

USDA/National Agricultural Statistics Service

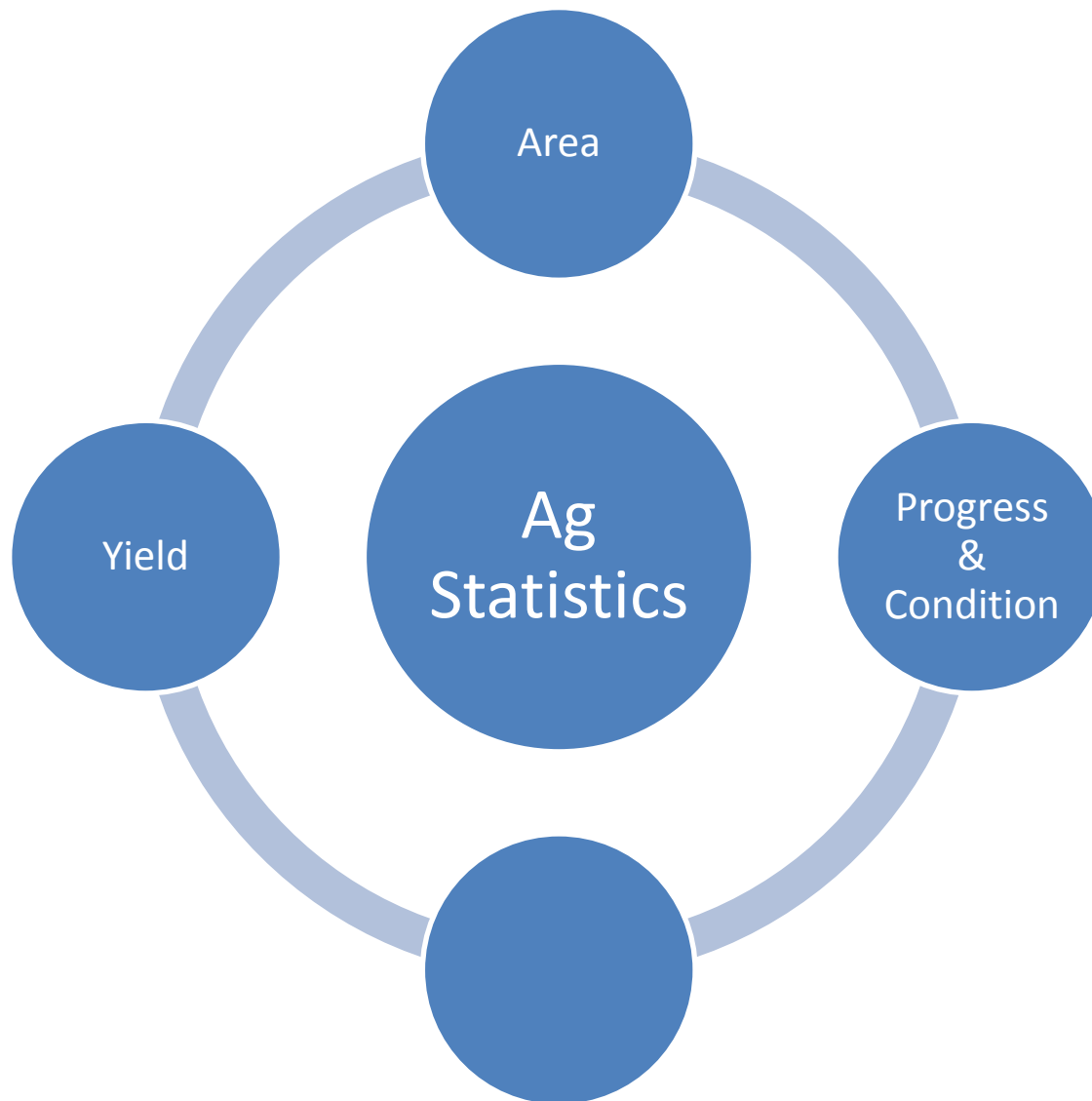
SMAP Application Benefits

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10/14/11



NASS Remote Sensing Apps



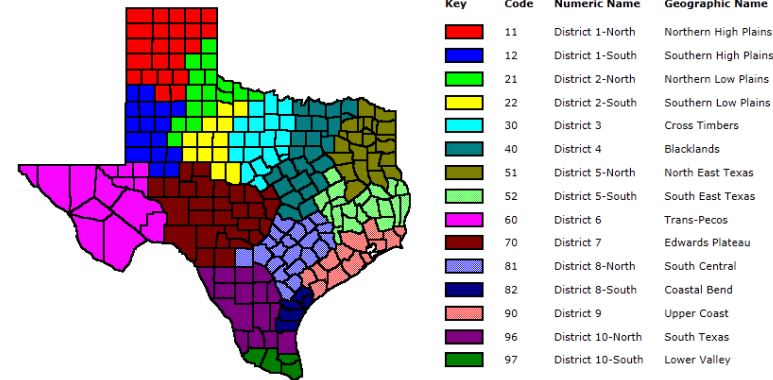
NASS SMAP Program Goals

- Leverage scientific and technological advances to produce and disseminate important foundational geospatial data to measure ag soil moisture
- Utilize near real-time remote sensing and modeled data to supplement and enhance official reports, statistics, and products
- Deliver advanced remote sensing science with objective, repeatable, transparent best practices methods and measures
- Reduce NASS respondent & staff burden



Current Soil Moisture Program

- Volunteer based weekly qualitative observations
 - Throughout growing season
- Topsoil (surface to 6" depth) and Subsoil (>6" - 3-4')
 - Very Short, Short, Adequate, Surplus
 - State level summarization



Current Texas Soil Moisture

Top Soil Moisture by District

Condition	Percent of Acreage														
	1-N	1-S	2-N	2-S	3	4	5-N	5-S	6	7	8-N	8-S	9	10-N	10-S
Very Short	80	79	76	50	50	79	95	83	74	69	79	75	45	50	75
Short	15	8	12	33	13	20	5	17	18	13	21	25	38	37	12
Adequate	4	12	12	7	34	1	0	0	8	12	0	0	4	13	13
Surplus	1	1	0	10	3	0	0	0	0	6	0	0	13	0	0

Importance to NASS

Total NASS Subscribers by Report

Title	Subscribers
Crop Production	10095
Acreage	9152
Crop Progress	9134
Crop Production Annual Summary	9026
Agricultural Prices	7830
Agricultural Prices Summary	7624
Prospective Plantings	7512
Grain Stocks	7109

NASS has a well established dissemination service to the rural, agricultural, commodity, and academic sectors, with a mission designed to provide timely, accurate, and unbiased critical decision support information to all parties at the same time.

Crop Values Annual Summary	5349
Dairy Products Prices	4635
United States and Canadian Cattle	4496
Livestock Slaughter	4493
Hogs and Pigs	4464
Agricultural Land Values	4429
Dairy Products	4252
Livestock Slaughter Annual Summary	4117
Dairy Products Annual Summary	4050
Milk Production	3908
Agricultural Chemical Usage - Field Crops and Potatoes	3722
Cold Storage	3565

Challenges

- To produce higher spatial resolution products for surface and root-zone soil moisture monitoring
- Large scale ground truth calibration – quantify NASS' soil moisture condition and correlate it with sensor measurements
- Large scale ground truth validation



Requirements

- Objective and quantitative soil moisture measures
- High resolution national geospatial coverage
 - Sub county
 - Georeferenced
- Automatic data collection, processing, and publishing
- Online visualization & dissemination
- Consistent, reliable, efficient, and low cost
- **Remote sensing based monitoring system!**



Collaboration/Integration is Key

- Enhance and modernize the current soil moisture method
 - Target the highest feasible level of spatial/spectral resolution
 - NASS “Early Adopter” first step
- Incorporate seasonal crop-specific parameters
 - Integrate Cropland Data Layer
 - Integrate National Crop Progress Monitoring System
 - GMU CSISS & NASA
 - Develop National Crop Condition Monitoring System
 - GMU/CSISS & NASA
 - NASS RS Yield program
 - Support Evaporative Stress Index R & D
 - Hydrology & Remote Sensing Lab/ARS
- Dissemination via NASS OGC Portal



5 Year Dream

Weekly Soil Moisture Updates
via Live OGC/Mapping Services
on NASS Geospatial Portal

