GEO WEEK & MINISTERIAL SUMMIT 2023

Flash Talk: The Initiative of Attainable Yield Gap in Africa

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Flash Talk: The Initiative of Attainable Yield Gap in Africa

Towards Africa's SDGs2

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Outline

Background

Initiative research content

Activities implemented

Outlook
- The countries along the Asia and Africa face a huge challenge in meeting their food security goals.

- Africa is the hotspot regions suffering from food shortage.

- Find a potential solution to address food insecurity issue is urgent for African countries.

Source: World Food Programme
Background-Food Insecurity Issues in Africa

- **SDG2 target:** By 2030, end hunger and ensure access by all people to safe, nutritious, and sufficient.
- The FAO SDG2 Indicator tracker showed that Africa has the highest proportion of moderately to severely food-insecure people.

![Global Food Security Annual report, 2021](image)

- Ways to increase crop production in Africa
  - Expand the plating area of cropland
  - Improve crop yield and reduce the yield gap between actual yield and potential yield

Objectives of the Achievable Yield Gap (AYG) initiative: to identify the gap between actual and potential yields that can be achieved at national and sub-regional levels, quantify the key drivers, and provide support to reduce the gap in support of achieving SDG 2 in Africa.

- Quantify the actual crop yield
- Quantify the potential crop yield
- Identify the limiting factors affecting the yield gap
- Policy recommendation to achieve SDGs2
Method: Spatial Allocation Model

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Production_{ij} = F(Area_{ref}, Agri - climatic, Agronomic, Irrigation, LAI, NPP, Soil, DEM)_{ij}

\[ \omega = \frac{\text{StasPro}_{tar}}{\sum_{i=1}^{n} \text{PrePro}_{tar}} \]

\[ \text{StasArea}_{tar} = \text{Area}_{ref} \times \varepsilon \]

\[ \varepsilon = \frac{\text{StasArea}_{tar}}{\text{Area}_{ref}} \]
Crop Production data and Performance Assessment

Crop Production data in Maize, Wheat, Rice, and Soybean from 2010 to 2020

Performance assessment
Crop Production data Sharing On CropWatch and CBAS

Crop Production data in CropWatch Cloud Platform

Crop Production data in CBAS platform

Data accessing address: https://essd.copernicus.org/preprints/essd-2023-346/
Activities implemented

Workshop in Beijing (Oct 2023)

Workshop in NARSA of Nigeria (Aug 2023)

Workshop in Beijing (Oct 2023)

Regional Workshop in Mauritius (Aug 2023)
Crop Production Outlook and the State of Food Security

- Global staple cereal and oil crops production of 2023 is estimated to reach 2,876.96 million tonnes, up 0.6%

- Drought mitigation capabilities in global staple cereal and oil crops major producing regions have improved significantly with measures including improved irrigation, mulching, conservation tillage, crop structure adjustment and planting drought-resistant varieties

- Global fallow land area reduced 46.4% 2022 from 2000, indicating the global cropland utilization efficiency has steadily increased