SUMMARY

The present work was carried out at the experimental farm of the Agricultural Research Center at El- Giza, during the two successive season 1999/2000 and 2000/2001.

Twenty four genotypes of bread and durum wheat were evaluated under water stress and normal treatments. These material were chosen on the basis of presence of wide range of genetic diversity for drought resistance from CIMMYT, ACSAT, ARC as well as some Egyptian cultivars which more adopted to water stress.

In both seasons, the genotypes were sown in mid November. In each season, two adjacent experiments were conducted. The first experiment (stress irrigation) was received two irrigations. The first irrigation was done after 30 days from sowing and the second after 30 days from the first irrigation. The second experiment was received all water requirements of wheat at El- Giza (6 irrigations).

Each experiment was designed in a RCBD with four replications. Each plot consisted of six rows four meters long with 20 cm between rows. Seeds were drill in the row by hand on November 1999 in the first season and November 2000 in the second season.

Data for the following trails were recorded:

1. Heading date (days).
2. Maturity date (days).
3. Plant height (cm).
4. Spike length (cm).

5. Number of kernels/spike.
6. Weight of kernels/spike (g).
7. Number of spikes/m^2.
8. 1000-kernel weight (g).
9. Grain yield (ardab/fad.)
10. Straw yield (ton/fad.)
11. Biological yield (ton/fad.)
12. Harvest index.
13. Grain protein content.
14. Susceptibility index for grain yield, straw and biological yields by three methods; i.e. **Fischer and Maurer 1978, Ali *et.al.* 1990 and Sauleseu *et.al.*1995.**

The results obtained could be summarized as follows:

1- Mean values of the second season were higher than corresponding in the first one for all traits except no. of spikes/ plot, no. of kernels and weight of kernels/spike and protein content.

2- Mean values of normal irrigation were significantly higher than those of stress irrigation for all the studied traits, except harvest index and protein % .

3- Mean squares for genotypes were significant for all the studied traits in the combined analysis over both irrigation treatments and both seasons.

4- Yecora variety (no.4) followed by genotype no.9 (IL75-2264/4/CAR //KAL/BB/3/NAC/5/CAA) showed the earliest of maturity date. However Penwawa variety (no.5) is the latest one. VAN-14 (no.21) gave the highest grain yield/ard./fad but without superiority than recorded by genotypes no.4 (Yecora), no. 9 (IL75-2264/4/ CAR//KAL /BB/3/NAC/5/CAA) and no.22

(G158/5/CFN/CNO"S"//RON/3/Bb/ NOR/4/TL/3FN/TH/NAR59* 2). However the lowest grain yield ard./fad. Was recorded by Penwawa genotype (no.5) . For straw and biological yields, the two genotypes no.21 (VAN-14) and no.9 (IL75-2264/4/CAR //KAL/BB/3/NAC/5/CAA) gave the highest values. However, the genotype no.5 (Penwawa) gave the lowest one. Regarding harvest index, genotype (no.5) Penwawa recorded the highest harvest index followed by VAN-14 genotypes (no.21). However, Penwawa variety (no.5) gave the lowest one. For protein %, Penwawa variety (no.5) gave the highest percentage followed by G 164/Sakha 61 (no.23). However, PASTOR * 2/OPATA (no.10) recorded the lowest one.

5- Mean squares for the interaction between genotypes and irrigation treatments were significant for all traits except plant hight, spike length, no. of kernels/ spike and grain yield ard/fad., straw and biological yields ton/fad. and harvest index in both seasons as well as the combined data in the first season and maturity date in the second season.

6- The effect of interaction between genotypes and season was statistically significant for all traits except plant height.

7- Variety no.21 (VAN-1 4), durum wheat was the highest one in grain yield under non stress and stress condition which gave 19.72 and 14.2 ard./fad., respectively. While, variety no.5 Penwawa bread wheat was the lowest one in non-stress and stress conditions, while, it gave the highest protein % under water stress.

Suceptibility index (SI)

1- Genotypes mean squares for susceptibility index (SI) were significant of grain, straw and biological yields in the three methods used. Also, significant genotypes x season for (SI) were obtained for

the three traits, indicating that genotypes behaved some wheat differently from season to another.

2- Genotypes no.2 (Sahel), no.16 (MYNA "S"/ VUL "S" YD "S" //PCI "S") and no.13 (CNO 79* 2/HOEL//vee "S"/ANC) gave the highest desirable SI for grain yield ard./fad. by the three methods in the first, second season as well as the combined data.

3- Yecora (no.4) , no.13 (CNO 79* 2/HOEL//vee "S"/ANC) and no.20 (STK/4/JO/3/CR//CIT 71) gave the best desirable susecptipility to drought resistance for straw yield by the three methods at the first, second season and the combined analysis.

4- Genotypes no.13 (CNO 79* 2/HOEL//vee "S"/ANC), no. 20 (STK/4/JO/3/CR//CIT 71), no.4 Yecora , no.9 (IL75-2264/4/ CAR// KAL/BB/3/NAC/5/CAA) and no.20 (STK/4/JO/3/CR// CIT 71) gave the best tolerance of stress irrigation for biological yield . In the first, second season as well as the combined analysis in the three methods used for estimating SI.