

Work by our faculty studying the redcedar issue and the implications of its continued encroachment of our rangelands may be found at:
<http://water.okstate.edu/projects/ecosystems/redcedar>.



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Here you'll also find links to:
news articles
videos
presentations
posters
fact sheets
and related sites of interest

Of particular interest:
NREM 2884: How Eastern Redcedar Encroachment Affects the Water Cycle of Oklahoma Rangelands

WREC 101: Eastern Redcedar Encroachment and Water: Update of 2010 Research

OKLAHOMA WATER RESOURCES CENTER

Researchers in the department of Natural Resource Ecology and Management measured water use and interception of redcedar trees in stands of different densities to learn how redcedars affect the quality and quantity of water falling in the watershed.

See what they found inside this leaflet.

These NREM department faculty are part of the Oklahoma Water Resources Center and the Division of Agricultural Sciences and Natural Resources.

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Designed by Leslie Elmore.

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Water Use by Eastern Redcedar

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Oklahoma Water Resources Center
Division of Agricultural Sciences
and Natural Resources
Oklahoma State University

Water Use by Eastern Redcedar Trees

Increasing concern about **limited water supplies** for human use and our natural resources **has heightened interest** in water demands of eastern redcedar trees, which are rapidly encroaching in the grasslands of the Great Plains and Midwest.

The Research Approach

We conducted intensive measurements on trees and soil and measured water flowing off two watersheds — a grassland and a grassland encroached by eastern redcedar trees.

Soil water content

We measured soil water content at 15-minute intervals on the grassland and the grassland encroached by redcedar trees. Eighteen soil water stations were evenly split between the two watersheds.

Water use by individual trees

Instrumentation for measuring water use by individual trees was installed to measure sap flow. We measured water use by trees of different sizes and trees grown in open-canopy and closed-canopy stands.

Streamflow

Watersheds were equipped with an H flume, stage recorder, datalogger, rain gauge, and sensors for solar radiation, wind speed & direction, soil temperature, air temperature, and relative humidity.

Researchers: Chris Zou, Rodney Will, Donald Turton, and David Engle
Department of Natural Resource Ecology & Management and
The Oklahoma Water Resources Center
Oklahoma State University
Stillwater, Oklahoma



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Soil water content is lower where redcedar trees have encroached.

Redcedar trees used water year-round, averaging 0.5-21 gallons/day – more for larger trees in less dense stands.

Only heavy rains break through the tree canopy to the ground. Rain captured by trees does not run off to replenish streams or groundwater.

Redcedar trees can thrive in various soil types and tolerate extreme temperatures and drought, but young redcedars are no match for fire.

