GIS Uses for Monitoring Soil Quality and Assessing pH and EC for Crop Productivity

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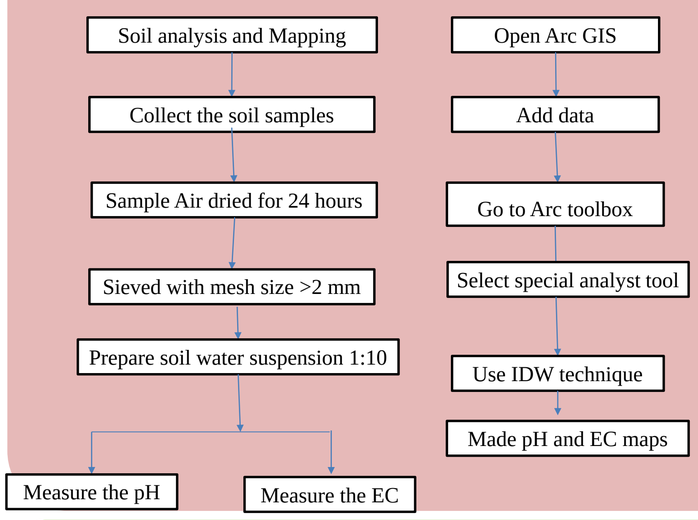
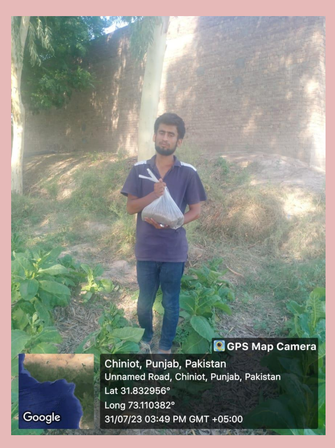
Introduction:

In Pakistan's agricultural economy, agriculture accounts for around 50% of employment, generates approximately 24% of the country's GDP, and sustains more than 67% of the country's people, the majority of whom live in rural regions. Crop productivity mainly depends soil quality. A geographic information system (GIS) is a computer system designed to collect, store, query, analyze, and geographic data.GIS techniques are used to learn the soil analysis and mapping of Chiniot City. Soil analysis and mapping using ArcGIS involves the integration of diverse soil-related data, including soil samples, surveys, and spatial datasets, within the ArcGIS software.

Materials and Methods:





Soil Sampling

Figure no: 01

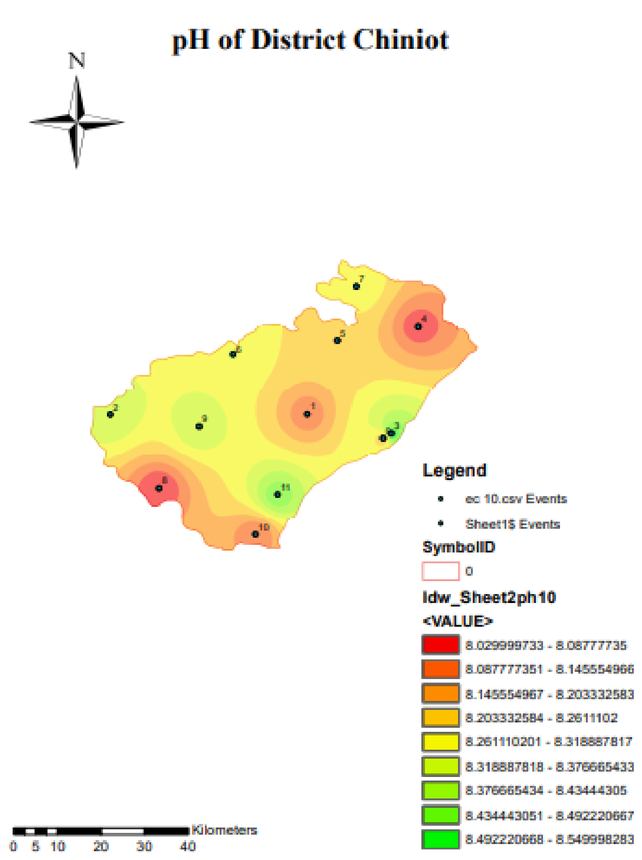
Preparation soil water suspension 1:10

Results:

- The soil of district of Chiniot is slightly alkaline in nature except a sample named CHT04 where 7.05 pH was recorded.
- The EC of soil district Chiniot is permissible limit. It is non saline soil.

Table no: 01 EC and pH of soil samples collected from various locations in district Chiniot

Sample No.	pH of 1:10 soil solution	EC of 1:10 soil solution
CHT 0	8.20	0.16
CHT 01	8.10	0.24
CHT 02	8.37	0.17
CHT 03	8.55	0.17
CHT 04	7.05	0.25
CHT 05	8.22	0.16
CHT 06	8.32	0.20
CHT 07	8.32	0.14
CHT 08	8.03	0.45
CHT 09	8.37	0.17
CHT 10	8.09	0.27
CHT 11	8.48	0.37



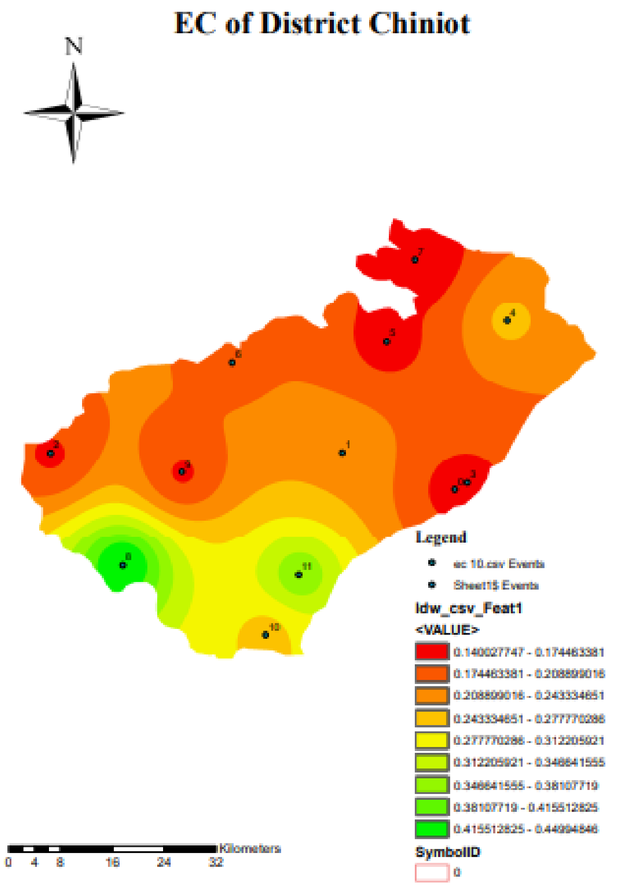


Figure No: 02

Conclusions:

- **The pH of district Chiniot was highest i.e., 8.55 in case of sample no. CHT 03 and was lowest i.e., 7.05 in case of sample no. CHT 04.**
- **The EC values of district Chiniot suggested that all the soil samples exhibited EC values within the permissible limits.**

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