SUMMARY

The following lines summarize the various topics which were handled in the present investigation to evaluate the individual effect of algal and/or bacterial inoculation solely or in combination with different levels of urea- N as mineral fertilizer.

The method of introducing this summary follows to great extent the line of approach used in the presentation of the various topics dealt with in this dissertation :

1- Effect of algal and/or bacterial inoculation on rice grain yield :

It was noticed that, the bio -fertilizer treatments in absence of urea-N gave insignificant effect on rice grain yield in the experiment under study. Also the addition of bio-fertilizer in the presence of urea-N at the rate of 20 and 40 kg N/ fed. did not give any significant increase in rice grain yield. However, it was noticed that inoculating the rice plants with mixture of imported algal strain and Azospirillum in presence of 40 kg N/ fed. gave an increase in rice grain yield.

Also, the inoculation with local and imported algal strains combined with Azospirillum in the presence of 40 kg N/ fed. gave an increase in rice grain yield comparing with the control treatment.

2. Effect of algal and/or bacterial inoculation on 1000-grains weight :

The present data showed that insignificant effect were obtained with different treatments on the weight of 1000- rice grains, whatever, with bio-fertilizer and/ or added urea nitrogen.

The local algal strain $BGA_{(1)}$ caused a relative increase in 1000- grains weight i.e. 22.95 g as compared with Azospirillum or with the imported algal strain $BGA_{(2)}$.

The increasing level of urea-N from 20 to 40 kg N/ fed. lead to decrease in 1000-grains weight. Such decrease amounted from 21.96 g to 21.39 g, respectively.

3. Effect of algal and/or bacterial inoculation on dry weight of shoots :

The inoculation with algae and/or bacteria without nitrogen fertilizer had a negative effect on dry weight of shoots before harvesting stage. However, the high yield of dry weight of shoots was observed in the treatment of imported algal strain $BGA_{(2)}$ combined with Azospirllum.

The addition of urea-N at 20 and 40 kg N/ fed. alone gave a high significant increase in dry weight of shoots . Such increase amount 26.98 % and 28.25 % at 20 and 40 kg N/ fed. respectively.

On the other hand, the addition of urea- N and bio-fertilizer gave insignificant effect on dry weight of shoots.

4. Effect of algal and/or bacterial inoculation on the total nitrogen content of rice grains :

The application of bio-fertilizer alone without mineral nitrogen increased significantly the total nitrogen content of rice grains. The highest increase was (18.79 %) over the control treatment "without any addition" in the treatment which received the bio-inoculation of imported algal strain combined with Azospirillum ($BGA_{(2)}$ + Azo.) .

On the other hand, the application of 20 and 40 kg N/ fed. led to a highly significant increase in the total nitrogen content of rice grains. The highest increase (58.11%) over the control was in the treatment at 40 kg N/ fed. while, the interaction between bio-fertilizer and urea- N showed no significant effect on the total nitrogen content of rice grains.

5. Effect of algal and/or bacterial inoculation on the total carbohydrates content of rice grains :

Generally, the results indicated that the inoculation with local algal strain or local and imported combined with Azospirillum gave the highest increase (18.35 %), (23.7 %) in the total carbohydrates content of rice grain over the control

treatment " without any addition, respectively".

On the other hand, the application of 20 kg N/ fed. gave a slight increase in some treatments such as the treatment which received Azospirillum and the treatment which received two algal strains combined with Azospirillum. Also, the addition of 40 kg N/ fed. gave a slight increase, but the treatments which inoculated with $BGA_{(2)}$ alone and $BGA_{(1)}$ + Azo.) gave a less value as compared with the control treatment.

6. Effect of algal and/or bacterial inoculation on the percentage of amino acids of rice grains :

It is clear from the data that the application of 20 kg N/ fed. combined with the inoculation with a mixture of local and imported algal strains combined with Azospirillum gave an increase in the percentage of some essential and non essential amino acids of rice grains in the experiment under study as compared with the application of 40 kg N/ fed. and the same inoculation.

Some essential amino acids such as leucine, lysine, methionine and valine gave an increase in the treatment of applying 20 kg N/ fed. combined with two algal strains and Azospirillum as compared with the treatment which received 40 kg /N/fed. and the same mixture of bio-fertilizer.