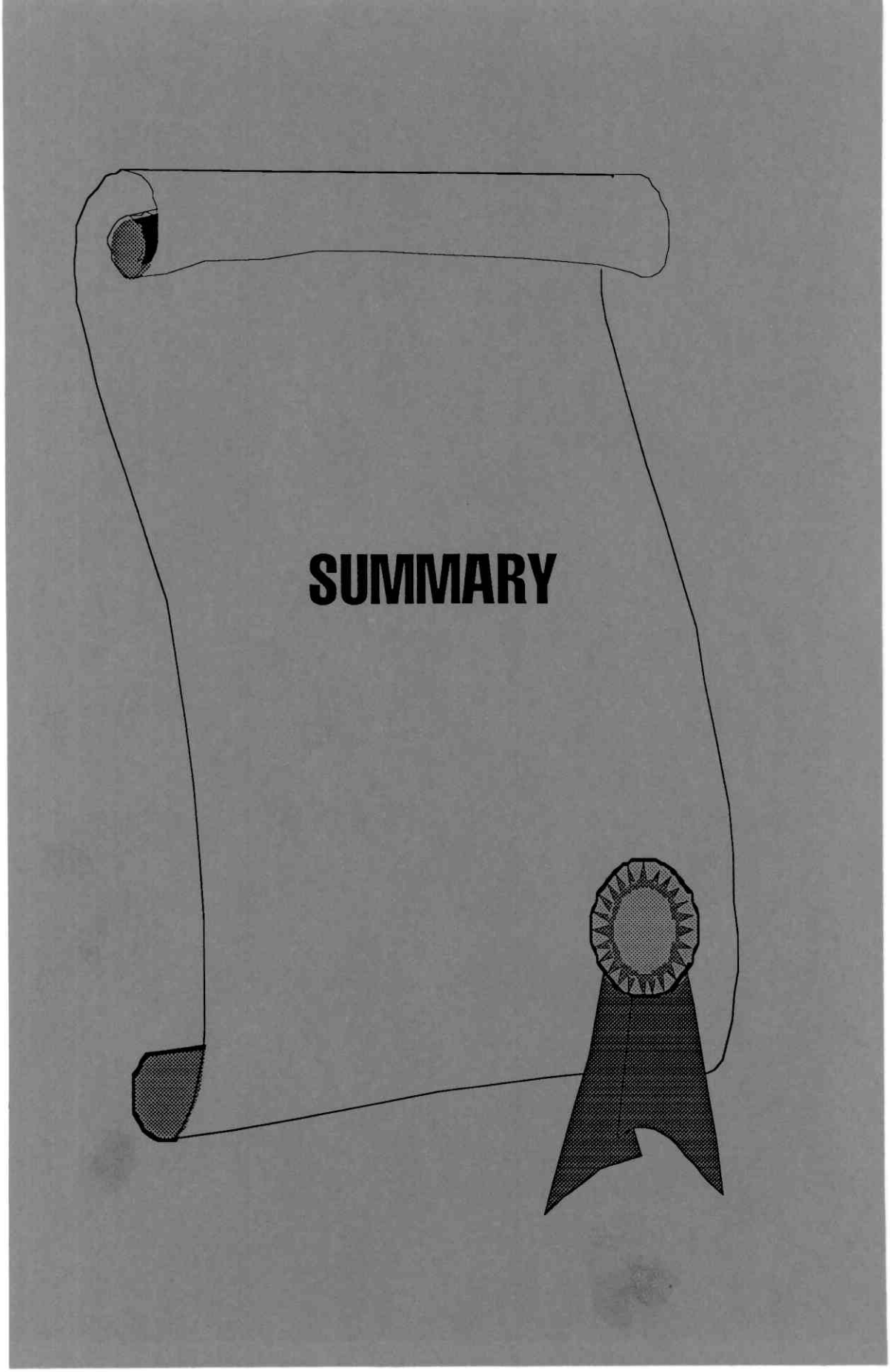
SUMMARY

# SUMMARY

Two field experiments were conducted at the Agricultural Reasearch and experimental center. Faculty of Agriculture at Moshtohor Kalubia, Egypt , during the two successive growing seasons of 1997 / 98 and 1988 / 99 to study the effect of four weed control treatments, (Grasp, Granstar, Granstar + Grasp and unweeded check) and the two wheat cultivars i.e. Sakha 69 and sids 7 and four nitrogen levels on weed growth, wheat growth, yield and yield components of wheat. The soil of the experiments was clay loam with PH value of 8, containing 2.3% organic matter and 8-12 PPm available P. Each experiment included 32 treatments which were the combination of four nitrogen fertilization rates i.e 60, 90, 120 and 150 kg N/fed, the two wheat cultivars and four weed control treatments. The chemical weed control treatments used in this investigation were:

1- Tralkoxydin which is known commercially as "Grasp 10% Ec. " it was applied at 3 -4 leaf stage of wheat plants (after 30 days from sowing) as post - emergence at the rate of 100 g . a. i/ fed (1L/ fed) .

2- Express which is known commercially as Granstar 75%, it was applied after 15 days from sowing as post-emergence at the rate 8 g. per / fed .

3- Mixture from Grasp 10% as post - emergence after 30 day from sowing of wheat plants with its half rate i.e 0.5L / fed + Granstar 75% as pos-temergence after 15 days from sowing of wheat plants with its half rate i.e 4 g. / fed .

4- Unweeded treatment ( check treatment) .

The treatments were distributed in split plot design where the four chemical weed control treatments were arranged at random in the main plots. While the two wheat varieties cultivars Sakha 69 and Sids and the four nitrogen fertilization rates were arranged in the sub plots at random . The results can be summarized as follows .

**I.1.Effect of Weed Control Treatments on Weed Growth: Fresh and Dry Weight of Weeds :**

**a- After 60 days from sowing :**

Granstar and mixture of Granstar and Grasp significantly reduced the fresh and dry weight of weeds ($g/m^2$) in both growing seasons as compared with unweeded treatment. The reduction percentage of weeds fresh weight resulted by using Granstar and the mixture of Granstar and Grasp amounted to 74% and 54% in the first season and about 86% and 77% in the second season as compared with control treatment. Grasp had no significant effect on fresh weight of weeds in both growing seasons.

**b- After 90 days from sowing :**

Granstar and mixture of Granstar and Grasp significantly reduced the fresh weight of weeds in both growing seasons as compared with unweeded treatment . Also all chemical weed control significantly reduced the dry weight of weeds in both growing season and the reduction percentage of weeds dry weight after (90 D.A.W) by using Grasp, Granstar and the mixture of both herbicides amounted by more than 35%, 94% and 95% in the first season and by 29%, 95% and 90% in the second season .

**C- After 120 days from sowing:**

1- Granstar and Mixture of Granstar and Grasp reduced the fresh weight of weeds in the frist season and Granstar and mixture of Granstar and Grasp and Grasp alone significantly reduced the fresh weight of weeds in the second season .

2- All chemical weed control treatments significantly reduced dry weight of weeds in both growing season as compared with check treatment . The depression in the dry weight of weeds was estimated by 18% , 91 % and 83 % in the first season and by 32% , 92% and 84 % in the second season by using Grasp , Granstar and the mixture of both herbicides as compared with the control treatment, respectively .

## 1.2. Effect of Weed Control Treatment on Wheat Growth:

**a- After 80 days from sowing .**

1- Granstar in the first season and both Granstar and mixture treatments in the second season increased number of leaves / $m^2$ as compared withe Grasp and control treatments .

2- Granstar significantly increased number of stalks in the second season.

3- All weed control treatments had no significant effect on spike length in both growing season as compared with un weeded treatment .

**b- After 101 Days From Sowing :**

1- Number of leaves/$m^2$, plant height and spike length (cm) were not significantly affected by weed control treatments in both growing season .

2- Granstar and mixture of Granstar and Grasp significantly increased number of stalks/$m^2$ compared with Grasp and control treatments in both growing season .

3-The mixture and Granstar treatments significantly increased the number of spikes/$m^2$ in the frist season as compared with Grasp and un weeded check but in the second season all weed control treatments significantly increased number of spikes / $m^2$ as compared with un weeded check .

**C - After 121 Days From Sowing :**

1- Number of leaves / $m^2$ was increased by using Granstar and mixture of Granstar and Grasp only in the first season as compared with unweeded check, but not affected by all weed control treatments in the second season.

2- The greatest values of number of spikes / $m^2$ were recorded from mixture treatment and Granstar treatment. The

mixture and Granstar treatments Significantly increased number of spikes / $m^2$ over the Grasp treatment in the second season .

3- Granstar and unweeded treatment gave the highest values of plant height (cm) and significantly higher as compared with Grasp and mixture treatments in the first season only.

4- Spike length (cm) was not affected by all weed control treatments in both seasons .

**I.2.2. Effect of Weed Control Treatments on Weight of Different Plant Parts .**

**a - After 80 Days from sowing .**

1- The highest values of fresh and dry weight of leaves /$m^2$ were obtained by Granstar and control treatments in both growing seasons but the lowest value was obtained with Grasp treatment .

2- The highest values of fresh and dry weight of stalks / $m^2$ were obtained by Granstar and mixture ( Granstar + Grasp) .

Granstar treatment gave the heavest values of fresh and dry weight from leaves, stalks and total / weight of plants / $m^2$ in both growing season, but the lowest values were obtained by control and Grasp treatments.

**b- After 101 Days From Sowing :**

The higher values of leaves dry weight ($g/m^2$) were obtained by Granstar and mixture treatments as compared with Grasp treatment in both growing season .

2- The mixture of Granstar and Grasp and Granstar treatments significantly increased fresh and dry weight of stalks / $m^2$ compared with the control and Grasp treatment in both growing season .

3- The mixture and Granstar treatments in the frist season and Grasp and mixture in the second season gave the heavest fresh and dry weight of spikes/$m^2$ and significantly higher as compared with the control treatment .

4- Granstar and the mixture of Grasp and Granstar significantly increased the total fresh and dry weight of plants / m2 as compared with control and Grasp treatments in both growing season .

**C- After 121 Days From Sowing :**

1- In the frist season Granstar and mixture of Grasp + Granstar gave the highest values from fresh and dry weight of leaves/$m^2$ and significant higher as compared with Grasp and control treatment .

2- All weed control treatments significantly increased fresh and dy weight of stalks in both growing seasons .

3- Gramstar and mixture treatments significantly increased fresh and dry weight of spikes / $m^2$ in the frist season and spikes dry weight in the second season, but Grasp treatment significantly increased spikes fresh weight in the frist and spikes dry weight in the second season as compared with the control treatment .

4- Granstar and mixture significantly increased total fresh and dry weight of plants / m2 in the frist season .

## 1.3. Effect of Weed Control Treatments on Chlorophyll and Carotenoids content .

### a- AFter 80 Days from Sowing :

1- The highest values of chlorophyll B was obtained by Grasp treatment and higher significantly as compared with Granstar and mixture treatment in the frist season also unweeded treatment significantly increased chlorophyll B as compared with mixture treatment in the frist season.

2- In the second season Grasp treatment recorded the highest value of chlorophyll B as compared with other treatments.

3- Unweeded treatment and Grasp treatment resulted the highest values of total chlorophyll which were significantly higher as compared with mixture treatment in the frist season.

4- Unweeded treatment significantly increased carotenoids content as compared with other treatments in the frist season.

### b- After 101 Days From Sowing :

1- Grasp treatment and un weeded check recorded the highest values of chlorophyll A as compared with mixture treatment in both seasons .

2- Grasp significantly increased chlorophyll A content as compared with Granstar in second season .

3- Granstar significantly increased chlorophyll A as compared with the mixture treatment in the second season .

4- Grasp and unweeded significantly increased chlorophyll B as compared with mixture and Grnastar treatments in both growing season, but the lowest values of chlorophyll B content was recorded by mixture and Granstar treatments in 60 both grwoing season .

5- The highest values of total chlorophyll content were obtained by Grasp and control treatment and significantly higher as compared with mixture and Gransat treatments in both growing seasons, and the differences between unweeded check and Granstar was in significant in the frist season .

6- Grasp and unweeded treatments significantly increased carobenoides content as compared with Granstar in the frist season and as compared with Granstar and mixture in second seson .

7- Total chlorophyll in the frist sampling ( 80. D.A. S.) was higher than the second sampling (101 D.A.S) in both growing seasons. In contrast carotenoids content in the frist sampling was lower than the second sampling date in both grwoing seasons .

## I.4. Effect of Weed Control Treatments on Yield and Yield Components of Wheat :

### 1- Plant height :

- The lallest plants were obtained from Granstar treatment and significant higher as compared with other treatments in the frist season only .

- Plants in unweeded treatment were significantly longer than plants treated with Granstar and mixture of Granstar + Grasp .

**2- Spike Length :**

Chemical weed control had no significant effect on spike length as compared with unweeded treatment in both sesons .

**3- Number of Stalks . $m^2$:**

The mixture of Grasp + Granstar and Granstar treatments increased significantly number of wheat stalks / m2 over the control treatment and the mixture significantly higher than Grasp tratment in the frist season. More over the Granstar treatment and mixture treatment gave the higher number of wheat statks / $m^2$ in the second season as compared with control and Grasp treatment .

**4- Number of spikes / $m^2$ :**

The mixture treatment gave the greatest number of wheat spikes / $m^2$ and significantly higher than Grasp .

**5- Number of spikelets / spike :**

Granstar treatment significantly increased number of spikelets/spikeas compared with Grasp and unweeded treatments in the frist season only.

**6- Number of Grains / spike :**

Granstar treatment and mixture treatment gave the highest number of grains / spike in the frist season .

**7- 1000 Grain weight :**

Granstar and mixture of Granstar + Grasp significantly increased seed index in the frist season as compared with unweeded and Grasp treatments.

**8- Grains Weight / spike:**

The mixture and Granstar treatments significantly increased grain weight / spike as compared with both unweeded and Grasp treatments .

**9- Grain Yield ( kg / fed) :**

- The mixture and Granstar and Grasp increased grain yield (kg / fed) over the control treatment more than 118%, 105% and 48 % in the frist season and 51% and 44% and 5% in the second srason respectively .

**10 - Straw yield ( Kg / fed ) :**

The mixture and Granstar and Grasp treatments significantly increased straw yield (kg / fed) in both growing seasons as compared with control trreatment .

**11- Biological yield ( kg / fed):**

The mixture and Granstar remarkable resylted the highest biologiacl yield and significantly highest biological yield and significantly higher over Grasp treatment in both growing season.

**12- Harvest Index :**

The highest harvest index values were obtained with both mixture Granstar treatments in both growing seasons .

**13 - Protein percentage :**

All chemical weed control treatments had no significant effect on protein % in both the growing seasons except only the mixture treatment significantly increased protein % in the second season as compared with control treatment .

**14 - Protein yield ( Kg / fed.) :**

The highest protein yield were obtained by mixture and Granstar treatments and significantly higher as compared with control and Grasp treatments in both grwoing seasons .

## II.1. Effect of Wheat Cultivars on Fresh and Dry Weight of Weeds :

**a- After 60 Days From Sowing :**

Variety Sids 7 reduced fresh and dry weight of weeds / m2 as compared with Sakha 69 .

**b- After 90 Days From Sowing :**

Wheat cultivars had no significant effect on weed growth in both seasons .

**c - AFter 120 Days From Sowing :**

Sakha 69 variety significantly decreased hand dry weight of weeds / $m^2$ in both seasons as compared with Sids 7 variety .

## II. 2. Effect of Two Cultivars on Wheat Groth .

**1- Plant Characters :**

The average values of plant height , spike lengthy number of leaves , stalks and spikes / $m^2$ were influenced by two wheat

varieties. such differences migth be due to the different pedigree of both varieties cultivars. Such values were higher for Sids 7 as compared with Sakha 69 after 121 days from sowing in the frist season i.e. spike length , No . of leaves, No. of stalks / $m^2$ and No of spikes / $m^2$ .

**2- Fresh and Dry Weight of Plants g / $m^2$ :**

Sids 7 had the higher values than Sakha 69 in fresh and dry weight of leave , stalks , spikes and total fresh and dry weight plants / m2 at all growth stages in both seasons .

## II.3. Chlorophyll and Carotenoids in Wheat leaves :

Sids 7 variety produced the highest wheat leaves control from clorophyll A, chlorophyll B, total chlorophyll and carotenoids whereas the lowest content were obtained from Sakha 69 seasons .

## II.4 .Effect of Two Cultivars on Yield and Yield Components :

**1- Plant height (cm) :**

Sakha 69 variety was taller in plant height than Sids 7 without significant differences in the frist season but in the second season Sakha 69 was the tallest in plant height .

**2 - Spike length ,** Sids 7 had the longest Spike than Sakha 69

**3- Number of stalks / $m^2$:**

Sakha 69 produced higher number f stalks/$m^2$ as compared with Sids 7 in both season .

**4- Number of Spikes / $m^2$:**

Sakha 69 produced the freatest number of spikes/$m^2$ (344.3) than Sids 7 ( 330.2) without significant differences in the first season in the second season the over all mean number of spikes / $m^2$ were 341.0 and 281.5 for Sakha 69 and Sids 7 with significantly differences .

**5- Number of Spikelets / Spike .**

Sids 7 produced higher number of spikelets/ spike with significant differences than Sakha 69 in the two successive seasons .

**6- Number of grains / spike :**

Sids 7 was higher number of grains / spike and was significantly higher than Sakha 69 .

**7) Grains weight / spike (g.) :**

The variety Sids 7 prodcued highest grain weight / spike than Sakha 69 in both seasons .

**8- Weight of 1000 - Kernels (g) :**

The highest 1000 - kernel weight was recorded from Sids 7 (50.39) whereas the lowest 1000 - kernel weight was recorded from Sakha 69 in the first season and (51.9 g) for Sids 7 in the second season

**9- Grain Yield ( Kg / fed ) :**

The highest grain yield was obtained from Sids 7 ( 2035.6 Kg/fed) in the first season while the lowest grain yield was

obtained from Sakha 69 (1817.4 kg / fed. ( In the second season the highest grain yield was obtained from variety Sids 7 which was recorded ( 2213.5 kg / fed) whereas Sakha 69 produced the lowest grain yield / fed which was (1853.8 kg / fed ).

**10- Straw Yield . (kg/ fed) :**

Varity Sids 7 produced the highest straw yield (918.7 kg / fed) while Sakha 69 prodced the lowest straw yield (1856.3 kg / fed) in the first season and similar trend was obtained in the second season .

**11- Biological Yield ( kg / fed) :**

Biological yield / fed significantly higher in Sids 7 than in Sakha 69 in both seasons. Mean values were 3673.8 and 3955 . 8 kg/fed in the first season and 3724.1 and 4107. 6 kg, in the second season for Sakha 69 Sids 7 respectively.

**12- Harvest index:**

In the first season the highest harvest index percentage was obtained for Sids 7 (50.0%) as compared with Sakha 69 (46.8%), but in the second season sids 7 was also superior in harvest index than Sakha 69 .

**13- Protein %**

In the first season the highest grain protein percentage recorded for Sids 7 (13.1%) and lowest value (12.0%) was observed for Sakha 69 . In the second season the highest values

of grain protein percentage recorded for Sids 7 (13.2%) while the lowest value of grain protein percentage was obtained for Sakha 69 .

**14- Protein yield ( Kg / fed ) :**

Protein yield / fed was significantly higher in Sids 7 than in Sakha 69 in both seasons .

## III.1. Effect of Nitrogen fertilization on fresh and dry weight of weeds:

**a- After 60 Days from Sowing :**

Fresh and dry weight of weeds / $m^2$ significantly increased by increasing nitrogen level up to 150 kg N/ fed as compared with the lowest levels 60 kg N / fed ) in 60 the grwoing season .

**b- AFter 90 Days From Sowing :**

Increasing nitrogen levels up to 150 kg N/ fed. significantly increased fresh and dry weight of weeds / $m^2$ in both seasons and the increases of weed growth reach 2 - 4 time more with highest N - level ( 150 kg N / fed) as compared with the lowest N - level ( 60 kg N / fed) .

**C- After 120 Days from Sowing :**

Fresh and dry weight of weeds/$m^2$ increased gradually and significantly with increasing N - level up to 150 kg N / fed. in both season . The lowest value of fresh and dry weight of weeds/ $m^2$ were obtained by applied lowest level of N - fertilizer ( 60 kg N / fed ) .

### III.2. Effect of Nitrogen fertilizer levels on wheat growth:

a) Application 120 and 150 kg N/fed. significantly increased plant height, spikelenth, number of leaves, stalks and spikes / $m^2$ at three sampling dates in two seasons.

**b) - Fresh and Dry Weight of Plants g / $m^2$:**

1- Fresh weight of stalks/$m^2$ were not significantly affected at three growth stages in the first season by applied nitrogen levels.

2 - In this study 90 and 120 kg N/fed. recommend for producing the highest values of fresh and dry weight of different plant organs and total fresh and dry weight of pkants at 80, 101 and 121 days from sowing in two season .

### III.3. Chlorophyll and Carotenoids in Wheat leaves:

a - Applying N at 90, 120 and 150 kg N / fed. significantly increased chlorophyll A, B, total chlorophyll and carotenoids as compared with the lowest N level ( 60 kg / fed) at 80 and 101 days from sowing both seasons .

### III.4. Effect of Nitrogen fertilizer levels on Yield and Yield Components :

**1- Plant height (cm) :**

In the first srason applying 90, 120 and 150 kg N/fed significantly increased plant height by 3.0, 6.5 and 9.6% as compared with 60 kg N / fed. respectievly.

**2 - Spike length :**

In the first season spike length increased by 4.6, 7.3 and 3.7 % as a result of increasing nitrograte from 60 to 90 , 90 to 120 and 120 to 150 kg N / fed .

**3. Number of spikes / $m^2$ :**

Applying N at 90, 120 and 150 kg N / fed in significantly increased spikes/$m^2$ over lowest N level of 60 kg N/fed. by 4.2, 6.3 and 2.1 respectively .

**4. Number of Stalks / $m^2$:**

In the first season applying N at 90 and 120 kg/fed in significantly increased sralks / $m^2$ over the lowest N level of 60 kg N/fed by 4.1 and 6.1 $ respectively

**5- Number of Spikelets / Spike :**

In the first season applying N at 120 Kg N /fed significantly increased number of spikelets /spike by 4.6 % over lowest level 60 kg N / fed as 50 , 90 and 150 kg N / fed did not cause any significant differences in number of spikelets / spike.

**6- Number of grains / spike :**

In the first season number of Grains / spike increased by 4.4, 7.7 and 5.0% by increasing the application levels of nitrogen to 90, 120 and 150 kg N/fed as compared with the lowest levels of 60 kg N/fed. In the second season applying N at 90, 120 and 150 kg N/fed significantly increased number of grains / spike by 10.7 , 1.0 and 8.8 % over lowest level ( 60 kg N / fed) .

**7) Grains Weight / Spike (g):**

Application of 120 kg N/fed significantly increased weight of kernels / spike as compared with the different N levels of 60 , 90 and 150 kg N / fed in the two growing season .

**8) Weight of 1000 kernels (g) :**

1- In the first season the highest weight of 1000 kernels (48.1 g) was recorded by applying 90 kg N fed and the lowest value ( 46.8 g) was recorded at 60 kg N / fed .

2- In the second season slight increase in weight of 1000 kernels was obtained by increasing N levels from 60 to 90 , 120 and 150 kg N/ fed with significant differences between different nitrogn rates and these increases were 1.5, 1.7 and 0.6% respectively as compared with the lowest nitrogen level of 60 kg N / fed .

**9) Grain yield . Kg / fed.:**

In the first season applying N at 90 , 120 and 150 kg N / fed significantly increased grain yield by 10.6, 11.7 and 7. 6% respectively as compared with the lowest rate of 60 kg N / fed. In the second season application of 90, 120 and 150 kg N/fed increased grain yield by 10.6 , 10.9 and 4.0 respectively as compared with the lowest N levels of 60 kg N / fed .

**10) Straw yield kg / fed:**

In the first season straw yield was increased by 2.6, 2.2 and 0.2 % with increasing N levels to 90 , 120 and 150 kg

N/fed. as compared with N rate of 60 kg N / fed . In the second season application of 90 and 120 kg N/fed significantly increased straw yield by 2.2 and 1.8% compared with 60 kg N/fed .

**11- Biological yield:**

The highest biological yield was obtained by applying 120 kg N/ fed. and increasing N rate up to 150 kg N/ fed. decreased the biological yield. In the second season application of 90, 120 and 150 kg N/fed in significantly increased biological yield by 6.5, 6.4 and 1.6% as compared with the lowest N level 60 kg N/fed. the highest biological yield was obtained by applying 90 kg N/fed. and areduction in the biological yield resulted from applying the higher N level (150 kg N / fed) .

**12) Harvest index %:**

In the first season applying N at 120 and 150 kg N / fed insignificantly increased harvest index percentage as compared with either 60 or 90 kg N/fed and the highest response was recorded at 120 kg N/fed. In the second season applying 90 and 150 kg N/fed in significantly increased harvest index than either 60 or 120 kg N/fed .

**13) Protein %**

In the first season the highest proetin percentage (13.2%) was recorded at 120 kg N/fed and the lowest protein precentage (11.8%) was recorded at 60 kg N/fed. In the second season applying no kg N/fed. produced the highest protein percentage

in grain (13.3%) and the lowest (11.8% ) were recorded at 60 kg N/fed and the slight increases in protein percentage were induced with increasing N level from 90 to 120 and 150 kg N / fed without significant differences .

**14) Protein yield kg fed .**

In the first season the highest proetin yield ( 268.0 kg / fed) was recorded at 120 kg N / fed and the lowest protein yield (210.26 kg / fed) was recorded at 60 kg N / fed . In the second season the highest protein yield (281. 68 kg / fed) was recorded at 120 kg N/fed. but the lowest protein yield ( 228.12 kg N /fed.) was recorded at ( 60 kg N / fed.) .

## IV.1. Effect of the interaction Between weed control and wheat cultivars :

**a- Dry Weight of Weeds :**

The lowest values from dry weight of weeds / $m^2$ were obtained by Granstar treatment and Sakha 69 while the greatest values were recorded by unweeded treatment and Sakha after 60 days in the second season, after 121 days in the second season unweeded with Sids 7 .

**b- Total fresh and dry weight of wheat plants :**

There were significant interaction of chemical weed control treatments and two wheat cultivars on total fresh and dry of wheat plants /$m^2$ after 80 and 101 days from in the second season and after 121 days from sowing in both seasons. The

heavest values from total fresh and dry weight of wheat plants/$m^2$ were obtained by the mixture treatment (Granstar + Grasp ) with Sids 7 variety and the lowest values from previous character, were recorded by unweeded with Sakha 69 variety.

**c- Some Wheat Growth Characters :**

The highest values from plant height, number of stalks, spikes/ $m^2$, fersh weight of stalks and spikes g/$m^2$ and dry weight of stalks / $m^2$ in the second season after 121 days from sowing was obtained by Granstar or the mixture treatments in some characters with sids 7 and in other characters with Sakha 69 variety .

**d - Chlorophyll and Carotenoids Content :**

There was significant effect of the interaction between chemical weed cpntrol treatments and two wheat cultivars on chlorophyll A, B. total chlorophyll and carotenoids after 80 days from sowing both season except chlorophyll A in the second season - after 101 days chlorophyll A and total chlorophyll in the first season were affected by this interaction and chlorophyll B in the second season. The mixture treatment with Sakha 69 gave the lowest values from all previous chlorophyll and caretenoids content .

**e- Yield and Yield components :**

The greatest values No. of grains /spike, 1000 grain weight. Grain weight /spike, Grain, straw and biological yields in the

first season, harvest index, protein percentage in grains and total protein yield. were obtained by the mixture treatment with Sids 7 and the lowest values were recorded with unweeded treatment with Sakha 69.

## IV.2. Effect of Interaction Between Weed Control and Nitrogen Fertilization :

1- The greatest values form fresh and dry weight of weeds /$m^2$ after 90 and 120 / days from sowing in both season were recorded by unweeded treatment with higher levels of applied nitrogen after 90, 121 days from sowing while the lowest values from fresh and dry weight of weeds / $m^2$ were obtained by the mixture ( Granstar + Grasp ) and Granstar alone with the lowest lvel of applied nitrogenn ( 60 kg N / fed) .

### 2- Wheat Growth Characters :

The highest values from total dry weight of plants/$m^2$ after 101 days from sowing in the second season was obtained by the mixture treatment and Granstar alone with the rates of 90, 120 and 150 kg N / fed as a significant interaction between them but the lowest values were obtained from control treatment and Grasp alone with 60 and 150 kg N / fed Dry weight of stalks / $m^2$ spike length , total fresh weight / plant in the second season and total dry weight of plant/$m^2$ in the frist season, the greatest values were obtained by the mixture and Granstar alone with 90 and 120 kg N /fed. while the lowest values of all

previous wheat growth characters were obtained by the unweeded and Granstar lowest levels of nitrogen fertilizer.

**3- Chlorophyll A, B , total chlorophyll and Carotenoids**

The highest values from chlorophyll A, total chlorophyll and carotenoids after 80 days of previous characters were recorded by the highest level of N fertilizer with unweeded .

**4- Yield and Yield Components**

The greatest values of number of spikelets / spike were obtained by the mixture treatment with 120 kg N / fed, Granstar alone with 60, 90 and 120 kg N / fed .

The greatest values of the number grains / spike., 1000 - grains weight and grains weight/spike were obtained by the mixture treatment and Granstar treatment with 60, 90 and 120 kg N / fed .

The greatest values from grain yield (kg / fed), biological yield (kg / fed ) and harvest index were obtained by the mixture treatment and Granstar alone with all nitrogen fertilizer levels.

Higher protein percentage recorded from the mixture treatment with 90 , 120 and 150 kg / fed and Grasp alone with 120 kg / N fed .

The highest values from Protein yield were obtained from mixture treatment and Granstar alone with 90 , 120 and 150 kg N / fed .

In the second season the greatest values of protein percentage were obtained by the mixture treatment with 90 kg N / fed. Grasp alone with no kg N / fed. and Granstar with 150 kg N / fed.

## IV.3. Effect of the Interaction Between Nitrogen Levels and the Two Wheat Cultivars :

### 1- Effect of Interaction on Number of Leaves / $m^2$:

The highest number of leaves / $m^2$ was recorded from Sids 7 under nitrogen level 120 kg N / fed .

### 2. Effect of Interaction on Number of Stalks / $m^2$:

The highest number of stalks / $m^2$ (337.0) was recorded by Sakha 69 under 90 kg N/fed and the lowest values 290.50 / $m^2$ was obtained by Sakha 69 under 150 kg N / fed .

### 3. Number of Spikes / $m^2$:

The highest values of number of spikes /$m^2$ was obtained from Skha 69 under 90 kg N / fed .

### 4- Fresh and Dry Weight of Leaves g. / $m^2$:

The highest values from fresh and dry weight of leaves/$m^2$ were obtained by Sakha 69 under 90 kg N / fed .

### 5- Fresh and Dry Weight of Stalks g. / $m^2$:

The highest values from fresh and dry weight of stalks /$m^2$ was recorded by Sids 7 under 120 kg N / fed .

**6 - Fresh and Dry Weight of Spikes g./$m^2$:**

The highest values from fresh and dry weight of spikes/$m^2$ was obtained from Sids 7 under 120 kg N / fed .

**7- Total fresh and Dry of Plants g. / $m^2$:**

The highest values were obtained by Sids 7 under 120 kg N/ fed while the lowest values from total fresh weight of plants/$m^2$ was obtained by Sakha 69 under 120 kg N / fed.

**8- Effect of Interaction on wheat Yield and Some its Components:**

- The tallest wheat of spikes was recorded by Sids 7 variety fertilized 120 kg N/fed. while shortes spike was obtained by Sakha 69 under 60 kg N / fed .
- The highest number of spikelets / spike was recorded by Sids 7 fertilized 120 kg N/fed while the lowest number of spikelets / spike produced by Sakha 69 under 60 kg N / fed .
- The highest value of grains / spike was obtained from Sids 7 with 120 kg N /fed. while the lowest one was recorded from Sakha 69 under 60 kg N / fed.
- The heaviest grains weight of spike was obtained from Sids 7 under rate of 120 kg N / fed .
- The highest weight of 1000 - kernels was obtained from the interaction between Sids 7 and 120 kg N / fed .
- The highest value of straw yield was obtained from Sids 7 with nitrogen rates of 120 kg N / fed .
- The highest value from biological yield was recorded by Sids 7 under rate 120 kg N / fed .

**1- Number of leaves / m2 :**

The highest number of leaves /$m^2$ was obtained from Sakha 69 under 90 kg N/fed. and the lowest one was recorded by Sakha 69 under 60 kg N / fed .

**2- Number of Spikes / m2 :**

The highest value from number of spikes /$m^2$ was obtained from Sakha 69 fertilized with 90 kg N / fed .

**3- Fresh weight of leaves g./ $m^2$ :**

The highest value of fresh weight of leaves / $m^2$ was obtained from Sids 7 under 120 kg N / fed .

**4- Fresh weight of stalks g./ $m^2$:**

The highest fresh weoght of stalks / $m^2$ was recorded by Sakha 69 fertilized with N rate of 90 kg N / fed .

**5 - Fresh Weight of Spikes g./ $m^2$ :**

The highest fresh weight of spikes was recorded by Sids 7 under 120 kg N / fed. while the lowest value of fresh weight of spikes / $m^2$ was recorded by Sids 7 under 60 kg N / fed .

**6- Dry Weight of Leaves g / $m^2$:**

The heaviest dry weight of leaves / $m^2$ was obtained from Sids 7 under 120 kg N / fed .

**7- Dry Weight of Stalks g. / $m^2$:**

The highest dry weigt of stalks / $m^2$ was recorded by Sakha 69 under 90 kg N / fed .

**8 - Dry Weight of Spikes . g / $m^2$:**

The heaviest dry weight of spikes / $m^2$ was obtained by Sids 7 under 120 kg N / fed .

**9- Spike length (cm) :**

The tallest wheat of spikes was obtained by Sids 7 under 150 kg N / fed .

**10 - Total fresh weight of Plants g. / $m^2$:**

The highest total gresh weight of plants / $m^2$ was recorded by Sids 7 under 20 kg N / fed .

**11 - Total Dry Weight of Plants g. / $m^2$ :**

The highest value of total dry weight of plants / $m^2$ was recorded by Sids 7 under 120 kg N / fed .

**12- Number of Grains / spike :**

The highest number of Grains / spuke was recorded by Sids under 120 kg N / fed .

**13 -** The highest grain yield was obtained from Sids 7 under 120 kg N / fed .

**14-** The highest strow yield was obtained by Sids 7 under 120 kg N / fed .

**15-** The highest value of biologiacl yield was recorded by Sids 7 under 120 kg N / fed .

**16-** The highest harvest index percentage was recorded from Sids 7 under 120 kg N / fed .

## IV. Effect of the Interaction Between Chemical Weed Control, Wheat Cultivars and Nitrogen Fertilization:

a) The highest value from total fresh and dry weight of wheat plants after 80 days from sowing in the second season was recirded by Skha 69 or Sids 7 with Granstar or the mixture treatments and 120 kg N / fed .

b) The greatest values frm number and dry weight of leaves/$m^2$ after 121 days from sowing in the first season were recorded by Granstar alone and Sakha 69 under 90 kg N/fed.

c) The tallest plants were recorded by Sakha 69 variety and Granstar or mixture treatments and 120 or 150 kg N / fed.

d) The greatest of dry weight of leaves / $m^2$ after 121 days from sowing in the second season were obtained by Sakha 69 or Sids 7 with Granstar or mixture treatments and120 or 150 kg N / fed.

e) - Chlorophyll and carotenoids content. The greatest values from chlorophyll A and corotenoides content were obtained by unweeded treatment with Sids 7 or Sakha 69 variety with the highest two N level (120 or 150 kg N / fed).

**f- Some Yield Component :**

The highest number of spikelets / spike and the heaviest grains weight / spike were recorded by Granstar or the mixture treatments with Sids 7 variety and 120 kg N/fed.