Chapter 7
Results and Conclusions

7.1 Soil Analysis

A] Physical properties of the soil

- **Particle Size Sand analysis**: Present findings showed that the sand of the study sites ranges from 4.66% measured at site Murumba (6) to 35.18% at site Kothari (9).

- **Particle Size Silt analysis**: Present findings showed that the silt of the study sites ranges from 31.46% measured at site Murumba (6) to 54.68% at site Ekarukha (2).

- **Particle Size clay analysis**: Present findings showed that the clay of the study sites ranges from 24.99% measured at site Kothari (9) to 63.88% at site Murumba (6).

- **Bulk-Density**: Present study showed that the bulk density of the soil from study sites ranges from 1.42 mg/m$^3$ to 1.78 mg/m$^3$. The minimum value was recorded at study site Amba (10), while maximum value was recorded at study site Kothari (9).

B] Chemical properties of the soil

- **Soil pH**: Present findings showed that the pH of the study sites ranges from 7.12 measured at site Puiani (12) to 8.20 at site Asegaon (18).

- **Electrical Conductivity (EC)**: Existing investigation shows that the electrical conductivity of the soil from study sites ranges from 0.09 dSm$^{-1}$ to 0.16 dSm$^{-1}$. The minimum value was recorded at study site Viregaon (1) while maximum value was recorded at study site Amba (10).

- **Calcium Carbonate (CaCO$_3$)**: The present study, the lower calcium carbonate content was recorded as 1.4% at site while site Viregaon (1) and Kothari (9) showed significantly high moisture content of 5.5% at site while site Amba (10).
- **Organic Carbon (OC):** In the present investigation, the lower organic carbon content was recorded as 0.18% at site Puiani (12) while site Amba (10) showed significantly high moisture content of 0.69%.

- **Organic Matter (OM):** This investigation, the lower organic matter content was recorded as 0.310% at site Puiani (12) while site Amba (10) showed significantly high moisture content of 1.190%.

- **Available Nitrogen (N):** In the present research work, the lower available nitrogen content was recorded as 65.85 kg/ha\(^{-1}\) at site Hatta (13) while site Amba (10) showed significantly high available nitrogen content of 144.60 kg/ha\(^{-1}\).

- **Available Phosphorus (P):** The present investigation, the lower available phosphorus content was recorded as 6.37 kg/ha\(^{-1}\) at site Hatta (13) while site Amba (10) showed significantly high available phosphorus content of 11.26 kg/ha\(^{-1}\).

- **Available Potassium (K):** In current examination, the lower available potassium concentration was recorded as 542.12 kg/ha\(^{-1}\) at site Hatta (13) while site Amba (10) showed significantly high concentration of 997.12 kg/ha\(^{-1}\).

- **Magnesium (Mg):** The present research work the low concentration of magnesium was recorded as 0.158% at site Ekarukha (2) and the higher concentration of magnesium was observed as 0.534% at site Basmath (4).

- **Calcium (Ca):** The current study shows the lower calcium concentration was recorded as 0.381% at site Girgaon (7) while Site Basmath (4) showed significantly high concentration of 0.754%.

- **Sulphur (S):** In present investigation, the lower sulphur concentration was recorded as 6.47 ppm at site Ekarukha (2) while site Murumba (6) showed significantly high concentration of 14.53 ppm.
• **Iron (Fe):** In present investigation, the lower iron concentration was recorded as 2.99 ppm at site Amba (10) while site Kothari (9) showed significantly high concentration of 13.30 ppm.

• **Manganese (Mn):** The present examination, the lower manganese concentration was recorded as 6.28 ppm at site Girgaon (7) while site Kothari (9) showed significantly high concentration of 24.50 ppm.

• **Zinc (Zn):** In present investigation, the lower zinc concentration was recorded as 0.47 ppm at site Puiani (12) while site Amba (10) showed significantly high concentration of 0.95 ppm.

• **Copper (Cu):** In the present examination, the lower copper concentration was recorded as 2.57 ppm at site Asegaon (18) while site Kothari (9) showed significantly high concentration of 8.85 ppm.

**7.2 Germination Rate:** The germination was highest observed at from the cultivation date of 15-21 days. Among the high germination was on 4cm depth was observed and medium was 8 cm depth and low was at 12 cm depth was noticed.

**7.3 Effects of Depth in Growth:** Growth The excellent growth was observed at 8 cm depth. The medium growth was observed at 12 cm depth and poor growth was observed at 4 cm depth.

**7.4 Yield:**

- High wet turmeric weighing of soil sample site Amba (10) 2.07 kg.
- Low wet turmeric weighing of soil sample site Asegaon (18) 1.52 kg.
- High dry turmeric weighing of soil sample site Murumba (6) and Amba (10) 0.66 kg.
- Low dry turmeric weighing of soil sample site Asegaon (18) 0.53 kg.
7.5 Quality Contents:

- **Curcumin content:** In the present investigation, the lower curcumin content concentration was recorded as 4.16% at site Hatta (13) while site Kothari (9) showed significantly high concentration of 8.84%.

- **Protein content:** In the present investigation, the lower protein content concentration was recorded as 190µg/gm at site Khandegaon (3) while site Puiani (12) showed significantly high concentration of 530µg/gm.

II] Conclusions

The researcher is come on the final summary and conclusion on the basis of last two years of investigation. These are summarized below in detail

- This soil samples which includes sand particle size above 10%, turmeric yield is below 1.50 kg and particle size below 7%, turmeric yield is above 1.80 kg.

- These soil samples which includes silt particle size above 35%, turmeric yield is below 1.50 kg and particle size below 35%, turmeric yield is above 1.80 kg.

- Soil samples which include clay particle size above 50%, turmeric yield is above 1.80 kg and particle size below 40%, turmeric yield is below 1.50 kg.

- This soil samples which includes bulk-density above 1.55 Mg/m$^3$, turmeric yield is below 1.50 kg and bulk-density below 1.50 mg/m$^3$, turmeric yield is high above 1.80 kg.

- Soil samples which include pH above 7.5, turmeric yield is below 1.50 kg and pH below 7.0 to 7.5, turmeric yield is above 1.80 kg.

- This soil samples which includes electrical conductivity above 0.12 dSm$^{-1}$, turmeric yield is above 1.80 kg and electrical conductivity below 0.11 dSm$^{-1}$, turmeric yield is below 1.50 kg.
• Soil samples which include calcium carbonate above 2.0%, turmeric yield is below 1.50 kg and calcium carbonate below 1.8%, turmeric yield is above 1.80 kg.
• These soil samples which include organic carbon above 0.40%, turmeric yield is above 1.80 kg and organic carbon below 0.35%, turmeric yield is below 1.50 kg.
• This soil samples which includes organic matter above 0.65%, turmeric yield is above 1.80 kg and organic matter below 0.60%, turmeric yield is below 1.50 kg.
• Soil samples which include available nitrogen above 110 kg/ha\(^{-1}\), turmeric yield is above 1.80 kg and available nitrogen below 100 kg/ha\(^{-1}\), turmeric yield is below 1.50 kg.
• These soil samples which include available phosphorus above 9.00 kg/ha\(^{-1}\), turmeric yield is above 1.80 kg and available phosphorus below 8.00 kg/ha\(^{-1}\), turmeric yield is below 1.50 kg.
• This soil samples which includes available potassium above 650 kg/ha\(^{-1}\), turmeric yield is above 1.80 kg and available potassium below 550 kg/ha\(^{-1}\), turmeric yield is below 1.50 kg.
• Soil samples which include magnesium above 0.350%, turmeric yield is below 1.50 kg and magnesium below 0.200% to 0.350%, turmeric yield is above 1.80 kg.
• These soil samples which include calcium above 0.550%, turmeric yield is below 1.50 kg and calcium below 0.350% to 0.500%, turmeric yield is above 1.80 kg.
• This soil samples which includes sulphur above 11.00 ppm, turmeric yield is above 1.80 kg and sulphur below 9.00 ppm, in yield is below 1.50 kg.
• Soil samples which include iron above 7.00 ppm, turmeric yield is above 1.80 kg and iron below 3.00 to 6.00 ppm, turmeric yield is below 1.50 kg.
• This soil sample which includes manganese above 15.00 ppm, turmeric yield is above 1.80 kg and manganese below 6.00 to 11.00 ppm, turmeric yield is below 1.50 kg.
• This soil samples which includes zinc above 0.60 to 0.70 ppm, turmeric yield is above 1.80 kg and zinc below 0.45 to 0.55 ppm, turmeric yield is below 1.50 kg.

• Soil samples which includes copper above 3.00 to 4.00 ppm; turmeric yield is above 1.80 kg.

• However, except from its uses as a medicinal plant, the fresh juice, the aqueous extracts, and the essential oil of the plant are credited with interesting pesticidal properties against certain pests of agricultural importance as well as a noticeable repellent activity against noxious mosquito species.

• Thus, organic manure like neem cake was best fitted natural fertilizer for turmeric cultivation.

• The planting depth at 8 cm is found superior in growth attributes and turmeric yield.

• The curcumin content of turmeric rhizomes was ranged in between 4.14 to 8.84 percent.