S U M M A R Y

1. The present experiment deals with the effect of the presence and absence of nitrogen at various stages of growth of wheat plant.

2. Wheat seeds, Giza 144, grown in sand culture deprived of nitrogen after varying initial periods of nitrogen supply and contrary wise of supplying nitrogen after initial periods of its deprivation.

3. Under the conditions of the present experiment, the importance of nitrogen for proper shoots, grains and the whole plant development seems to lie during the first 12 weeks from thinning (15 weeks after planting). Omission of nitrogen for the first three weeks only resulted in a marked decrease in dry weight of shoots and whole plant. On the other hand, this omission period did not affect the average dry weight of grains per plant. The initial absence of nitrogen for longer periods affected the grain formation. As the period of initial depriviation was increased for more than the first three weeks, the dry matter production decreases as well as grain production. With complete absence of nitrogen throughout the whole period of the experiment, the growth eventually came to a standstill.

Under such condition, the shoots and grains were more affected than the roots.

4. Omission of nitrogen after 15 weeks supply did not affect the number of tillers per plant. But initial omission of nitrogen for the first three weeks only resulted in a lower rate of tillering production.

5. Late nitrogen application increases the protein content of wheat grains especially during the period of milk stage of grain development as the absorption of nitrogen was at a high rate. There was, however, no marked effect on nitrogen concentration of roots and shoots with varying the period of nitrogen supply.

6. The longer the period of nitrogen starvation the lower the actual amount of both nitrogen and phosphorus content in the various parts as well as the whole plant. When nitrogen was absent for more than the first three weeks, a rapid drop in the actual amount of phosphorus was observed.

7. The actual amount of nitrogen and phosphorus in roots and shoots of plants receiving nitrogen during the whole period of growth increased gradually, reaching the maximum value after 15 weeks from thinning but such

values in grains and whole plants recorded their maximum at the end of the experiment.

8. There were two waves of active nitrogen absorption occurred, the first during the most active vegetative growth and the second during grain maturity. Plants continuously supplied with nitrogen absorbed their maximum phosphorus at early grain formation, but plants continuously deprived of nitrogen absorbed most of their phosphorus in two periods only, the first period at early vegetative development, (Three weeks after thinning), and the second period at early grain formation.

9. Withholding nitrogen supply tended to increase the accumulation of phosphorus in roots, but decreased the accumulation of this element in shoots and grains.

10. Plants continuously supplied with nitrogen showed that the addition of nitrogen decreased the percentage of total phosphorus at vegetative stage as related to the maximum amount of phosphorus attained in the plant.