area index, greater relative growth rate, more seed weight per plant and 1000-seed weight. $V_1$ was followed by $V_2$ in terms of aforesaid characters.

2. The variety $V_2$, though, proved superior in term of oil percentage and oil production Q/ha than variety $V_1$, but variety $V_1$ proved superior in respect of protein percentage and total protein production Q/ha.
3. Toria variety $V_1$ was found to be more responsive to nitrogen as compared to $V_2$ variety. This is due to the fact that $V_1$ variety absorbed more nitrogen in Kg/ha.

4. The yield of seeds increased significantly with every increase in levels of nitrogen.

5. Heavy dose of nitrogen, however, decreased the oil percentage in seeds.

6. The nitrogen content and its accumulation in Kg/ha in seed and stover separately increased significantly with the increasing rate of nitrogen application.

7. The protein production Q/ha increased significantly with increasing levels of nitrogen.

8. Heavy dose of nitrogen, however, decreased the oil percentage significantly in seeds but the protein accumulation Q/ha increased significantly with the increasing levels of nitrogen.

9. The lowest plant population as obtained by spacing of 60x10 cm ($S_2$) produced, greater plant height, dry weight per plant, number of branches, greater relative growth rate and net assimilation rate. While the leaf area index increased with the increasing plant population. However, the yield of seed Q/ha increased with the increasing plant population.
10. The total nutrient (N) uptake in kg/ha increased significantly with the increase in plant population. The highest nitrogen uptake was under the plant population as obtained by row-spacing of 30x10 cm ($s_1$).

11. The total oil production increased significantly with the increasing plant population.

12. The residual effect of nitrogen on wheat was found more under $N_3V_2S_1$ treatment combination applied to Toria.
CONCLUSION

*Toria* variety $V_1$ (ITSA) proved to be the best for total production of seed and oil, when applied with 60 Kg nitrogen per hectare under a plant population as obtained by 30 x 10 cm row to row and plant to plant spacing followed by wheat crop variety HD 1981.