

PHD GRADUATE RESEARCH ASSISTANTSHIP · SPRING 2027 INTAKE

Cotton Irrigation Management: Efficiency and Sensing

Soil moisture and canopy temperature sensing across a 50,000-acre irrigation district in southwest Oklahoma — and the decision support system that tells the district when to release water.

FULLY FUNDED

THREE YEARS

STIPEND + TUITION WAIVER + INSURANCE

THE POSITION

The Irrigation Research Laboratory is seeking one PhD student to lead the field and modeling work on a new three-year, externally funded research project. The Lugert-Altus Irrigation District serves roughly 50,000 irrigated cotton acres from a single reservoir. In 7 of the last 15 seasons it could not release any water at all. You will help answer the two questions that decide a cotton season: when the first irrigation should begin, and when the last one can safely stop.

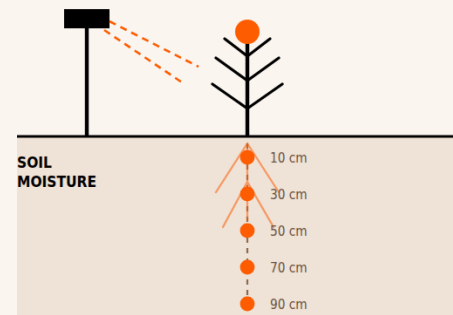
WHAT YOU WILL DO

- Instrument producer fields and replicated research trials with dual soil moisture and canopy temperature sensing systems.
- Collect and quality-control season-long sensor, crop phenology, and yield data across the district.
- Develop and evaluate sensor-based and physiology-based irrigation initiation and termination criteria under furrow and subsurface drip irrigation.
- Run pyfao56 and AquaCropOS to build crop water productivity functions for deficit irrigation scenarios.
- Build the district-scale cotton irrigation decision support system.
- Publish, present at ASABE and ASA-CSSA-SSSA, and work directly with producers and the district manager.

AT A GLANCE

START	Spring 2027
DURATION	3 years
APPOINTMENT	12-month
BASED	Stillwater, OK
FIELDWORK	Altus, OK
DEGREE	PhD, BAE

CANOPY TEMPERATURE



Dual sensing at each site: canopy temperature above, soil moisture every 10 cm to 90 cm below.

DESIRED QUALIFICATIONS

- BS and MS in agricultural or biosystems engineering, water resources engineering, or other engineering fields.
- Strong interest in irrigation water management, crop-water relations, evapotranspiration, and soil moisture dynamics.
- Proficiency in Python, R, or MATLAB; experience with GIS, remote sensing, or crop modeling is an advantage.
- Comfort with sustained summer fieldwork in southwest Oklahoma and with working alongside producers.
- English proficiency per OSU Graduate College requirements; GRE optional unless the program requires it.

FUNDING AND TRAINING

- Competitive assistantship for three years: stipend, tuition waiver, and health insurance support, subject to OSU and project funding policies.
- Twelve-month calendar appointment.
- Travel to regional and international conferences and to annual project meetings.
- Structured mentoring: responsible conduct of research training, grantsmanship coursework, manuscript and proposal development.
- Teaching assistant experience and the opportunity to mentor undergraduate researchers.

HOW TO APPLY

Submit **one combined PDF** containing: **(1)** current CV, **(2)** a one-page statement of research interests and fit with this project, **(3)** unofficial BS and MS transcripts, **(4)** contact information for three references, and **(5)** a publication, thesis chapter, code repository, or technical writing sample if available. Use the subject line **PhD GRA — Cotton Irrigation**. Applications are reviewed as received until the position is filled. Shortlisted applicants will be invited to apply through the OSU Graduate College and BAE.

Dr. Sumon Datta, Ph.D., E.I.

Assistant Professor and Irrigation Engineer · Director, Irrigation Research Laboratory
Department of Biosystems and Agricultural Engineering, Oklahoma State University

sumon.datta@okstate.edu | +1 (405) 744-5403 | experts.okstate.edu/sumon.datta