

6.1 Major Finding

The major findings of the study are as follows:

1. The nature of soil salinity in Purba Medinipur district gradually decreases from the coast towards the interior. The salinity of soil along the coast is quite high. Soil salinity of 37 percent villages in the district is no saline (S0), 16 percent villages slightly saline (S1), 44 percent villages moderately saline (S2) and 3 percent villages high saline (S3) in nature.
2. The intense drainage system has developed in the district. The drainage system consists of river, tributaries and canals. The saline water of the sea enters the interior of the land by this drainage system during the tide and inundated the land.
3. Tidal water reaches almost part of the district through different channels.
4. The salinity of tidal water tends to decrease with the distance after entering the interior of the land through different channels. Therefore, the drainage system near the coast is dominated by brackish water and gradually decreases towards the inside. In the district, about 14 percent villages are inundated by low level salinity of tidal water, 19 percent villages by medium level salinity, 20 percent villages by high level salinity, 13 percent villages by very high level salinity and 34 percent villages are inundated by extremely high level salinity of tidal water.
5. In the district, crops are cultivated in three seasons in an agricultural year such as Kharif cultivation, Rabi cultivation and Zaid cultivation.
6. Amon and Boro paddy is the principal crops in the district. Amon paddy is produced in most part of the district during kharif cultivation. However, Boro paddy cultivation is not everywhere in the district. The vegetable is cultivated in all the season and more or less everywhere. Although this cultivation is greater in winter, then summer season. The

important cash crops of the district are betel leaf, flower and jute. Flower and betel leaf is produced throughout the year and jute only kharif season. Betel leaf and flower of the district is exported to the all over India.

7. Cropping intensity is higher in 37 percent villages, medium in 46 percent villages and low in 17 percent villages of the district. Highest cropping intensity is above 150 percent. It is noticeable that most of the villages with high cropping intensity are covered by younger alluvial soil.
8. Purba Medinipur district is under the five crop combination zone. Single crop combination is found in 3 percent villages, double crop combination in 29 percent villages, three crop combinations in 44 percent villages, four crop combinations in 18 percent villages and five crop combinations in 6 percent villages of the district. Most villages of four and five crop combination are located in the northern part of the district and most villages of three crop combination are located along the coast.
9. The overall crop diversity of the district is medium to high. Crop diversification is high in 38 percent villages, medium in 51 percent villages and low in 11 percent villages of the district. Most of villages with high crop diversification are located in the northern part of the district.
10. Except some crops, the production rate of all crops from 2003-04 to 2013-14 is almost the same, even in the case flower and fruit production.
11. All the villages of the district have sufficient cultivated land. Such as, 40 percent villages of the district have more than 80 percent cultivated land and 46 percent villages have 60 to 80 percent cultivated land of their total land.
12. There is highly variation in the use of cultivated land in different seasons. During the kharif crop season most of the arable land is cultivated throughout the district. But in rabi and zaid crop season large amount of arable land remain vacant due to the lack of fresh

water. Such as during the rabi crop season, in 44 percent villages of the district more than 80 percent arable land remains vacant and 60 to 80 percent arable land remain vacant in 45 percent villages. On the other hand, during the zaid crop season, in 23 percent villages more than 80 percent arable land remains vacant, in 28 percent villages 60 to 80 percent arable land and 20 percent villages 40 to 60 percent arable land remain vacant. The amount of gross non ploughed arable is more in the southern and western villages of the district.

13. The forest of Purba Medinipur district is mainly man made, known as social-forestry. Total forest cover area of the district is 80119.92 hectares. Two types of forest are created, forestry by farmer and forestry by government and semi-government organization. The amount of forest planted by farmers is 90.59 percent and 9.41 percent of government and semi-government organisation.
14. The total amount of inland fishery is 8.97 percent out of total land of the district. It is remarkable that the large amount of land is converted into the fishery. In 2013 the amount of fishery was 4.21 percent, whereas in 2019 it increased to 8.97 percent. The main reason is that the farmers earn maximum profit from his land through fishery than crop cultivation.
15. There are various environmental problems arising where fishery has developed like deforestation, water logging, destruction of ecosystems, soil erosion, eutrophication, water pollution, loss of agricultural production etc.
16. Some small to micro agro-based industry has developed in the district. Major is the food and beverage processing industry. There is more rice mill and others are very few. There is only one cold storage. Total agro-market in the district is 321 large to small with different market frequency, such as daily, tri-weekly, bi-weekly and weekly.

17. The district is divided into 8 micro-zone based on the drainage system. Rasulpur basin hydro-system is the largest zone in the district. All the basins have above 50 percent cultivated land of their total land. Gross non ploughed arable is high in the Pichaboni basin hydro-system about 193.32 percent. All the villages of Durbachati sub-basin hydro-system are high cropping intensity. Five crop combination villages are more in the downstream sub-basin of Kangsabati River. Crop diversification is high in the Durbachati sub-basin hydro-system and downstream sub-basin of Kangsabati River. The highest amount of forest cover area is found in the Champa basin hydro-system and Durbachati sub-basin hydro-system about 30.65 and 30.3 percent of the total area. The large amount of fisheries is developed in the downstream sub-basin of Kangsabati river about 21.47 percent of the total area.
18. There are 14 categories of villages in the district according to salinity level of soil and inundated tidal water. The highest number of villages such as 844 is under the category of Moderately Soil Salinity (MSS) with Extremely High Salinity of Water (EHSW), then 481 villages are under the No Saline Soil (NSS) with Medium Salinity of Water (MSW).
19. In the Purba Medinipur district, four suitability zones are found for fish farming. There are 568 villages which are very highly suitable for fish farming, 1049 villages high suitable, 1243 villages moderately suitable and 139 villages are low suitable for fish farming.

6.2 Conclusion

From the study, it can be said that there are many opportunities for agro-natural resources development of the district but a well management technique is required.

1. Any planning for agro-natural resources can be taken based on the physiographic micro-zone.
2. Crops should be selected understanding the nature of the environment.

3. If a place is not suitable for crop cultivation, then fish can be farmed there if it is suitable for this and it must be scientifically and environmentally friendly.
4. The amount of forest land of the district is quite low, so afforestation is very essential.
5. The number of agro-industry of the district is very few. So, the agro-industry needs to be established and the export system needs to be improved.
6. The government needs to introduce well and innovative policies, so that the farmers are encouraged to grow more crops.
7. Lastly, the local people are the creators of resources, the patron of the resources and also the destroyers of resources. So, local people are at the root of resources management. Therefore, the real purpose will be achieved only if the interests of the local people are fulfilled.

The study will be a very helpful in making various plans, decisions and development in the district of Purba Medinipur. The table 6.1 shows how the different initiatives of the study can help in various developments. At present, this discussion will help in many ways to prevent the resources depletion. This discussion can play a significant role in meeting the needs of the present generation as well as the needs of future generations.

Table 6.1 Different initiatives and their benefits to development.

Initiatives	Benefits
Physiographic micro-zone	micro-level planning, development from the grass root level
Crop selection understanding the nature of soil and water	Proper use of vacant cultivated land, increases of cropping intensity
Development of fishery on suitable land	Increases financial earning, proper use of land
Scientific cultivation (crops & fish), afforestation	Maintain the environmental balance, ecological development
Use of tidal water	Groundwater propagation, increases of production
Build of agro-industry, infrastructure, export arrangements	Economic development, increases of production
Government policy in the positive	Increases of farmer's enthusiasm, responsibility and courage.

6.3 Future scope

- i. The study has been shown the village wise nature of soil salinity and inundated tidal water salinity for agricultural management of the district but, if the other elements of soil and water such as nitrogen, phosphorous, potassium and pH etc. are considered for this analysis, the agricultural management can be done better.
- ii. In this study area, distribution of crops has been shown on the basis of village but, if it can be identified the land for different crops in different seasons from the satellite image, the cropping pattern will be revealed more thoroughly and the agricultural management can be done better.
- iii. This study reveals the village wise distribution of forest with all types of species but, it can be shown by identifying the individual species which will help in understanding the nature of the growing species and endangered species can also be identified.
- iv. The study has determined the suitability of fishery at the village level, but it can be determined the land suitability for fishery from the satellite image at the micro level, the land management can be done more appropriately.