

# Role of Geospatial Science, Technology and Applications (GeSTA) in Dryland Systems

Ensuring Food Security

Startup 35.47m  
Total 122.7m

**Gender**  
Address social inequities, greater roles and priorities



Geospatial commons, KM sharing, stakeholder feedback



**Youth**  
Engaging and empowering young gen. by creating opportunities



156 Remote sensing missions in orbit  
>12 Sensors potential in CRPs/IRPs, etc.  
>6 are free

Mapping present, emerging & future land use /land cover dynamics, cropping patterns, intensities, water use, pest & disease risk, climate change & impacts

Quantification of existing agricultural production systems

**5 Regions**

- 1) The West African Sahel and dry savannas
- 2) East and Southern Africa
- 3) North Africa and West Asia
- 4) Central Asia
- 5) South Asia

Characterization of vulnerable areas for increasing resilience and assist in identifying mitigation pathways with biophysical, socioeconomic and stakeholder feedback as well as specific needs & constraints

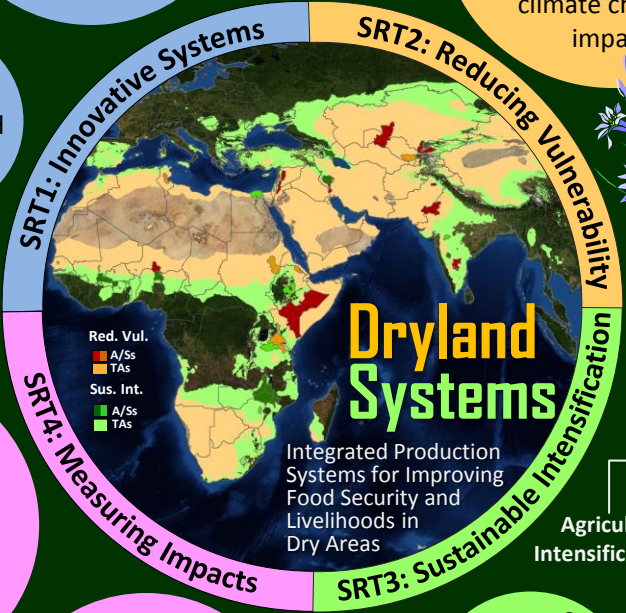
Characteristics of agricultural and livestock production in small holder farming systems and rural livelihoods



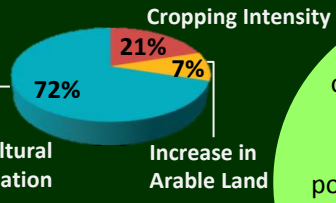
**Biodiversity**  
Spatial enrichment and its role in food security, risk mitigation, & sustainability

**Drylands**  
41% Earth's land area

Cooperative Research and Partnerships



↑ increased **Food production potential sources**



Measuring the impact at spatial scales, rate, magnitude, synergy among the systems, CRPs, cross-regional synthesis

Assessing the impact of outcomes in Action Sites, post-project implementation, & M&E



Status & trends of existing production systems

Delineation of potential, suitable areas for sustainable intensification, diversification of production systems

Mapping the extent of existing & traditional practices, indigenous knowledge, diversity, potential areas for modern & improved, productive, profitable, and diversified dryland agriculture, & linkages to markets



Farmers, stakeholders, policymakers, mobilization, & marketing

**Nutrition**  
Changing diet patterns, nutrition and health



**2.5b** People Live in Drylands

Assessment of present, emerging & future droughts, floods, pests & diseases, extreme events, infrastructure, migration

**1.5b** Livestock Depend on Drylands

**Improved Livelihoods**



# Geoinformatics Applications in ICARDA Led/Involved CGIAR Research Programs (CRPs)

