SUMMARY

AND

CONCLUSION
Chapter-VI

SUMMARY AND CONCLUSIONS

The present investigation entitled "Effect of dates of planting and fertility levels on growth and yield of turmeric (Curcuma longa L.)" was conducted during two consecutive seasons of 2006-07 and 2007-08. The experiment was laid out in Split Plot Design having four planting dates (May 15, May 30, June 14 and June 29) as main plot treatments, four fertility levels (0:0:0, 120:60:60, 160:80:80 and 200:100:100 kg NPK/ha) as sub plot treatment and two varieties (NDH-1 (18) and NDH-9) as sub-sub plot treatments. The soil of experimental site was silty loam in texture with low organic carbon (0.38-0.40 per cent) and nitrogen (132.40-133.27 kg/ha), medium in phosphorus (15.85-16.39 kg/ha) and potassium (227.67-232.03 kg/ha). Rainfall 970.8 mm and 1213.6 mm was recorded during 2006-07 and 2007-08, respectively. Other meteorological data were congenial during the course of investigation and erratic climate was not occurred.

Data collected during the course of present investigation were subjected to statistical analysis in order to draw the valid conclusions. The important and salient findings emerged from this investigation and broad conclusions derived are summarized in the following passage.

➤ Percentage germination was not influenced appreciably by the planting dates during both the years.

➤ The crop planted on 14th June promoted non-significant growth characters viz., plant height, while in case of number of tillers/clump and number of leaves/plant during both the years of
investigation, it was noticed to be significant during 2006-07 and 2007-08.

➢ Duration of crop was increased non-significantly by dates of planting during both the years of experimentation.

➢ Improvement of weight, length and width of mother rhizomes was found better by delayed planting upto 14th June. Further delay in planting by the margin of 15 days i.e 29th June planting showed decreasing trend with respect to development.

➢ Non-significant increase in weight of primary and secondary rhizomes, number of primary and secondary rhizomes was recorded with the delayed planting upto 14th June. Last planting (29th June) discouraged the production of rhizome yield.

➢ Planting dates had non-significant influence on yield of rhizomes during both the years. Highest fresh weight of rhizomes (319.14 and 325.48 g/plant) was recorded under 14th June of planting as compared to rest of the planting dates during both the years. Lowest fresh weight of rhizomes (288.79 and 294.53 g/plant) was observed with planting done on 15th May.

➢ Total yield of rhizomes (q/ha) was also influenced with different planting dates during both the years of investigation. Maximum yield i.e. 398.98 and 406.33 q/ha were recorded under 14th June of planting during both the years followed by 30th May and 29th June planting. Minimum yield of rhizomes i.e. 360.88 and 367.64 q/ha were observed in planting on 15th May during both the years.

➢ Moisture per cent and dry matter per cent of the rhizome remained unaffected at various dates of planting.
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- Curcumin per cent and oleoresin per cent of the rhizome remained unaffected at various dates of planting.

- Yield of fresh rhizomes (kg/plot) was not found to be significant during both the years.

- Various fertility levels did not influence the germination percentage of rhizomes during both the years. Plant height was affected significantly with fertility levels. Maximum plant height i.e. 138.86 and 143.91 cm were recorded under fertility level of 200:100:100 kg NPK/ha being at par with 160:80:80 kg NPK/ha.

- Number of tillers/clump and number of leaves/plant also increased significantly with the increment in fertility levels. The difference between 160:80:80 kg NPK/ha and 200:100:100 kg NPK/ha were found to be at par and significant improvement to be noticed.

- There was a significant delay in maturity due to higher fertility levels. Shortest duration of the crop for maturity was recorded under control during both the years.

- Yield attributes such as weight of mother, primary and secondary rhizomes, number of primary and secondary rhizomes were significant in higher fertility levels.

- Length of mother rhizomes and width of mother rhizomes were significantly improved with increasing levels of fertility upto 160:80:80 kg NPK/ha beyond which the increase was found to be significant.

- Fresh rhizome yield (g/plant), fresh rhizome yield (kg/plot) and rhizome yield (q/ha) increased significantly with successive
increase in fertility level upto 200:100:100 kg NPK/ha. The difference between 160:80:80 and 200:100:100 kg NPK/ha was significant.

- Moisture per cent was non-significant and dry matter percent was influenced significantly due to various fertility levels. Dry matter per cent decreased with every increase in fertility levels while the moisture per cent increased.

- Curcumin per cent and oleoresin per cent were not found to be significant at various fertility levels.

- Germination per cent was not influenced appreciably by the use of varieties.

- NDH-1 (18) gave significantly more plant height, number of tillers/clump, number of leaves/plant in comparison to NDH-9 during both the years of experimentation.

- Duration of the crop was influenced significantly by the varieties.

- Among the yield attributes weight of mother, primary and secondary rhizomes, number of primary and secondary rhizomes, length of mother rhizomes and width of mother rhizomes were recorded superior with the NDH-1 (18).

- In regard to yield of turmeric cv. NDH-1 (18) produced the yield of 319.17 and 325.48 g/plant, yield of 8.08 and 8.24 kg/plot and yield of 398.97 and 406.33 q/ha during 2006-07 and 2007-08 respectively which was significantly higher than cv. NDH-9.

- Moisture per cent and dry matter per cent in both the cultivars touched the level of significance.
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> Curcumin per cent and oleoresin per cent in both the cultivars touched the level of significance.

**Interaction Effects:**

The turmeric crop planted on 14th June in conjunction with F3 (200:100:100 kg NPK/ha) fertility level induced highest growth characters viz., plant height, number of tillers/plant and number of leaves/plant while maximum duration of the crop was recorded with 15th May planting and F3 (200:100:100 kg NPK/ha) fertility level. Yield of rhizomes (kg/plot), yield of rhizomes (g/plant) and yield (q/ha) were recorded maximum with 14th June planting and 200:100:100 kg NPK/ha fertility level.

A tremendous response of interaction due to use of dates of planting on 14th June along with cv. NDH-1 (18) was observed with respect to weight of mother rhizomes.

Interactive response of fertility level and varieties showed significant difference in growth as well as yield attributes and yield viz., plant height, weight, length and width of mother rhizomes, weight of primary and secondary rhizomes, number of secondary rhizomes and yield of rhizome. Maximum interaction values were recorded in cv. NDH-1 (18) with fertility level F3 (200:100:100 kg NPK/ha) being at par with interaction of cv. NDH-9 and F2 (160:80:80 kg NPK/ha) fertility level, however, these interactive values were significantly superior over other interactions.

**Economics:**

The average maximum gross income Rs. 188257.00 and Rs.191748.00/ha were obtained under D^M [14th June planting, 200:100:100 kg NPK/ha and cv. NDH-1 (18)] while net return Rs. 132637.00 and Rs. 136128.00/ha were recorded under D^M [14th June planting, 200:100:100 kg NPK/ha + cv. NDH-1 (18)]. Maximum
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Benefit: cost ratio was recorded with D₄F₃V₁ treatment combination during both the years of investigation.

Conclusion:

On the basis of the results summarized above the following conclusions are being made out which could be useful for both scientists and farmers as well.

(i) For obtaining higher yield of rhizomes, planting of turmeric crop should be done upto 14th June.

(ii) The turmeric cv. NDH-1 (18) proved better than cv. NDH-9 and can be grown successfully for higher rhizome yield.

(iii) A fertilizer dose of 160:80:80 kg NPK/ha can be considered as a suitable dose for growth and yield of turmeric. This dose gave rhizome yield, comparable to the 200:100:100 kg NPK/ha, which recorded the higher rhizome yield but was at par with each other.

(iv) The interaction effect of planting dates and fertility levels, planting dates and varieties and fertility levels and varieties were found beneficial for yield of turmeric.

(v) Turmeric cv. NDH-1 (18) when planted on 14th June with 200:100:100 kg NPK/ha proved most remunerative and feasible for cultivation under the condition prevailing which represent the eastern part of Uttar Pradesh.

Recommendations:

Considering the aforesaid conclusions the planting of turmeric cv. NDH-1 (18) upto June 14th with the application of 160:80:80 kg NPK/ha may safely be recommended for the farmers of this area.