SUMMARY

Effect of some irrigation treatment on vegetative growth and flowering and chemical composition :

1. Regular irrigation resulted in good vegetative growth characters for all plant sources under study, since mean plant height and mean number of branches/ plant increased with medium and low levels of irrigation than the high level 75% F.C. or the highest one (control) 100% F.C.

2. The Portugese plants were superior in their height and number of branches over other sources. The best results in this concern were observed with the high and medium level of irrigation. The Swiss sources came after and then the local var. Giza I.

3. All irrigation treatment increased the mean number of flower heads/plant over control. The highest number of flower/plant was obtained with the lowest irrigation plants followed by those treated at the medium, high and highest level (control) respectively.

4. Mean weight of petals/flower icnreased with low level of irrigation 37.5% F.C. as compared to the medium or high level and control (the highest). Portuges plant produced mean weight of petals/flower higher than over those of Giza I and Swiss plants.

5. The highest yield of petals/plant was obtained with the lowest level of irrigation (37.5% G.V.) than the medium and high levels (50% and 75% F.C.) which obtained same yield of petals/plant this was also increased over control. Comparing the plant sources, Portuges plant produced the highest yield of petals/plant with significant increase over both Swiss source and local var. Giza I. The latter came as the second and Swiss as the third in yield of petal/plant.

6) The mean weight of seeds/flower and seed yield/plant increased with appling moderate levels of irrigation 50% and 75% F.C. followed by control (100% F.C.). The least mean weight of seed/flower and plant was obtained with the lowest level of irrigation (37.5% F.C.)

Also seed weight/flower and seed yield/plant produced by Portuges plant were superior over other sources followed by Giza I var. and Swiss source respectively.

Chemical composition :

1. The results showed that decreasing the irrigation rate decreased the percentage of chlorophyll (a) while it increased clear chlorophyll (b) percentage.

2. The highest level of irrigation 100% F.C. produced the highest percent of caroten in leaves.

3. The local var. Giza characterized by the highest percent of chlorophyll (a) in leaves and also the highest percent of carotene, while Portuges plant characterized by the highest percent of chlorophyll (b).

Oil content :

1. The low level of irrigation resulted in the lowest percent of oil in seeds as compared to other treatments.

2. Comparing the plant sources, the Portuges plants produced the highest oil percent in seeds followed by the local var. Giza I then Swiss plant.

3. The highest yield of seed oil/plant was obtained with the medium level of irrigation 50% F.C., followed by the high one 75% and then the control plant 100% F.C. The least oil yield/plant was obtained with the lowest level of irrigation 37.5% F.C.

4. Portuges plant source produced also the highest oil yield/plant followed by Giza I and Swiss.

Pigment content in Petals :

1. Caroten content of petals increased with decreasing the level of irrigation. The lowest level produced the highest percent of caroten in petals, and this trend still constant at the beginning of the flowering season through the successive picking from the first to the fourth. While with the fifth picking the least one at

the end of the following season the mean percent of carotene in petals increased with the high level 75% and 100% F.C.

Concerning plant sources, the Swiss plants was of highest percent of carotene in petals followed by the local var. Giza 1 and Portugese.

Generally it could be notice that carotene content of petals under different treatments of irrigation and with different plant sources, was higher at the beginning of the flowering season and decreased gradually to the end of the flowering season (last picking).

Corthamin percentage in petals was higher in plants treated at medium or low level of irrigation 50% and 37.5% F.C. than with high levels 75% and 100% F.C.

Swiss source was superior in its content of Carthamin throught out all the flowering season, followed by the local var. Giza I and Portuges.

Generally it could also noticed that carthamin content in petals increased gradually as the flowering season came to its end.

Gas-chromatographic analysis of fixed oil :

The fractionation of seed oil by Gas chromatographic cleared that the oil of carthamus seed contain 18 fatty acids saturated and unsaturated. It could be noticed that increasing irrigation rate 75% F.C. increased the percent of unsaturated fatty acids in seed oil and also the saturated fatty acids of longer chain.

Second: Effect of Nitrogen fertilization level:

1. The vegetative growth of Carthamus tinctorius L. plant, as plant high or number of branches carried by plant affected greatly and significantly by applying nitrogen fertilizers The high rate of nitrogen was more effective in increasing both height of plant or the number of branches by the low level or control plant.

2. Nitrogen fertilization treatment resulted in higher number of flower heads/ plant. The increase was more clearer with the high level than the low one.

3. The seed yield/plant increased by adding nitrogen fertilization over the untreated plants. The high level of nitrogen 100 kg/fed. produced plant with higher seed yield than those obtained by the low one 80 kg N/fed.

4. The mean percentage of oil was higher in seeds of plants treated at the low level of nitrogen 80 kg N/fed. than

both those of control 0 kg N/fed. or of high level 100 kg N/fed. The later produced also higher oil percentage in seeds over control.

5. The total yield of oil/plant increased significantly with the high level of nitrogen 100 kg N/fed.over control or the low level of nitrogen, although the low level increased oil percentage, since the seed yield was higher with the high level of nitrogen.

6. Nitrogen fertilization affected positively protein percent of seeds, and the low level of 80 Kg N /fed. was more effective in increasing protein percentage over the high level 100 kg N or control N_0.

7. Nitrogen fertilization with both levels used resulted in an increase in the major elements content (N,P,K) of leaves although the high level of nitrogen was more effective in this concern than the low one.

8. The total carbohydrate content in plant leaves, increased by nitrogen application. The high level of nitrogen 100 kg N/fed. was more effective than the low one. The least charbohydrate percent was observed from control plant leaves.

9. The chlorophyll (A) percent increased in plant leaves by increasing nitrogen levels applied. While chlorophyll (B) percent increased when the low level of nitrogen was used.

10. Nitrogen application resulted in decreasing in the saturated fatty acids in the seed oil while the unsaturated fatty acids increased.

11. It could be noticed that carotene percentage in petals decreased gradually in the successive pickings. The least values for carotene percentages were obtained at the end of the flowering season.

12. Carthamin percentage of Carthamus tinctorius L. dry petals decreased as a result to apply nitrogen at its two rates, although the high level increased carthamin percentage over control plant in the third and fourth picking.

It could be noticed also that carthamine percentages were on the other side carotene percent since it increased gradually towards the end of the flowering season.