Advanced Satellite-based crop monitoring to increase resilience in the face of global food insecurity

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PRESENTATION OUTLINE

1. Basic information on Niger’s Agriculture,

2. Main crops and their phenology

3. Agricultural projects related to remote sensing,

4. Current problems,

5. Requirements and Expectation
1. Basic information on Niger’s Agriculture 1/3

- Farming is the main source of livelihood for rural dwellers (84% of rural population)

- Agriculture is mainly a subsistence crop production which is characterised by little or no input use at small scale level

- Two cropping seasons: rainfed crop production (May – October) and irrigated crop production (November – March)
1. Basic information on Niger’s Agriculture 2/3

- Millet is the most important and staple crop during the wet season (> 400mm).
- Millet is usually intercropped with cowpea, sorghum, or groundnut.
- Sorghum is grown widely in the south, even in some of the driest areas.
- Other subsistence crops are maize, rice, wheat, cassava, groundnut,
- Along the Niger river, rice is grown as a flooded or irrigated crop and near ponds as an irrigated crop too.
- tomato, and onions are some of the irrigated crops.
1. Basic information on Niger’s Agriculture 3/3

• Importance and type of intercropping (2004-2008 Agricultural census)

Main types of intercropping 85%

• Millet+ cowpea: 42 %

• Millet+ Sorghum+ Cowpea : 35%

• Millet + Sorghum: 8%

• Sorghum+ cowpea
• Millet + cowpea+sorrel
• Millet+ Sorghum+ groundnut
• Millet+ cowpea+groundnut 1 to 3 % each
Crop production statistics for different regions of Niger (2023) in metric tonnes

<table>
<thead>
<tr>
<th>Region</th>
<th>Millet</th>
<th>Sorghum</th>
<th>Maize</th>
<th>Rice</th>
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Source: DS/MAG/EL
2. Main crops and their phenology

1. Cereal crops:
   - MILLET
     Phenology: Germination/
   - SORGHUM
     Phenology: Three leaf stage, side shoot/tillering, stem elongation, boot stage, flowering, milk stage, dough stage and maturity

2. Leguminous crops
   - COWPEA
     Phenology: Germination, leaf stage, vegetative growth, flowering, pod formation, pod filling and ripening

3. Oil crops
   - GROUND NUTS
     Phenology: Germination, leaf development, formation of side shoot, stem elongation (crop cover), inflorescence, flowering, development of fruit and seed, ripening of seed
3. Agricultural projects related to remote sensing

- **Niger- Morocco technical cooperation**: capacity building at (CRASTE-LF _ Morocco)

- Crop production, **fodder estimation** and monitoring small water bodies through remote sensing

- Training on drone technologies for agricultural survey
3. Agricultural projects related to remote sensing

❖ AGRHYMET REGIONAL CENTER
Capacity building using SARRA_ H/O MODEL to estimate crop yield
SARRA: Système d'Analyse Régionale des Risques Agroclimatologiques
Millet, Sorghum, Maize and rainfed Rice

https://sarra-h.teledetection.fr/

❖ African risk view (ARV) of ARC to monitor drought
4. Current problems in agriculture development

- Uneven rainfall distribution: over a third of the country has inadequate rainfall, and agriculture is concentrated in the southern and southwestern border areas.

- Crops planted during the rainy season have their productivity dependent on rainfall.

- Irregular rainfall and inadequate soil and crop management techniques contribute to poor yields and high annual variability in production.
5. Requirements and expectation, in agriculture development

- Understanding of the climate and, in particular, the variability in the amount and distribution of rainfall

- Shifting from rainfed agriculture to irrigated crop production

- Financing the country agricultural transformation
THANK YOU FOR YOUR ATTENTION