

Adaptation needed for rising temps

By Mary Lou Peter

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If ever there was a year to make one think about climate change, it may be this year.

"July marked the 36th consecutive July and 329th consecutive month with a global temperature above the 20th century average," said Johannes Feddema, professor of geography at the University of Kansas. "The last below-average-temperature July was July 1976 and the last below-average-temperature month was February 1985."

Feddema, who was speaking at the recent "Adapting to a Changing Climate on the Central Great Plains Conference" hosted by Kansas State University, said that so far, 2012 is the 10th warmest year on record globally, but in the U.S. it is the warmest year on record.

"Farmers already know how dry it is, coming into planting season in the context of their crops," he said. "We as a society need to think about that, too."

In more than 117 years of records, July 2012 stands alone as not only the hottest July on record in the lower 48 United States, but also the hottest of any month on record in that time span, according to the National Oceanic and Atmospheric Agency. To put it another way, July 2012 was the hottest of more than 1,400 months that we've gone through since 1895.

The average temperature for the contiguous U.S. during July was 77.6 degrees F., which was 3.3 degrees above the 20th century average, marking the warmest July and all-time warmest month on record for the nation in a period that dates back to 1895, he added. The previous warmest July for the nation was July 1936, when the average U.S. temperature was 77.4 degrees.

"Our low temperatures now are much higher than they were in the '30s," Feddema said, in comparing this year with the infamous drought years of the 1930s. "If we look back at the 1930s, average global temperatures were not that exceptional globally. The drought generally only affected the central U.S."

He cited Environmental Protection Agency records covering 100 years from 1900 to 2000, that illustrated the average last spring frost and the first fall frost in the



CHRISTINA BERINGER/Colby Free Press

During the hottest July on record worldwide, swim instructor Paige Arnbruster worked at the Colby Aquatic Center with (from left) McKenna Husband, daughter of Lloyd and Nicole Husband; Brylee McKee, daughter of John and Linda McKee; and Olivia Williams, daughter of Brian and Bethany Williams.

U.S., excluding Hawaii and Alaska. Since 1970, the first fall frost has been trending later.

Climate Change and Agriculture

Agriculture contributes to climate change, but also is and will continue to be affected by climate change and variability, said Charles "Chuck" Rice, K-State distinguished professor in agronomy.

"Citizens are already responding to climate change and some don't even know it," said K-State agronomy professor Dan Devlin. "Farmers are planting earlier than they did 30 or 40 years ago. We also have more double-cropping."

Some conference speakers presented data showing that in general, the first fall freeze is coming later and the last spring freeze is coming earlier.

Even with evidence of earlier frost-free dates in the spring, however, farmers have to gauge the risk - if they plant early, they can still end up with the devastat-

ion of a killing freeze, said Stacy Hutchinson, professor of biological and agricultural engineering at K-State.

In most crops so far, there's been a negative impact on yields from the changes occurring in the climate, Rice said, adding that yields have generally gone up in Kansas because of the development of better varieties, better management and better equipment. But there's more variability in growing conditions.

"Every one of these dips has been related to weather," said Rice as he displayed a chart showing crop yield trends. "Irrigation can moderate that, but can't make up for the whole impact of the variability."

Diseases that infect plants can be an indicator of climate change, said Karen Garrett, who is a plant pathologist at K-State. She gave the example of soybean rust, a disease that she and a team of researchers are currently studying. Soybean rust overwinters in the

south and infects soybean plants as it moves north during the warmer months of the growing season. What happens if overwintering for diseases like this becomes easier farther north?

Rice, who served on the United Nations Intergovernmental Panel on Climate Change, provided the panel report's projected changes for the climate of the U.S. Midwest, including fewer extreme high temperatures in summer in the short term, but more in the long term, as well as higher night-

Steps to adapt ag to changes

Kansas State University distinguished professor of agronomy Chuck Rice outlined 10 steps farmers, ranchers and researchers involved in growing crops can take to adapt to climate change.

- 1) Develop crop varieties.
- 2) Develop new irrigation technologies.
- 3) Develop more diverse cropping systems.
- 4) Improve the synchronization of planting and harvesting operations.

- 5) Develop soil and crop management strategies.
- 6) Increase soil carbon sequestration.
- 7) Develop new technologies to increase nitrogen-use efficiencies.
- 8) Develop soil erosion prevention and protection.
- 9) Value agricultural commodities for water use and environmental benefits.
- 10) Apply concepts of precision and target conservation.

time temperatures in both summer and winter. The report also predicted increased temperature variability.

The report also projected about 10 percent more precipitation annually in the Midwest, as well as a change in seasonality. Most of the increase in precipitation is expected to come in the first half of the year, meaning wetter springs and drier summers. There is also more variability in summer precipitation expected, including more intense rain events which could mean more runoff.

Rice said changes in agriculture practices have the potential to make a significant impact on climate change. As a soil scientist, he studies carbon sequestration - the process of transforming carbon in the air - carbon dioxide, or CO₂ - into stored soil carbon. Carbon dioxide is taken up by plants through photosynthesis, and incorporated into living plant matter. As the plants die, the carbon-based leaves, stems and roots decay in the soil and become soil organic matter.

How can carbon sequestration aid in the fight against climate change? Atmospheric carbon dioxide and other greenhouse gases trap heat that is reflected from the

earth's surface. This heat buildup could lead to global warming. Through carbon sequestration, atmospheric carbon dioxide levels are reduced as soil organic carbon levels are increased. If the soil organic carbon is undisturbed, it can stay in the soil for many years as stable organic matter. This carbon is then sequestered, or removed from the pool available to be recycled to the atmosphere. This process reduces CO₂ levels in the atmosphere, reducing the chances of global warming.

Rice estimated that 20 percent or more of targeted CO₂ emission reductions could be met by agricultural soil carbon sequestration. In cropland, some steps farmers can take to reduce greenhouse gas include: reduce tillage; rotate crops so as to have less bare fallow and increased crop intensity; plant cover crops; use fertilizer efficiently; and use irrigation efficiently.

Information is available at soilcarboncenter.k-state.edu/carbon-cycle.html, www.greatplainsclimate.org/, www.globalchange.gov/what-we-do/assessment/nca-overview and www.ncdc.noaa.gov.

Car burglar stopped by sitting

ALBUQUERQUE, N.M. (AP) - Police say an Albuquerque man stopped a would-be car burglar by sitting on the perpetrator until authorities arrived.

KOAT-TV reports (bit.ly/PIGJAH) that a newly released police video showed Rene Huerta sitting on top of burglary suspect Michael Chavez earlier this month after Huerta said he caught Chavez breaking into his Chevy Tahoe.

According to the criminal complaint, Huerta heard his alarm going off then saw two men rummaging

through his sport utility.

Police said Huerta chased Chavez, fought with him and then sat on him until officers arrived.

Chavez is heard telling police "thank you!" when officers arrived and got Huerta off of him.

Chavez was charged with auto burglary. It was unclear if had an attorney.

Make a Difference - Please Recycle



Workshop to help with communication at office

A workshop focusing on leadership skills, communication and coaching is being offered by the Management Development Center at Fort Hays State University to help develop and improve professional organizations and their members.

Participants must register online.

"Communication and Coaching Skills in the Workplace" is from 1 to 4:30 p.m. Tuesday, Nov. 13, in the Memorial Union. The cost is \$99.

The knowledge gained from this workshop will help participants

understand what drives their behavior and the behavior of others when engaged in communication and coaching.

It will include two assessments, "What's My Communication Style" and "What's My Coaching Style," followed by activities allowing participants to apply and experiment with communication and coaching simulations.

Men or women interested in developing their leader, manager and follower skills to be more effective in their current positions are welcome.

Participants will understand how communication impacts relationships, learn about the different types of communication, understand the four communication styles, discover a quick way to

identify styles of others and learn how to use style to improve communication.

To register, go to www.fhsu.edu/cob/mdc/Workshop-Series.

For information on workshops or consulting services, contact Dr. Kyle Stone, director of the Management Development Center, at (785) 628-4124 or go to www.fhsu.edu/mdc.

A PROPOSITION to amend section 1 of article 11 of the constitution of the state of Kansas, relating to classification and taxation of watercraft, to be submitted to the electors of the state at the general election to be held on November 6, 2012.

House Concurrent Resolution No. 5017

§ 1. System of taxation; classification; exemption. (a) The provisions of this subsection shall govern the assessment and taxation of property on and after January 1, 2013, and each year thereafter. Except as otherwise hereinafter specifically provided, the legislature shall provide for a uniform and equal basis of valuation and rate of taxation of all property subject to taxation. The legislature may provide for the classification and the taxation uniformly as to class of recreational vehicles and watercraft, as defined by the legislature, or may exempt such class from property taxation and impose taxes upon another basis in lieu thereof. The provisions of this subsection shall not be applicable to the taxation of motor vehicles, except as otherwise hereinafter specifically provided, mineral products, money, mortgages, notes and other evidence of debt and grain. Property shall be classified into the following classes for the purpose of assessment and assessed at the percentage of value prescribed therefor:

- Class 1 shall consist of real property. Real property shall be further classified into seven subclasses. Such property shall be defined by law for the purpose of subclassification and assessed uniformly as to subclass at the following percentages of value:
- (1) Real property used for residential purposes including multifamily residential real property and real property necessary to accommodate a residential community of mobile or manufactured homes including the real property upon which such homes are located.....11 1/2%
 - (2) Land devoted to agricultural use which shall be valued upon the basis of its agricultural income or agricultural productivity pursuant to section 12 of article 11 of the constitution.....30%
 - (3) Vacant lots.....12%
 - (4) Real property which is owned and operated by a not-for-profit organization not subject to federal income taxation pursuant to section 501 of the federal internal revenue code, and which is included in this subclass by law.....12%
 - (5) Public utility real property, except railroad real property which shall be assessed at the average rate that all other commercial and industrial property is assessed.....33%
 - (6) Real property used for commercial and industrial purposes and buildings and other improvements located upon land devoted to agricultural use.....25%
 - (7) All other urban and rural real property not otherwise specifically subclassified.....30%

Class 2 shall consist of tangible personal property. Such tangible personal property shall be further classified into six subclasses, shall be defined by law for the purpose of subclassification and assessed uniformly as to subclass at the following percentages of value:

- (1) Mobile homes used for residential purposes.....11 1/2%
- (2) Mineral leasehold interests except oil leasehold interests the average daily production from which is five barrels or less, and natural gas leasehold interests the average daily production from which is 100 mcf or less, which shall be assessed at 25%.....30%
- (3) Public utility tangible personal property including inventories thereof, except railroad personal property including inventories thereof, which shall be assessed at the average rate all other commercial and industrial property is assessed.....33%
- (4) All categories of motor vehicles not defined and specifically valued and taxed pursuant to law enacted prior to January 1, 1985.....30%
- (5) Commercial and industrial machinery and equipment which, if its economic life is seven years or more, shall be valued at its retail cost when new less seven-year straight-line depreciation, or which, if its economic life is less than seven years, shall be valued at its retail cost when new less straight-line depreciation over its economic life, except that, the value so obtained for such property, notwithstanding its economic life and as long as such property is being used, shall not be less than 20% of the retail cost when new of such property.....25%
- (6) All other tangible personal property not otherwise specifically classified.....30%

(b) All property used exclusively for state, county, municipal, literary, educational, scientific, religious, benevolent and charitable purposes, farm machinery and equipment, merchants' and manufacturers' inventories, other than public utility inventories included in subclass (3) of class 2, livestock, and all household goods and personal effects not used for the production of income, shall be exempted from property taxation.

Explanatory statement. This amendment would allow the legislature to classify and tax watercraft upon a basis different from other property. A vote for this proposition would permit the legislature to provide for separate classification and taxation of watercraft or to exempt such property from property taxation and impose taxes in lieu thereof. A vote against this proposition would continue the taxation of watercraft in the same manner as all other property.

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