Arizona Range and Livestock News

COCHISE COUNTY COOPERATIVE EXTENSION

January 2021

Happy New Year!

The University of Arizona is still working remotely. We are still here, working hard to provide information to all of you as safely as possible. Please contact us if there is anything you need.

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Elise Gornish – Assistant Specialist, Restoration Ecology
Betsy Green – Extension Specialist, Equine
Larry Howery – Noxious Weeds/Range Management Specialist & Professor
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Cochise, Graham & Greenlee & Counties
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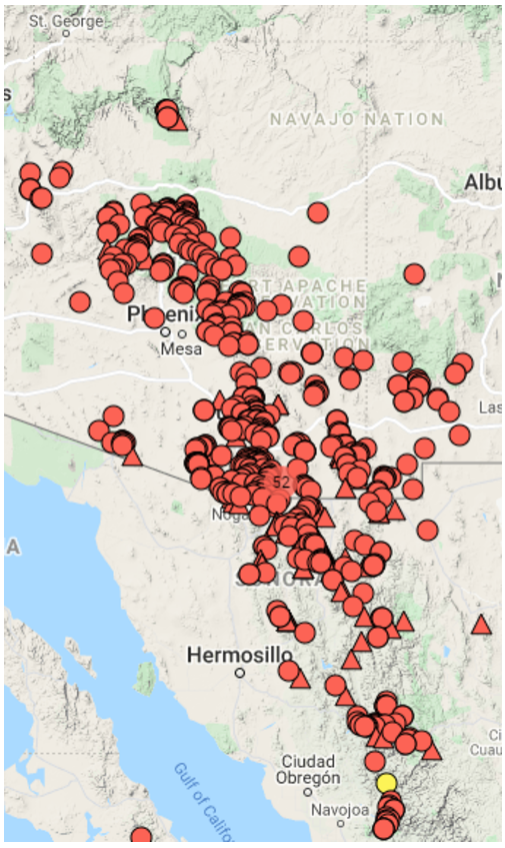
Featured Plant

plains lovegrass

Eragrostis intermedia A.S. Hitchc.
Ashley Hall, Agriculture and Natural Resources Area Assistant Agent

Characteristics
Plains lovegrass is a native, warm season, perennial bunch grass growing up to 3 feet tall. The leaves are long and slender, with a width ranging from 4 to 10 inches long and 1/8 inch wide. The leaf blades are rough on the upper surface and smooth on the bottom surface with edges that slightly roll upwards towards the tip of the leaf. There are hairs on the leaf blade and ligule (leaf at the junction of the sheath and blade)

Inflorescence is an open, broad, triangle shape with many branches, that will branch again with the tips of the secondary branches holding the seed heads. Plants will put out seeds from June to October.



Occurrence

Southern, central, and southwestern United States, with the densest populations found in Arizona, New Mew, Texas, Oklahoma and the northeastern corner of Kansas. In Mexico plains lovegrass is documented as far south as the Guatemala border. In Arizona plains lovegrass is the most widespread throughout upper desert grasslands and oak woodlands from 3,500 to 6,800 feet. Commonly growing on sandy, rocky slopes and plains.

Forage Value

Even though the leaf blades of plains lovegrass can be course, it is a good forage species. It is one of the first grasses that will green up in the spring so it if often grazed heavily during the early part of the growing season even on steep slopes. Due to this early green up is it often considered an important initial spring forage species.

Grazing Management

It is thought that plains lovegrass was more common in Arizona than it is today. The reduction of density of this species is most likely due to overgrazing during the spring and summer. When possible pastures with an abundance of plains lovegrass should be deferred during the warm growing season at least every three years.

Sources

Eragrostis intermedia. Retrieved December 16, 2020, from http://swbiodiversity.org/seinet/

Ruyle, G. B., & Young, D. J. (Eds.). (2003). *Arizona Range Grasses: Their Description, Forage Value, and Grazing Management*. Tucson, AZ: Cooperative Extension, College of Agriculture, University of Arizona.

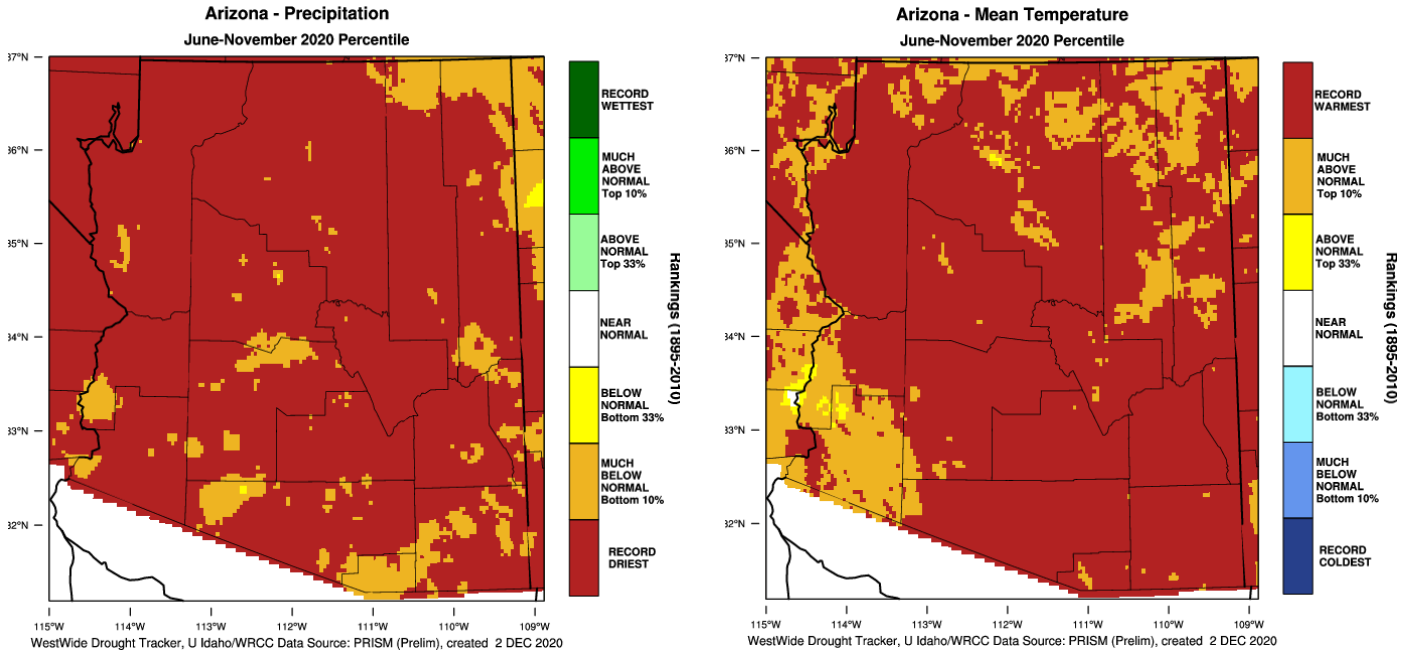
Yavapai County Native and Naturalized Plants. Retrieved December 15, 2020 from https://cals.arizona.edu/yavapaiplants/SpeciesDetailGrass.php?genus=Eragrostis&species=intermedia

Arizona Seasonal Climate Summary: Fall 2020

December 2, 2020 - The June through November period was just plain brutal in terms of climate for the Southwest. Arizona observed its record driest and record hottest monsoon season (June-Sept) and the same for the past six month period of June through November. Monsoon precipitation failed to show up in July and August and the weak monsoon pattern quickly retreated in early September. Areas in southeast Arizona received some precipitation throughout the summer, but still way below normal amounts. Tucson usually observes six inches of precipitation over 25 rain events through the monsoon season and saw only 1.62" in seven events in 2020. Flagstaff observed its driest summer on record as well with 1.8" of rainfall, breaking the previous driest record set in 2019.

Temperatures moderated only slightly in October and November as fall storms tried to push south into the southwest U.S. A late October storm brought a brief period of much cooler temperatures and some light precipitation to much of the state, but not enough to make a dent in drought conditions. Another fall storm pushed through Arizona in mid-November, but again brought little in the way of precipitation. Temperatures were again above-average and precipitation was below-average for the October-November period.

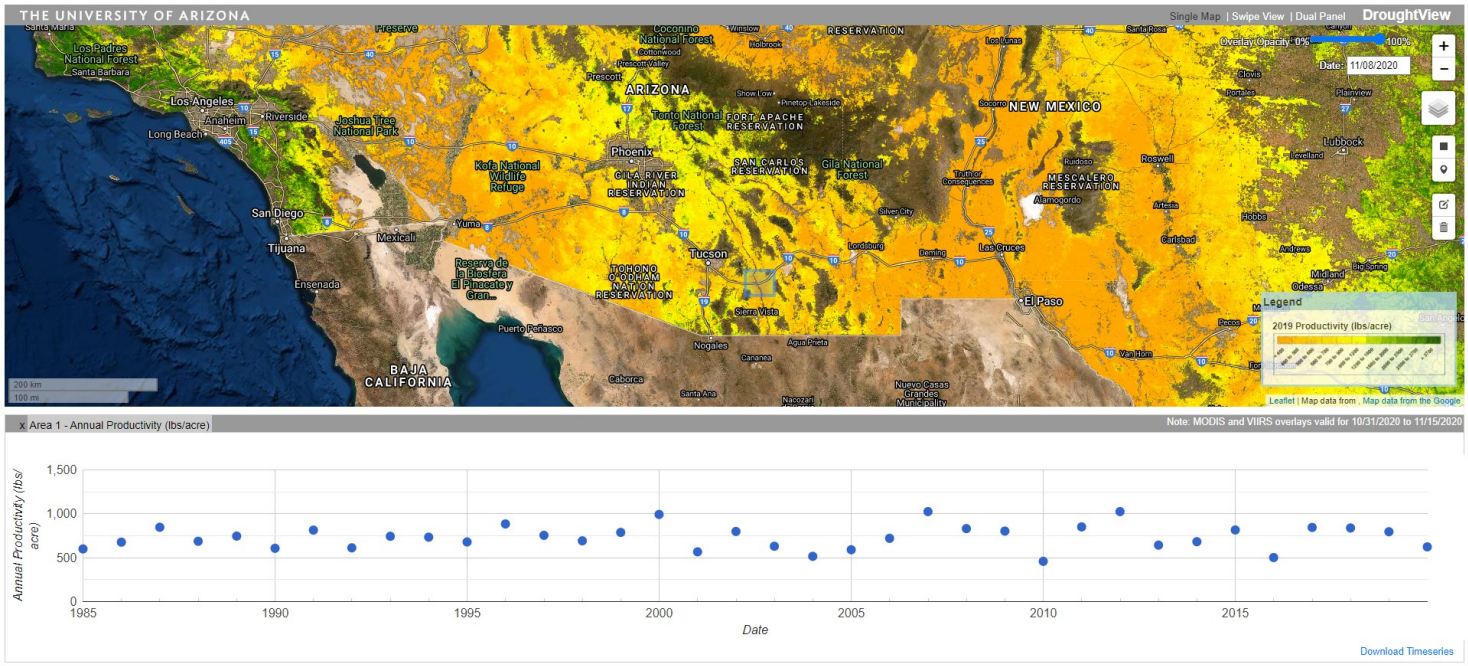
Drought conditions have continued to worsen across the entire Southwest with over 70% of Arizona observing 'Exceptional' drought on the latest U.S. Drought Monitor. This the most intense drought category on the USDM map indicating rare conditions expected to only 1 or 2% of the time in a long-term historical record. (https://droughtmonitor.unl.edu/)



June-November precipitation and temperature rankings from the WestWide Drought Tracker

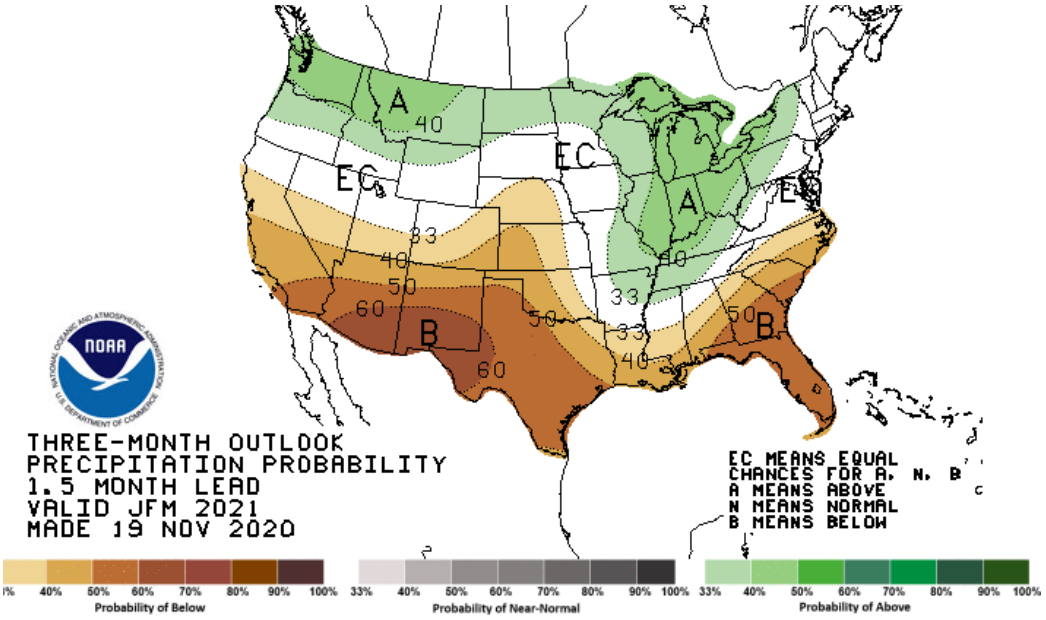
(http://www.wrcc.dri.edu/wwdt/)

More information available at :
http://cals.arizona.edu/climate
http://www.climas.arizona.edu
Questions /comments? Contact Mike Crimmins, crimmins@email.arizona.edu



Researchers at the USDA Rocky Mountain Research Station have developed a remote sensing based estimate of annual total production in pounds per acre on a 250 meter grid for the continental United States. The data area based on a series of historical satellite datasets and extend from 1984 up to the current year. (More information on the Rangeland Production Monitoring Service-RPMS can be found here https://www.fs.usda.gov/rmrs/projects/development-rangeland-production-monitoring-service-could-improve-rangeland-management). The dataset has been made available through the DroughtView site at the University of Arizona (https://droughtview.arizona.edu/) by clicking on the 'Rangeland Productivity' tab on the datasets pane on the right hand side of the page. This will expand the data pane to display all available years of RPMS data in either raw form or in standardized anomalies (standard deviations either above or below the long-term mean). A time series of historical values for an area can be created by clicking on the 'Draw rectangle' tool, selecting an area, and then clicking on it. This will bring up a pull down box where you can select 'Annual Productivity' which will display an interactive time series as shown in the image above.

The January-February-March seasonal precipitation outlook issued by the NOAA Climate Prediction Center in mid-November depicts an increased chance of below-average precipitation for all of Arizona with the largest shift in odds over the southern half of the state. This is a relatively high confidence outlook due to moderate to strong La Nina conditions occurring in the equatorial Pacific Ocean that are expected to continue through the early spring season. La Nina events tend to steer the winter storm track away from Arizona, leaving the region with many fewer winter storms than are usually observed during a normal winter. Temperatures are expected to be above-average in concert with the drier than average conditions (More info at http://www.cpc.ncep.noaa.gov/products/predictions/long_range/)



Drought and Rangelands

Ashley Hall, Agriculture and Natural Resources Area Assistant Agent

After a disappointing summer monsoon, Arizona rangelands are seeing the effects. With the most recent forecast for below average winter precipitation, it's important to remember that long- and short-term drought affects many aspects of rangelands and their management. Vegetation typically experiences a decline in vigor with reduced soil water availability leading to a decrease in plant production and the amount of nutrients vegetation can uptake, in turn declining livestock health. This is just the tip of the iceberg as rangeland and animal health ultimately go hand in hand.

Vegetation

Drought can leave perennial grass species susceptible to damage from overgrazing and the potential to be completely removed from the range without proper management. Vegetation response during the growing season primarily depends on the amount of leaf area and meristems that remain after grazing. As grazing pressure increases, few of those important vegetative portions of the plant are left behind. During a drought leaving enough of these materials behind becomes even more important, especially to make sure that established plants can endure drought conditions, during a time when species recruitment via seed is not possible.

Grasses rely on energy stored as carbohydrates in the base of the plant, stems, and roots to survive dormancy and for growth when the growing season begins. Soil moisture is needed for carbohydrate reserves to be produced, and in years when soil moisture is reduced, these reserves are limited.

Carbohydrates are needed for initial root and stem development are also produced in the early growing season by any residual leaf tissue. If overgrazing occurs during the early growth period when plants are already stressed due to drought, plant health will be affected, and production will be lower than expected. After drought, if grazing is allowed before a sufficient amount of regrowth has occurred, grazing can prevent replenishment of carbohydrate reserves needed for future growth.

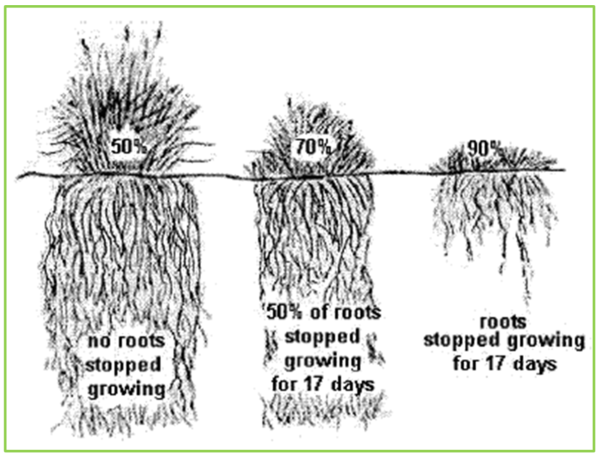


Figure 1. Root development in Relation Above Ground Biomass Removal

Perennial grass roots are also sensitive to grazing. Studies show that continuous overgrazing during a normal year can decrease root biomass (Figure 1; Leithead, H. L. 1979). Overgrazing during a drought year can have even more of a detrimental impact on underground biomass. A loss of roots will limit a plant's ability to absorb water and nutrients further inhibiting growth. Species with shallow roots, like curly mesquite, are even more likely to decrease on rangelands during drought compared to larger bunch grass with deep roots. As a side note, curly mesquite forms thick patches because it reproduces through stolons (above ground stems) during a normal year. The stolons typically allow for the curly mesquite patches to quickly regrow when moisture returns because seeds are not needed to expand the population.

Weed encroachment and loss of soil is often a concern of land managers during years of drought, especially prolonged drought. When vegetation is not able to withstand drought conditions and preferred native species are no longer present on the landscape ground cover holding soil in place is reduced. The loss of vegetation cover makes soil more vulnerable to being moved off-site through wind or high-intensity rainfall events. The lack of cover also increases open interspaces between plants, providing an area for drought tolerant noxious/invasive weeds seed to become established.

Even when drought conditions may seem to have subsided, the amount of precipitation after a drought may not be enough to allow vegetation to fully recover. Research shows that when it comes to production the positive benefits of wet years may not always overcome the negative impacts of dry years (Hamilton et al., 2016). This has the potential to cause a deficit in resources during severe drought.

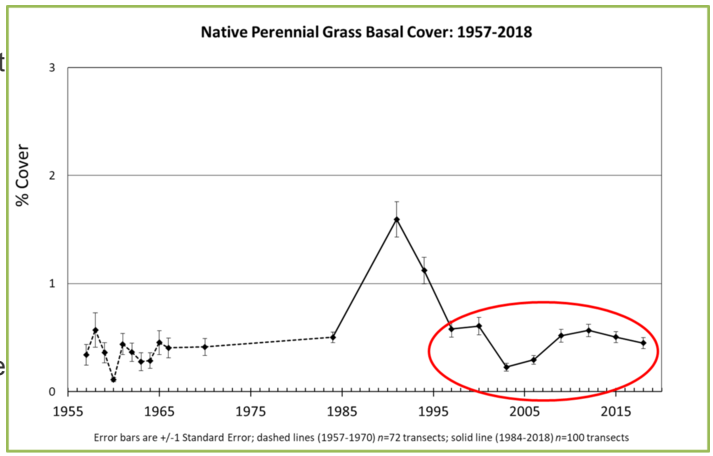


Figure 2. Perennial Grass Cover at Santa Rita Experimental Range

On the University of Arizona (UA) Santa Rita Experimental Range, it took several years for vegetation basal cover to return to near pre-drought amount after the drought of the early 2000s (Figure 2). Land managers will be eager to increase their herd size back to pre-drought numbers after conditions seem to have improved, however, vegetation will not be as efficient with growth as on an average year. Having vegetation monitoring data before, during, and after drought can be used to document and determine impacts quantitatively, instead of relying only on visual observation can be useful.

Livestock

On rangelands that are overstocked during drought, it is common to observe reduced body condition in cattle. Especially when vegetation is to the point when nutrient content has decreased, and the quality of forage is poor. A decrease in quality also means a decrease in digestibility meaning cattle will need to eat more forage to maintain their body condition. Another issue that arises with the decrease in available forage is distance to forage. Cattle must often travel further to look for their next bite, causing them to expend more energy while consuming poor quality vegetation. Lower body condition in cattle can cause many reproductive issues including (but not limited to); decreased pregnancy rate, difficulty calving, decreased libido of bulls, and an increase in abortions. Additionally, Hamilton et al. (2016) found that similar to forage production, drought negative impacts are greater than the positive during wet years for calf gains.

If range conditions deteriorate enough it can come to the point where the only species remaining for feed could be potentially toxic. For example, in a pasture where palatable species have been heavily grazed broom snakeweed, which is toxic, maybe the only vegetation available. Furthermore, compounds like nitrates or prussic acid that are toxic may be present in high concentrations in certain species following a drought. In many areas of Arizona toxic plants are often the first to green up in the spring. In general, it is common for cases of livestock poisoning to increase during and after periods of drought, to prevent deaths land managers should be aware of toxic species.

It can be difficult to identify exactly when a drought period has ended and when drought conditions slightly improve land managers may not be out of the woods just yet. As drought intervals in Arizona are increasing, land managers should always be preparing for the next drought. https://cals.arizona.edu/droughtandgrazing/ is a UA website dedicated to tools and guides available to assist land managers in drought planning. The website includes information about:

- How to create a drought contingency plan that lines out certain breaking points and adaptive management options for each of those points. A drought preparation.
- Drought preparation plans and worksheets to assess drought risk and impacts, identify issues with the current level of preparedness. This tool is best suited for those with a grazing permit on a National Forest but can be adapted for use by anyone.
- How to use DroughtView a web-based tool that gives users access to near-real time and historical remote sensing data that tracks changes in rangeland conditions.
- Drought mitigation risk strategies.
- How to create DYI rain gauges and online precipitation tracking (myRAINgeLog).
- Link to Standardized Precipitation Index (SPI) Explorer Tool.
- Dashboard containing the most current maps for the US Drought Monitor, 12-month SPI map, 12-month temperature map, and the NOAA 3-month precipitation outlook.

For information on management strategies during drought see Rangeland Management Before, During, and After Drought. University of Arizona Cooperative Extension Bulletin AZ1136 by Dr. Larry Howery.

Citations

Hamilton et al. 2016. Economic Impacts of Increasing Seasonal Precipitation Variation on Southeast Wyoming Cow-Calf Enterprises. Rangeland Ecology & Management. 69 (2016) 465–473

Leithead, H. L. 1979. Grass: how it grows. USDA-SCS Bulletin. U. S. Govt. Printing Office 17pp.

Upcoming Events

March

9th, 10th, 11th - **Virtual Range Livestock Workshops** -The Range Livestock Workshops are going virtual for 2021! With three consecutive nights focusing on Beef, Range, and Small Ruminants there'll be something for everyone. Formerly known as the Range Livestock Nutrition Workshops, we've dropped the nutrition from the name so that we can cover even more valuable producer education topics. To register, go to https://extension.arizona.edu/events/2021-03-09/virtual-range-livestock-workshops