CHAPTER VII

SUMMARY AND CONCLUSION
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The experimental investigations described in the thesis were carried out on sandy loam soil in the departmental farm of the I.C.A.R. Research Complex, Barapani, Meghalaya, during two kharif season of 1982 and 1983.

The experimental investigations were concerned with the:

1. Effect of water regimes and certain nutrients on the growth and yield of rice.

2. Effect of different levels of boron, zinc and molybdenum on the growth and yield of rice.

3. (a) Effect of different levels of two plant growth substances and their time of application on the growth and yield of rice.

(b) Combined effect of gibberellin and kinetin at various stages of crop growth under varied concentration levels on the growth and yield of rice.

4. Effect of best level of irrigation regimes and nutrients selected from the results of experiment I & II on the growth and yield of rice. All the experiments were carried out in complete randomised block design with three replication in each.

The evaluations were made on the basis of growth characters, such as plant height, tiller/plant, panicle length and yield attributive characters, such as filled grain/panicle
Among the different irrigation studied, phase irrigation (irrigated at transplanting, tillering, panicle initiation, flowering and dough stage of the crop) was found significantly superior to other irrigation treatments on grain yield (41.3 q/ha) as well as dry matter production (69.9 q/ha).

Continuous flow irrigation ($I_2$) with 5 cm submergence where irrigating water was allowed to flow continuously from the date transplanting to maturity, also attributed an encouraging grain yield of 39.7 q/ha.

Phase irrigation ($I_3$), on the other hand was slightly superior to continuous flow irrigation in regards to its effect on grain and dry matter production.

From the overall performance, both the levels of irrigation could be recommended safely for rice cultivation, since this region is endowed with high rainfall (approx. 6000 mm annual precipitation) and crop can grow well even under rainfed situation.

Among the three fertilizer (NPK) levels studied, 90:120:45 kg of NPK/ha gave an encouraging grain yield (30.3 q/ha) and could be considered suitable from the
economics point of view.

3.0 Between the two varieties, Mgoba, was found superior in respect of its grain yield (32.7 q/ha) and dry matter production (54.0 q/ha) than that of Pusa-33.

4.0 Zinc @ 5 kg/ha combined with 3 kg boron and 2 kg molybdenum/ha produced maximum grain yield (36.2 q/ha).

4.1 Grain yield was further increased to 43.9 q/ha with phase irrigation and a basal NPX dose of 90:120:45 kg/ha. Thus, application of zinc, boron and molybdenum @ 5 kg, 3 kg and 2 kg/ha coupled with phase irrigation (supplementing at the time of transplanting, tillering, panicle initiation, flowering and dough stage) may be recommended for rice for more grain and straw yield.

5.0 The growth substances augmented both yield and vegetative growth of rice. The crop responded well to the growth regulators up to 75 ppm (the highest applied in 1982) with a grain and straw yield of 39.9 q/ha and 56.2 q/ha respectively, when they were applied at tillering, booting and after flowering. While in the second year, the crop responded to the combined application of 100 ppm each of GA and kinetin. The rate of increase in grain yield was 4.0% over control in the first year with 75 ppm irrespective of the chemicals.

The combined application of GA and kinetin @ 100 ppm produced an increased yield of 35.1 q/ha amounting to 9% over control.
From the over all studies, it can be recommended that Nsaba (a local rice variety) can be taken suitably for mid-altitudes (850 m) region of Meghalaya, combined with phase irrigation or continuous flow (with 3 cm submergence) irrigation coupled with 5 kg zinc, 5 kg boron and 2 kg molybdenum application/ha for profitable grain yield of rice and boosting dry matter production.

However, the application of micronutrients may not give attractive net return when the cost of cultivation is taken into consideration.