

**Expert Consultation on “Methodologies for Soil Mapping and Estimation of Crops in  
Meghalaya and Action Plan for the same”**

**2<sup>nd</sup> August 2024**

**Venue: MegArise Building, Shillong**

**Background**

The soil mapping and fertility evaluation is an important decision-making tool for effective soil fertility management. There are several techniques for the evaluation of soil fertility status, latests remote sensing technologies along with soil profiling following stratified sampling design is one of the approaches which is commonly used these days. It identifies bodies of soils that can be recognized as natural units, predicts and delineates their areas on maps, and identifies the delineated areas in terms of defined kinds of soils. Soil analysis includes physical and chemical properties which symbolize prerequisite for sustainable soil management.

Soil properties vary spatially from a small to larger area might be due to effect of intrinsic (parent materials and climate) and extrinsic factors such as soil management practices, indigenous fertility status, crop rotation and nature of standing crop. The use of modern technologies is crucial for easy access, retrieval and manipulation of voluminous data and for the derivation of spatial maps based on soil sample analysis data collected from different locations. Additionally, describing the spatial variability of soil fertility across a field has been made more convenient with such technology. It facilitates manipulation of spatial and attributes data useful for handling multiple data of diverse origin. Soil Health Management (SHM) is one of the most important interventions that aims at enhancing agricultural productivity especially in rainfed areas focusing on integrated farming. SHM aims at promoting Integrated Nutrient Management through judicious use of chemical fertilizers including secondary and micro nutrients in conjunction with organic manures and bio-fertilizers for improving soil health and its productivity.

Meghalaya, is known for its hilly terrain and diverse ecosystems, is essential due to its significance in agriculture, environmental management, and infrastructure development. Some key aspects specific to soil mapping in Meghalaya are:

**Diverse Soil Types:** Meghalaya exhibits a variety of soil types influenced by its topography, climate, and vegetation. These include sandy soils in the plains, red and yellow soils in the hills, and alluvial soils along riverbanks.

**Agricultural Importance:** Agriculture is a primary occupation in Meghalaya, with a focus on crops like rice, maize, and fruits. Soil mapping helps farmers determine suitable crops, optimize fertilization, and manage soil erosion.

**Environmental Considerations:** Meghalaya's unique ecology, including its rich biodiversity and sensitive ecosystems like forests and wetlands, necessitates soil mapping to assess environmental impacts and plan sustainable development.

**Infrastructure Development:** Effective soil mapping supports infrastructure projects by identifying suitable sites for construction, road building, and other development activities while minimizing environmental impact.

Overall, soil mapping in Meghalaya plays a crucial role in sustainable development, ensuring that agricultural practices are optimized, environmental impacts are minimized, and infrastructure development is conducted responsibly to preserve the state's natural resources and biodiversity.

Crop Estimation in Meghalaya, like in other agricultural regions, involves assessing the expected yield of various crops grown in the State. Here are the key aspects related to crop estimation in Meghalaya: Meghalaya cultivates a variety of crops including rice, maize, potatoes, fruits (like pineapple and oranges), spices (ginger and turmeric), and vegetables. Each crop has its own growing season and specific requirements.

The Government of Meghalaya often supports crop estimation through various initiatives such as providing subsidies, disseminating agricultural information, and promoting best agricultural practices. However, Meghalaya's hilly terrain can pose challenges in accessing and assessing agricultural areas, especially during monsoon seasons. Additionally, the state experiences heavy rainfall and varied climatic conditions, which can affect crop growth and yield unpredictability.

It is essential to ensure accurate and timely data collection across diverse agricultural landscapes for reliable crop estimation as the Governments the crop estimation data to formulate agricultural policies, plan for food security, and allocate resources for crop insurance and subsidies.

Farmers and traders may also use crop estimation data to anticipate market trends, plan harvest schedules, and negotiate prices.

Thus, various methodologies such as field surveys, satellite imagery and remote sensing and crop cutting experiments are generally followed for crop estimation to provide inputs for effective planning, sustainable farming practices, and economic development. Accurate estimation helps stakeholders make informed decisions and mitigate risks associated with agricultural production.

To discuss the above methodologies by the senior officials of the State Government Departments in presence of experts, a meeting has been convened for reviewing the on-going projects and studies done in the past so that course correction, if any, may be adopted and also a blueprint for further action plan can be prepared.