

V- SUMMARY AND CONCLUSION

The present study was conducted during the two successive summer seasons of 1997 and 1998 at the Experimental farm of the Faculty of Agriculture at Moshtohor, Zagazig University (Benha Branch) to investigate the effect of irrigation intervals and different levels of NPK fertilizers and irrigation regime as well as their interaction on the growth, chemical composition and yield and its components of taro plants. The obtained results can be summarized as follows :

- 1-Increasing water supply ,i. e. irrigation every $\frac{1}{2}$ week by intervals throughout the growing season increased all the studied vegetative growth parameters, expressed as plant height, number of leaves per plant, leaf area, lamina and petiole fresh weight as well as fresh weight of whole plant . However, dry matter percentage of different plant parts (leaf and corm) were significantly decreased with increasing the amount of water applied .
- 2-The highest used level of N, P and K fertilizers (120 kg N + 64 kg P_2O_5 + 120 kg K_2O /fed.) resulted in the highest growth rate , i. e. plant height, number of leaves per plant, leaf area and fresh weight of lamina and petiole as well as fresh weight of whole plant and dry matter content of plant .
- 3- The maximum increments in all the studied growth parameters were obtained in case of irrigation every $\frac{1}{2}$ week by intervals and the highest used levels of NPK fertilizers .

- 4-Increasing the irrigation interval from $\frac{1}{2}$ up to 2 weeks led to a significant decrease in chlorophyll a , b and total chlorophyll as well as carotenoids of taro plant leaves .
- 5- Increasing the fertilization level up to the highest used one (120 kg N + 64 kg P_2O_5 + 120 kg K_2O /fed.) gradually increased chlorophyll a , b and total chlorophyll as well as carotenoides content of plant leaves during both seasons of study .
- 6-The maximum values of all measured photosynthetic pigments , i. e. chlorophyll a , b and total chlorophyll as well as carotenoides were obtained as a result of irrigation every $\frac{1}{2}$ week by intervals and applying the highest used level of NPK fertilization (120 kg N + 64 kg P_2O_5 + 120 kg K_2O /fed.) .
- 7-Shortening the irrigation intervals from 2 to $\frac{1}{2}$ week by intervals during the growing seasons led to significant increases in the uptake of nitrogen, phosphorus and potassium by plant .
- 8-The maximum increments in all assayed macroelements were connected with the highest used level of N , P , K fertilizers (120 kg N + 64 kg P_2O_5 + 120 kg K_2O /fed.) .
- 9-Increasing the irrigation frequencies up to 64 irrigations combined with the highest used level of fertilization (120 kg N + 64 kg P_2O_5 + 120 kg K_2O /fed.) resulted in the highest N,P and K content in different plant parts .
- 10- Generally, the total carbohydrates percentage of different plant parts were increased with decreasing the irrigation intervals from 2 to 1 week . In addition , decreasing the irrigation intervals less than 1 week tended to decrease the total carbohydrates content of different plant parts .

- 11- Application of the highest used level of NPK fertilization level (120 kg N + 64 kg P₂O₅ + 120 kg K₂O/fed.) reflected the maximum increments in carbohydrates content of plant foliage and corms .
- 12- Decreasing the irrigation intervals from 2 to 1 week and increasing the applied level of NPK fertilizers up to the fifth used level (120 kg N + 64 kg P₂O₅ + 120 kg K₂O/fed.) reflected the highest carbohydrates content of whole plant except for lamina which should height values in this respect with the third used water irrigation intervals (every 1 ½ week) .
- 13- The yield and its components expressed as number and fresh weight of cormels , fresh weight of main corm , and total yield per plant as well as height and diameter of main corm were significantly increased as a result of increasing water applied for plant either through increasing number of irrigation frequencies or decreasing the interval between irrigation's from 2 to ½ week.
- 14- The highest used level of fertilizers (120 kg N + 64 kg P₂O₅ + 120 kg K₂O/fed.) reflected the highest values of all studied yield component ,i. e. number and weight of cormels per plant , fresh weight and diameter of main corm and yield per plant as well as total yield per feddan .
- 15- Total produced yield and its studied components significantly increased with increasing both the amounts of applied water and the dosage of fertilizers up to the highest used level ,i. e. 120 kg N + 64 kg P₂O₅ + 120 kg K₂O/fed.

- 16- The utilized water was increased with either increasing the number of irrigations frequency or shortening the irrigation period up to $\frac{1}{2}$ week by intervals during both seasons of study .
- 17- The amount of water required to produce one kg of corms was decreased with increasing the used level of NPK fertilizers during both seasons of growth .
- 18- The highest quantity of water supplied to the plants connected with the highest used level of NPK improved the efficiency of water utilization .

Finally, it could be concluded that, under such conditions, irrigation every $\frac{1}{2}$ week by intervals combined with the highest used level of fertilizers (120 kg N + 64 kg P_2O_5 + 120 kg K_2O /fed.) may be recommended for obtaining the highest taro yield with good nutritional value of taro corms and cormels .
