# The Long-Term Agroecosystem Research Network (LTAR)

## Understanding and enhancing the sustainability of agriculture

**A network developing national strategies for the sustainable intensification of agriculture production**

### Long-Term Research
- 18 regional sites
- Multiple organizations and collaborators
- Historic measurements and research

### Spanning Multiple Agroecosystems
- Croplands
- Grazinglands
- Integrated systems

### Scientists Working Together
- Shared research questions
- Network-wide data infrastructure
- Common measurements

### Conducting Research
- Multidisciplinary approaches
- Multiple spatiotemporal scales
- Local and national issues

### Delivering High Impact Results
- Decision support tools
- New technologies
- Management practices

### To Diverse Stakeholders
- From producers to policy makers
- Education and outreach

## Sustainable Intensification of Agricultural Production

Agriculture integrates soil, water, air, and biology to produce food, feed, fiber, and energy production. But, agriculture faces many challenges.

Expanding global population
Adapting to weather extremes
Encroaching urbanization

Agricultural intensification involves increasing production per unit of inputs such as labor, land, time, fertilizer, agrochemicals, seed, or feed.


However, intensification needs to be **sustainable**.

This can be achieved by balancing increased **production** with the need to conserve natural resources and protect the **environment** while promoting **rural prosperity**.


Sustainable intensification will increase our food security while shrinking the environmental footprint of agriculture.

Sustainable intensification provides a roadmap to achieve local, regional, national, and international goals for agricultural production.

These strategies will need to maximize yield while simultaneously minimizing environmental impacts, however, they are likely to vary across climatic, ecological, political, and socioeconomic gradients.

LTAR network research links broad, societal demands to local agricultural production systems.

LTAR examines a diversity of strategies to ensure that local systems will be sustainable over time and across multiple scales.



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Long-Term Agroecosystem Research Network

USDA

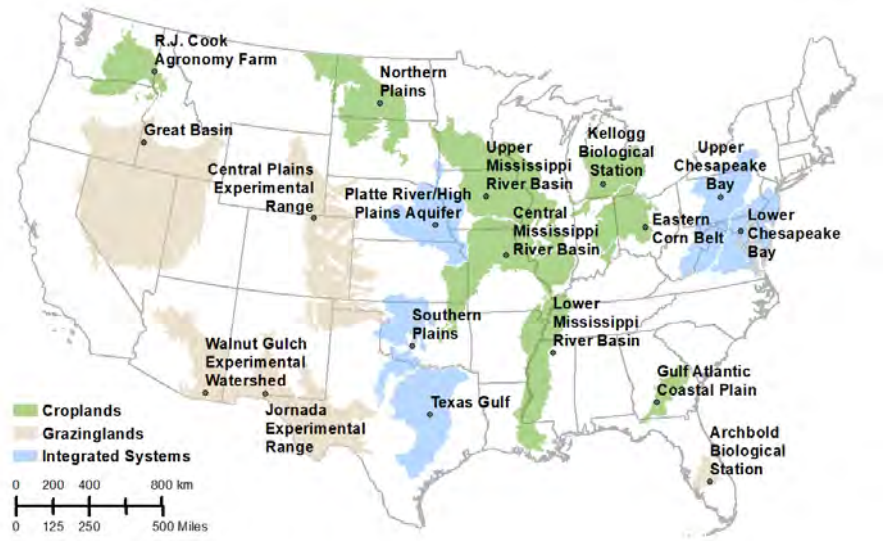
## Achieving Sustainable Intensification of Agriculture

The LTAR network is comprised of **18 sites** representing a diversity of cropland, grazingland, and integrated systems.

Sites provide test beds to evaluate new cultivars, breeds, and methods under actual production conditions.

Scientists, specialists, producers, and policy makers form **working groups** to share ideas, approaches, and measurements across sites.

**Network-wide experiments** provide opportunities to link observations and data across regions and ecosystems.




The LTAR network is uniquely poised to support sustainable intensification, providing data and inferences needed to inform producers, the public, and policymakers on options and implications.

### Plan and Communicate

### Assess, Test, and Forcast

**Plan**

**Experiment**

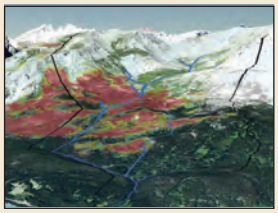
Common long-term measurements enable cross-site comparison and integration of findings at broader spatial and temporal scales.

**Data**

**Communication**

**LTAR Network Research**

**Modelling**



Models are developed and used with data collected to predict agroecosystem responses to management and climatic changes.

**Technology**

Results provide new technologies, better management practices, and opportunities to plan new experiments.

**Management Strategies**

**For more information visit www.ltarnetwork.org**