SUMMARY AND CONCLUSIONS
CHAPTER VI

SUMMARY AND CONCLUSION

The experiment entitled "Yield and water use efficiency of summer groundnut (Arachis hypogaea) as influenced by different levels of phosphorus and irrigation" was conducted at Research Farm, College of Agriculture, Indira Gandhi Krishi Vishwa Vidyalaya, Raipur, M.P. during summer season of the year 1986, 1987 and 1988. It comprises of four treatments of different water regimes (1.0, 0.8, 0.6 and 0.6 upto first 60 days + IW/CPE during later stages of crop) as main plot treatments and four levels of phosphorus (0, 20, 40 and 60 kg P₂O₅/ha) as sub plot treatments laid out in a split plot design having four replications. The soil was clay loam with neutral soil reaction and low in nitrogen, medium in phosphorus and high in potash. Sowing date during all the years was 10th February. Date of harvesting was 10 June, 13 June and 8 June for the year 1986, 1987, 1988 respectively. Following are the conclusions of observations made during the course of investigations:

1. Effect of different water regimes on plant height at various stages of growth was inconsistent, but tallest plants in general were found with the higher levels of phosphorus (either 40 or 60 kg P₂O₅/ha).
2. Though maximum LAI at harvest was recorded with 0.6 + 0.8 IW/CPE schedule, the trend was not always the same at various growth stages during all the year under study. Highest LAI values for different water regimes were recorded at 50 days after sowing. Response to phosphorus levels were variable regarding this character.

3. Groundnut plant continues to accumulate dry matter till maturity. Approximately 70% of dry matter is accumulated after the 50-55 days of the crop. Again response to water regimes was variable in this aspect, but higher level of phosphorus certainly contributed at most toward dry matter accumulation.

4. Nodules continued to multiply till 65 days stage giving best counts under 0.8 IW/CPE schedule. Response to higher levels of phosphorus was observed positive and maximum number of nodules were noted with 60 kg P$_2$O$_5$/ha at 65 days stage.

5. Dry weight of nodules was also noted to be maximum at 65th days stage, but in most of the cases effect of different irrigation schedules was not significant. Same was the case with graded levels of phosphorus. Though numerical values for dry weight of nodules were highest with 60 or 40 kg P$_2$O$_5$/ha, in general differences were not significant.
6. Maximum number of branches were observed with $0.6 + 0.8$ IW/CPE during the years 1986 and 1987. and with 0.8 IW/CPE during 1988, this character does not seem to have any correlation with plant height. Higher levels of phosphorus continued to maintain their beneficial effect on production of branches also. Maximum number of branches were recorded either with 60 or with 40 kg $P_2O_5$/ha.

7. Number of pods and weight of pods per plant were not found to have regular trend under the influence of different water regimes during the three years under study. However, pod weight per plant was maximum with treatment having more frequent irrigation. Regarding the levels of phosphorus maximum number of pods per plant were observed with 60 kg $P_2O_5$/ha, but the weight of pods per plant had no significant variations due to levels of phosphorus.

8. 0.8 IW/CPE schedule produced better filled pods resulting in highest shelling percentage. 60 kg $P_2O_5$/ha was noted to give best performance in this respect.

9. Test weight of kernels marched parallel to the shelling percentage regarding effects of water regimes and phosphorus levels.

10. Pod and kernel yield (q/ha) were also highest during all the years under 0.8 IW/CPE schedule, while the 60 kg $P_2O_5$/ha registered to maximum yield both pods and kernels.
11. Maximum haulm yield like pod yield q/ha also was the result of water application at 0.8 IW/CPE and 60 kg P$_2$O$_5$/ha.

12. 0.8 IW/CPE irrigation schedule also exerted its beneficial effect on oil percentage and ultimate oil yield. The response of 60 kg P$_2$O$_5$/ha was also in the same line i.e. maximum oil yield was obtained with this level of phosphorus.

13. Under Raipur condition, in summer groundnut crop (Feb. to May) a total amount of 650 mm of irrigation water is required, at an IW/CPE ratio of 0.8. this is approximately in 13 irrigations with 50 mm of water in each irrigation.

14. As regards phosphorus application 40 kg P$_2$O$_5$/ha was found to be the optimum dose from pod yield as well as water use efficiency point of view.

Thus under increasing irrigation water potential through command area, a location specific irrigation scheduling and optimum fertilizer recommendation are necessary. Under such conditions this study is of immense help for proper utilization of command water for development of commercial crop like groundnut in this region.
RECOMMENDATIONS

On the basis of above findings, summer groundnut is advocated to be fertilized with 20: (40-60): 20 kg/ha NPK schedule. However, 0.8 IW/CPE schedule of irrigation is recommended to obtain better yield.

SUGGESTIONS FOR FUTURE WORK

Since Ca and S are the nutrients directly absorbed by pods, their optimum doses need to be found out for summer groundnut.

Harvesting of summer groundnut is often caught with erratic pre-monsoon rains, which faces problems of drying the pods. This can be avoided to some extent by adjusting the sowing dates. So, the work on optimum planting dates for summer groundnut may be taken.