SUMMARY

Three field experiments were performed at the Research and Agric. Experiment Center of the Fac. of Agric. At Moshtohor during 1995/96, 1996/97 and 1997/98 seasons. The aim of this investigation was to study the effect of nitrogen fertilizer rates and foliar application of Folactive on growth characters, grain yield, yield components and quality of wheat cv. Gemiza1.

The soil was a clay having alkaline reaction (PH 7.7)., O.M. content was 2.6%. the available, N,P and K were 45,31 and 260 mg/kg soil, respectively.

The experimental design was a randomized complete blocks (R.C.B.D) used with four replications.

The first seasons experiment included 20 treatments which were the combination of five N levels (o,25,50,75 and 100 kg N/fad) and four treatments of foliar application of Flactive as follows:

1- Zero Folactive applied (F0, spray with tap water).
2- Folactive applied at tillering stage (FT).
3- Folatctive applied at booting stage. (FB).
4- Folactive applied twice at both FT and FB, full rate each (FT and FB, 100%).

However, Folactive rate was reduced to 50% for the same water volume in each treatment of (FT and FB, 50%) in the 2nd and 3rd seasons.

Folactive is composed of 12% N, 8%, P_2O_5, 8% K_2O, 400 mg/l Fe, 2000 mg/l mg and 100 mg/l of each Mn, Zn, Cu and Bo. Folactive, foliar treatments were applied at a rate of 656 cm^3. It disolved and sprayed into 328 l water /fad.

Application of N (as $NH_4 NO_3$ – 33.5% N) was in two equal doses, one before the 1st irrigation and the other before the 2nd irrigation. The normal cultural practices for growing wheat were used.

Results could be summarized as follows:

1- Effect of soil application of nitrogen:

1- Growth Characters:

1- Applying 25,50,75 and 100 kg N/fad significantly increased plant height over the check treatment by 4.8,5.8,6.7 and 5.8% in 1995/96 season and by 7.3, 8.3, 8.3 and 7.3% in (1997/98) season, respectively. Differences among 25,50, 75 and 100 kg N/fad levels were not significant.

2- Application of 75 kg N/fad produced the highest number of leaves/ stalk (4.6 & 4.15) and the unfertilized treatment gave the lowest values (3.3 & 3.5). This was true in both seasons.

3- Flag leaf area significantly increase by increasing N levels up to 75 kg N/fad.

4- Adding 25 kg N/fad significantly increased number of stalks/m^2. However, the differences among 25,50, 75 and 100 kg. N/fad levels in both seasons were not significant.

5- Dry weight of different plant organs of wheat were not affected by adding N fertilizer in both seasons.

2- Grain yield and yield components:

1- Plant height and number of stalks/m_2 at harvest were significantly increased by increasing N level up to 50 kg N/fad. However, the differences among 25,50,75 and 100 kg N/fad in 1995/96 season as well as the difference between 50 and 75 kg N/fad in 1997/96 season were not significant.

2- Application of 50 kg N/fad significantly produced the highest number of grains/spike and spike grain weight.

3- Application of 50 kg N/fad produced the highest weight of 1000-grain. However, the differences among zero/25 and 50 kg/N/fad as well as differences among 50, 75 and 100 kg N/fad in both seasons were not significant.

4- Adding 50 Kg N/fad produced the highest grain, straw and biological yields/ fad in both seasons. Such increases over the unfertilized treatment in grain, straw and biological yields/fad were 46.0, 36.9 and 39.8% in the 1st season and 43.9, 42.0 and 42.9%, respectively. However, the differences among 50, 75 and 100 kg N/fad were not significant in both seasons.

5- Harvest index was affected by N application in both seasons. Application of 50 kg N/fad recorded the highest values of harvest index (33.1 &.27.5).

Chemical composition:

1- Crude protein, phosphorus and potassium percentages in both grain and straw affected as a result of adding N fertilizer. .

2- Application of 75 Kg N fad recorded the highest values of CP% in grain (11.75% & 11.49%) and straw (2.5% & 2.70%). However, the differences among N levels on P% in grain and straw were not significant.

3- Adding 25 .Kg N/fad. gave the highest K% in grain and straw in both seasons. Differences among 25,50,75 and 100 kg N/fad levels were not significantly.

II- Effect of foliar application with Folactive :

1- Growth characters :

a- All growth characters, namely, plant height number of leaves / stalk, flag leaf area, number of stalks / m^2 and dry weight of different plant organs were not significantly influenced by foliar application of Folactive treatments.

2- Grain yield and yield components:

1- Folactive treatments did not significantly affected plant height, number of spikes/ m^2 , spikes weight/ m^2, number of grains / spike, spike grain weight, 1000 – grain weight, and grain yield / fad in both seasons and number of stalks / m^2 in the 1st season.

2- Foliar application of Folactive in different stages of wheat significantly increased straw yield and biological yield/fad in both seasons. On the other hand, the untreated plots recorded the lowest ones. The same trend was obtained in harvest index.

Chemical composition:

1- Foliar application of Folactive at booting stage of wheat plants significantly increased CP% in straw and P% in grain in the 1st seasons. However, the difference among Folactive treatments in chemical composition characters were not significantly.

III- Inteaction effect:

The effect of the interaction between various N levels and Folactive treatments were not significantly for all studied characters under study except, number of grains/ spike in both seasons, spike grain weight in 1997/98 seasons and P% in straw in both seasons.

It could be concluded that, application of 50 kg N/fad caused a significant increase in grain yield, straw yield, biological yield and their quality. This result indicated that the rate of 50 kg N/fad is recommended for grain yield and quality of wheat. On the other hand Folactive foliar application did not significantly affected the most of studied characters.