GEO-ENABLED DECISION SUPPORT SYSTEM for Sustainable Agriculture

Geo4SDGs, GWF 2018
19th January 2018
Setting the context

Climate change has a complex impact on agriculture – Environmental, Social and Economic

Agricultural processes are inherently complex relying on multiple disparate factors

While climate change is impacting agriculture and food security, practices deployed for food production are also impacting climate change by resulting in increase in greenhouse gases

Constantly changing dynamics of nature, calls for constant tweaking of agricultural production systems & methodologies

We are dealing with challenges on multiple fronts

No “single solution” for agricultural management can “fit for all”
Need of the hour

- **Inclusivity** – Interventions can no longer be addressed in isolation
- **Interconnectivity** – Connectivity between multiple disciplines/sectors is the key
- **Monitoring, evaluation and learning** - Knowledge based system critical
- **Incentivizing** – Stakeholders to adopt and leverage technology
- **Scalability** – Vital to address changing dynamics and complexity
Need of the hour

Smart Decisions are possible only when our agricultural ecosystem can quickly and efficiently - gather information across the disciplines, put them in a perspective, analyze them and use actionable intelligence to respond to situations.

The need of hour is to have ability to translate "data" into "actionable information" by ingesting, organizing, managing, analysing, and disseminating data from multiple disparate sources, on a common operational platform.

This is where a “Geo-Enabled Decision Support System” for agricultural management becomes critical for sustainable agriculture.
Geo-Enabled DSS for Sustainable Agriculture

RESPONDERS

DECISION SUPPORT ● DASHBOARDS ● SITUATIONAL AWARENESS ● ACTIONABLE INTELLIGENCE ● ANALYTICS

Asset Management ● Resource Management ● Farmer Engagement ● Emergency Response ● Incident Management

FACILITATORS

SUSTAINABLE AGRICULTURAL PRACTICES ● INSTITUTIONAL STRENGTHENING ● RESEARCH & DEVELOPMENT ● HUMAN RESOURCE DEVELOPMENT ● CREDIT FACILITATION ● INFRASTRUCTURE STRENGTHENING ● PUBLIC AND PRIVATE PARTICIPATION (PPP) ● FARMER WELFARE

Data Governance

Data Management

Data Processing

Data Fusion

Data Integration

Data Security

Acquire

Process

Fuse

Manage

Share

Deliver

Non-Spatial Data

Spatial Data

GEO-ENABLED DSS PLATFORM

Data Governance

Data Management

Data Processing

Data Fusion

Data Integration

Data Security

3rd party applications, Devices and Sensors

Partnership

Participation

Sharing

Collaboration

Demographic Data, Socio-economic Data
Agricultural Data
Water Resources data, Water Quality Data,
Knowledge bank, Market Data,
Procurement Data, Price Data
Pests, Genetics, Diseases, Assets,
Meteorological data, Emergency Services
Emergency Communication Plan Organizations,
Resources
SOP’s, Historical Data

Geographic Data, Maps
Aerial Data, Satellite Data
Topographic Data, Cadastral Data
Land use Data
Hydrographic Data,
Hydrology, Soil Data
Weather Data

Sustainability Goals

Geo-Enabled DSS for Sustainable Agriculture

Addressing Agenda 2030
18 - 19 January 2018

Geo 4 SDGs
Connecting dots

PARTNERSHIP

PARTICIPATION

SHARING

COLLABORATION
Geo-Enabled DSS Framework

Comprehensive historical and current data sets Viz.
- Climate, Soil, Topography
- Pests, Genetics
- Irrigation, Yields, Assets
- Land-run-off and erosion
- Soil properties (soil nutrients, fertility, crop suitability),
- Land cover and land use
- Distribution of crops
- Geo-hydrology (geology, surface water, ground water)
- Meteorology (precipitation, temperature, soil moisture, radiation, evapotranspiration),
- Water usage (current and projected),
- Water harvesting structures
• Better integration of watershed development, agriculture programs, and related research.
• Better planning, capacity building, incremental monitoring and evaluation, and post-harvest value addition
• Developing agro-climatic zone specific technology to enable rural communities to better adapt to the effects of climate change.
• Characterization of natural resources at cadastral level for resource potential and conservation
• Help farmers to take up innovations, have better access to a range of information tools and support mechanisms, improve value addition, and diversify crop, horticulture and livestock productivity, within particular farming systems.
• Better understanding of the hydrological dynamics, climatic variability, etc based on good science, and integrated into watershed plans - Better targeted interventions.
• Convergence between livelihoods, availability and access to food, ecosystem and human health
• Strengthen existing delivery extension systems, agriculture schemes and value chains, to increase opportunities to adopt new technologies.
• Strengthen financial and technical convergence between programs through integrated planning and monitoring, and developing innovative tools and processes
• Facilitate applied research studies across key thematic areas including integrated landscape management and agricultural intensification, climate smart agriculture, and agriculture value chains.
• Integrated decision-support models for scenario building and analysis – Prioritizing of land and water interventions
Thanks

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