CHAPTER VII

SUMMARY AND CONCLUSION

In the present investigation older alluvium of Brahmaputra valley, Assam was identified using geomorphological map of Assam as well as interpretation of satellite image of the study area. Three representative locations viz- Majuligarh, Negheriting and Makri chariali were selected for soil profile study. Along with older alluvium soil profiles, profiles of associated soils were also exposed for comparative study. Dominant geo-environmental factors and processes of the formation of older alluvium were identified. Ground water prospects of the investigated area and land use and socioeconomic aspects of the area were also studied.

7.1 Summary

The salient features of the research findings are summarized below:

- Soils

Older alluvium soil profiles were found to be very deep and highly developed. The soils were dark yellowish brown to reddish brown in colour and clay loam to clay in texture. Clay content increases with increase in depth. The soil consistence study showed that the soils were sticky on wetting and hard when dry. Mottles observed only in lowermost horizon of soil profiles. The soils were very strongly to extremely acidic. Medium to high organic matter were found in surface horizons which decreases with depth. Cation
exchange capacity, exchangeable cations and base saturation were found to be low. The soils were found to be low to medium in available N, P2O5 and K2O content. The soils of the Majuligarh and Negheriting were classified as Alfisols and that of Makri were classified as Ultisols. Mapping of the soils of the study area were done with appropriate legends.

The associated soils (old flood plain) exhibited distinct variation with older alluvium soil and are having moderately developed soil profile. These were grey brown to brownish yellow in colour and lighter in texture. Mottles were found in almost all the soil horizons. Soils were less sticky and slightly hard and less acidic than older alluvium soil.

- **Geo-environmental aspects**

The older alluvium of the Brahmaputra valley was formed in the Pleistocene age and is much older than associated alluvium. The paleoclimatic changes affected its formation during the long past period. Climatic parameters like rainfall, temperature and humidity affected it and made it a distinct type. Weathering, erosion, Relief and drainage condition affected its formation. Processes like leaching, eluviation, illuviation and brownification, ferrugination and rubification were operated on it and transformed it in to the present form.

- **Land Use and socioeconomic condition**

The land use data of the study area revealed that out of the 3747.89 sq. km. of reported area of land 2454.1 sq. km. (65%) is cultivated land. However less than 10% of the cultivated land is irrigated, others are still to be done. An area of 246.35 sq. km. (7%) is
cultivable waste. Twelve percent of the land is covered by forest. A major portion of the cultivated land is covered by plantation crops particularly tea. A number of valuable trees are found to grow in the study area. Socioeconomic condition of the study area is not up to the mark. Though agro-based industries, particularly tea industry is flourishing in the area, most of the people are in lower economic strata.

- **Land Evaluation**

  Land of the investigated area was evaluated through Land Capability classification and soil site suitability for crop growth. Suggestions were made for better use and management of the studied land. The land was found to be suitable for both tea and rubber.

- **Ground water resource**

  The aquifer system consists of materials of highly weathered rock comprising gravels, pebbles, sands and silts. Moderate yield prospects of ground water were found in the area. The depth of ground water table is moderately deep. Shallow tube-well and ring well development is suggested.

- **Problems**

  The major soil problems of the study area are high soil acidity, low Cation exchange capacity, poor base saturation and relatively poor physical condition of the soil for crop growth. Along with these soil problems there are problems like soil erosion and
degradation, water stress during dry period, lack of irrigation facility and moderate ground water prospects.

- **Strategies for management**

  A number of strategies for better management of land and its resources were found out. These includes land management by growing of green manuring crops, use of Farm yard manures and compost, afforesration, soil conservation and soil acidity management. Management of water resources through rain water harvesting, excavation of canals, tanks and ponds along with development of shallow tube wells were suggested. Land use planning includes growing of plantation crops, horticultural crops and timber tree plantations.

### 7.2 Conclusion

Older alluvium of the Brahmaputra valley, Assam occupies not more than five percent of the geographical area of Assam but this area is economically significant. It has got high potential of growing plantation and horticultural crops along with economic plantations and agro based industrial development. The greatest advantage of this area is that it is not affected by the problem of flood. These are manageable lands in which improved agricultural technology can be practised. A number of alternative land use is also possible in this area. The area is quite distinct from the adjoining areas in its land form and soil characters. A systematic approach covering the whole older alluvium area for its sustainable development considering social, economic and environmental aspects is need of the hour.