Southeastern Arizona Range and Livestock News February 2016

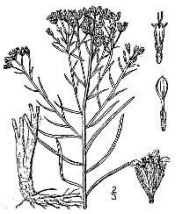
THE UNIVERSITY OF ARIZONA | COLLEGE OF AGRICULTURE AND LIFE SCIENCES | COOPERATIVE EXTENSION

Serving Cochise, Graham, Greenlee, and Santa Cruz Counties

Welcome!

Welcome to the newly re-issued Southeastern Arizona Range and Livestock News covering Cochise, Graham, Greenlee, Pima, and Santa Cruz counties! This newsletter is a way for us, your local University of Arizona Cooperative Extension Agricultural and Natural Resource agents, to communicate with you, the local ranching community. This newsletter will be published on a quarterly basis (February, April, July, and November). Each issue we will highlight different aspects of cattle health and care, rangeland management issues and methods, and climate reports from the University of Arizona as well as important news and current events. We welcome your feedback and suggestions, and hope that you find the information here timely and useful. This newsletter is available in a full color e-newsletter format (available by email) or if you prefer a black and white hard copy can be mailed to you. You can find our contact information on the front page of this newsletter.

Snakeweed and Burroweed Population Increases During Wet Winters



During the prolonged drought that southeastern Arizona has been experiencing, there has been a decline in the density of snakeweed (*Gutierrezia sarothrae*) and burrowed (*Isocoma tenuisecta*). These two species can cause significant problems on many western rangelands by out-competing forage grasses and by causing poisoning in livestock. Rangelands that are overgrazed or in poor ecological condition may exhibit high numbers of these species.

However, it is important to note that both snakeweed and burroweed populations are cyclic depending on the year, regardless of grazing or land condition. During years of drought or other environmental stresses, plant numbers decrease. Following drought with wet winters, significant increases in plants can be seen. Because seedlings respond to environmental conditions that are favorable, there is no well-defined pattern to the population cycles. Three studies involving populations of snakeweed conclude the following: 1) increases in snakeweed may be due to climatic fluctuations rather than overgrazing, and 2) climatic factors are more important than grazing in determining the extent of snakeweed populations.

So, pull out your monitoring and rainfall data and see if you can determine any patterns on your ranch!

Line Drawing Credit: USDA-NRCS PLANTS Database/Britton, N.L., and A. Brown. 1913. And illustrated flora of the northern United States, Canada and the British Posessions. 3 vols. Charles Scribner's Sons, New York. Vol. 3: 370.

Sources:

McDaniel, K. 2015. *Control Perennial Snakeweeds.* New Mexico State University Cooperative Extension. Guide B-815

US Forest Service. *Database, Species: Gutierrezia sarothrae.* http://www.fs.fed.us/database/feis/plants/shrub/gutsar/all.html

Inside this Issue

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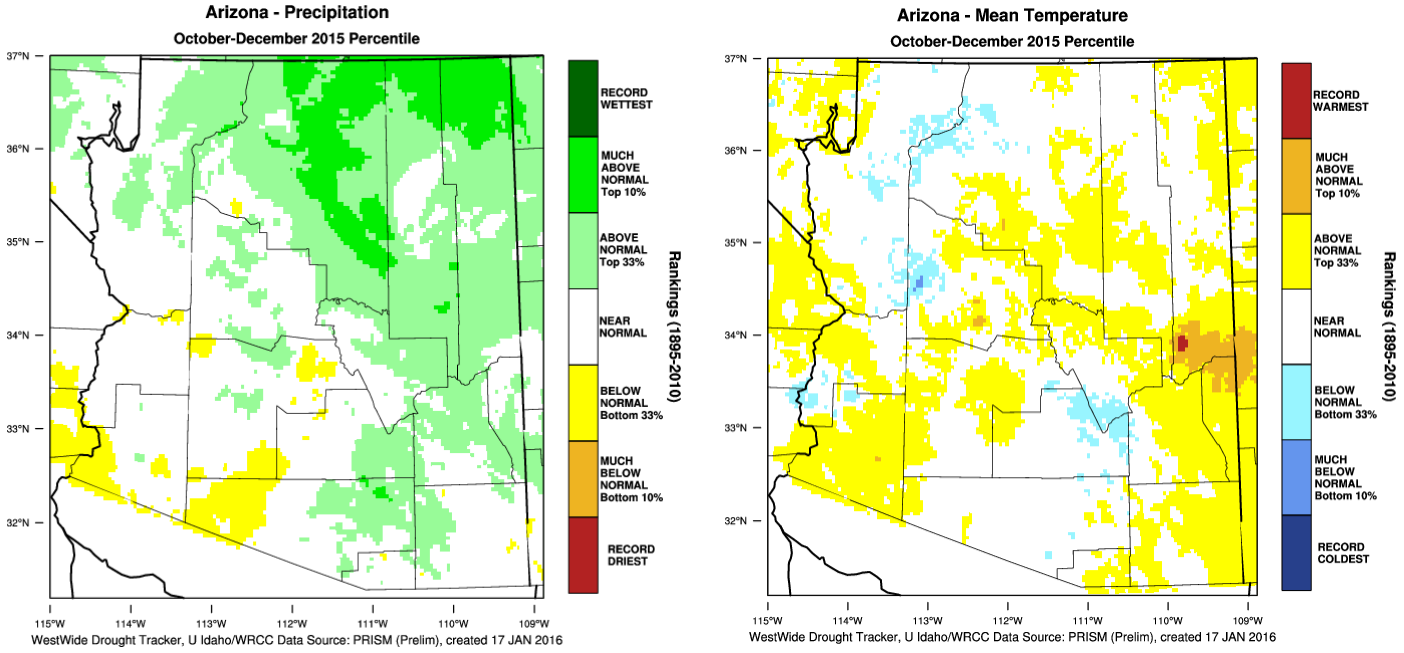
Southeast Arizona Seasonal Climate Summary: Winter 2015-16

January 20, 2016 - The October-December period was relatively active weather-wise in concert with the ongoing strong El Niño event underway in the Pacific Ocean. Several cut-off low pressure systems (including one that crossed the Southwest twice!) drew subtropical moisture into southeast Arizona throughout the month of October producing several rain events. Beginning in November the weather pattern transitioned into a more typical winter time storm track with storm systems originating in the Gulf of Alaska periodically diving south across Arizona and New Mexico. These storms brought periodic cool downs, but often lacked much in the way of moisture. Two events, one in mid and late November tapped into some moisture bring precipitation and snow to the region.

This pattern continued through December with only one mid-month event bringing much in the way of additional precipitation. Overall, the October-December period was near to slightly above-average due mostly to precipitation picked up in October. Temperatures were also near to slightly above average as well due largely to the balance of cool overnight temperatures and several warm spells in October and again in November and December.

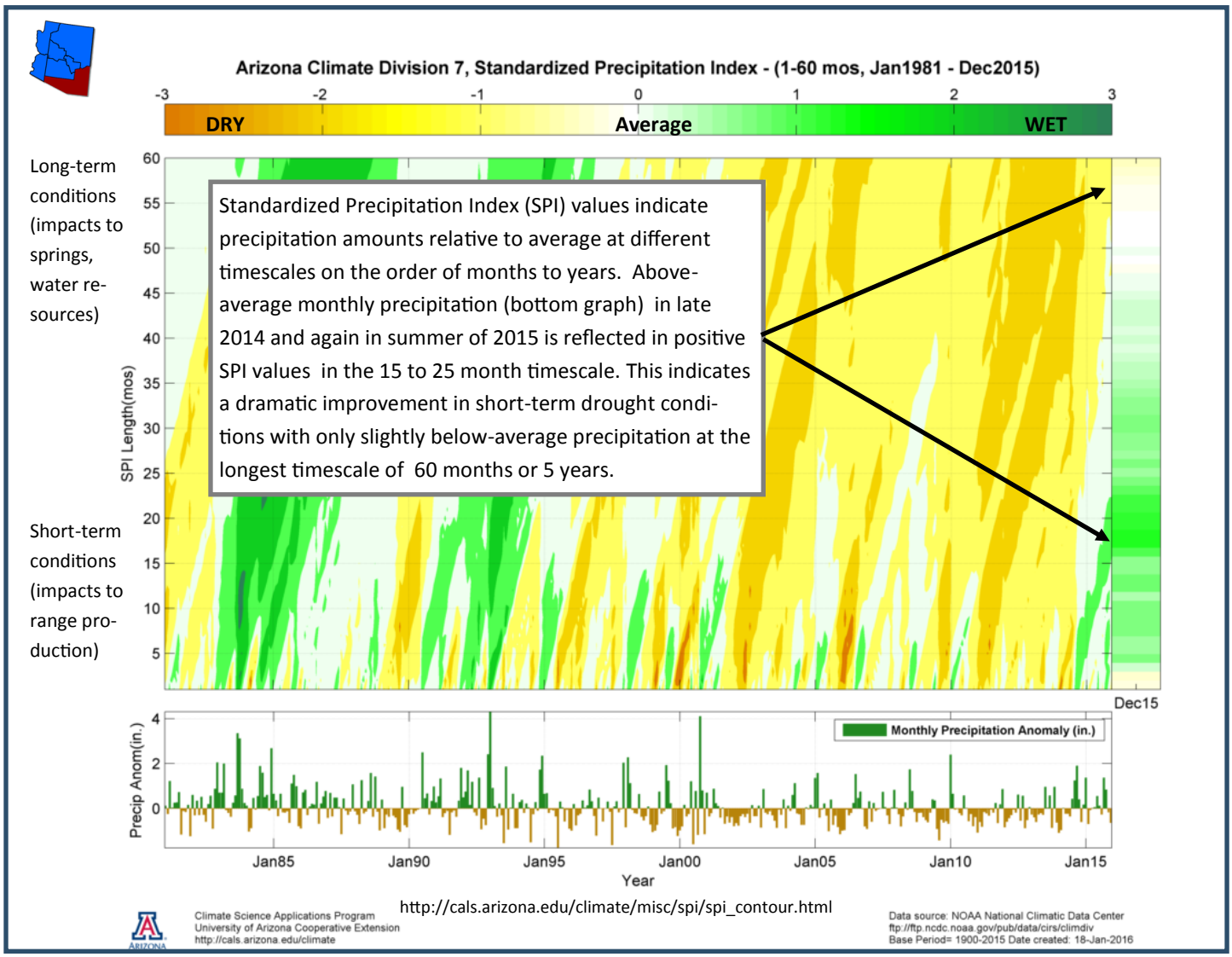
The strong El Niño event underway is expected to persist through late spring and should continue to raise our chances of observing above-average precipitation for the January through April period. Several more wet periods like the one in early January should continue to emerge over the next several months helping to continue to alleviate any remaining short-term drought conditions.



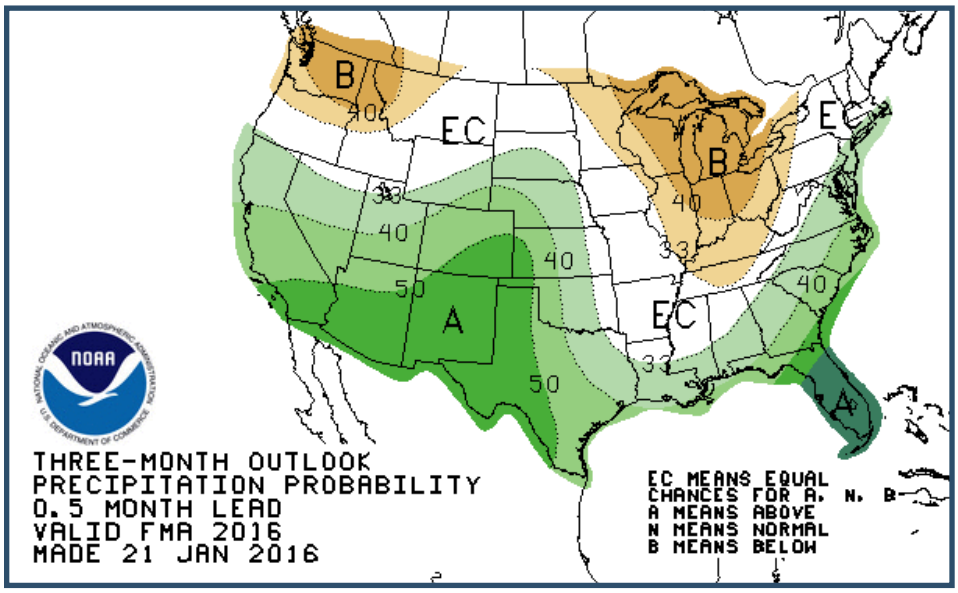
October– December precipitation and temperature rankings from the WestWide Drought Tracker

(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

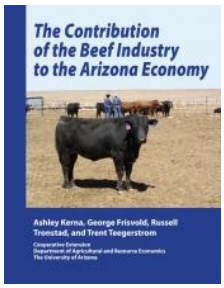


The February-March-April seasonal precipitation outlook issued by the NOAA Climate Prediction Center on January 21st, 2016 depicts an increased chance of seeing above-average total precipitation over the upcoming 3-month period. This is a relatively high confidence forecast due to the strong El Niño event underway in the Pacific Ocean. The late winter/early spring storm track is typically pushed south and can bring a parade of storms to the Southwest during this period. Past El Niño strong events like the winter of 1982 and 1998 brought heavy precipitation to southern Arizona in February and March. In February of 1998 Willcox recorded precipitation on 12 days during the month totaling over 3 inches. El Niño is expected to gradually diminish through the spring and early summer. Forecast models don't appear to have any insight on the upcoming monsoon season but do hint at a possible La Niño event developing later this summer.



The Contribution of the Beef Industry to the Arizona Economy

Ashley Kerna, George Frisvold, Russelll Tronstad, and Trent Teegerstrom



What is the Issue?

- Cattle ranching remains an important part of Arizona agriculture, making a variety of economic contributions to Arizona county economies and to the state economy as a whole.
- The beef industry extends beyond production by cow-calf ranches and feedlot operations. It also includes cattle processing in slaughter and leather and hide tanning and finishing operations. The beef industry purchases inputs from other sectors of Arizona's economy, while earnings from the industry (profits and wages) are spent on Arizona goods and services. This means that the beef industry has impacts that extend to many sectors of the state's economy.
- In order to determine the contribution of the beef industry to the Arizona economy, one must take a comprehensive look at the industry, incorporating the economic activities of industries directly and indirectly related to the beef industry.

What Did the Study Find?

- The total market **value of capital assets of Arizona beef cattle operations is more than $5.2 billion.** These assets include land, buildings, and machinery.
- The value of these **capital assets average more than $1.2 million per ranching operation.**
- In addition to these capital assets, **the Arizona beef industry manages 71 percent of the state's cattle and calf inventory, which is valued at more than $1 billion** (with dairy sector managing the remaining 29 percent). These inventories represent valuable assets that can be placed at risk by prolonged drought or weather extremes.
- Grazing is the dominant land use in Arizona. **Grazing land makes up 73 percent of Arizona's total land area** and approximately 98 percent of Arizona's total agricultural land, with cropland accounting for the remaining 2 percent of agricultural land.
- **In 2011, Arizona cattle and calf sales surpassed $800 million.**
- Direct cattle and calf sales represent only part of beef industry output. Input output analysis was used to estimate the contribution of the entire beef industry to Arizona's economy. **The total contribution to state output of the beef industry was $1.7 billion** ($1.2 billion in beef industry sales and $0.5 billion in sales stimulated other sectors of the Arizona economy).
- **The beef industry contributed $431 million to Arizona's GDP** (or value added).
- **Every 100 workers hired by the beef industry create 62 additional jobs in other industries in Arizona.** Beef industry proprietor's contribution to total state employment was 8,758 hired jobs – 5411 jobs directly related to the beef industry and an additional 3,347 jobs created throughout the state in other industries.
- **Approximately 21 percent of all farms in Arizona specialize in beef production.** By specialize, we mean that more than half of farm sales come from the sale of beef cattle. Farms specializing in beef production are the third most numerous type of all agricultural operations in Arizona.
- Of all Arizona operations with sales in 2012 (the most recent Census of Agriculture data available), there were 3,364 operations with sales of cattle. This ranks operations with cattle sales as the second most numerous type of agricultural operation in the state. Operations with cattle sales were the most numerous agricultural operation in seven of Arizona's 15 counties.
- **In 2012, cattle and calf sales accounted for 18.8 percent of total agricultural sales in Arizona, ranking third in sale among all agricultural commodities.** In five of 15 counties, however, the sale of cattle and calves ranked first in agricultural sales.
- **In 2011, the total number of cattle commercially slaughtered in Arizona was 565,000 head,** producing a total live weight of more than 721 million pounds.
- Economic base analysis identifies which industries are basic: industries that generate relatively more jobs than the national average and bring money from outside the region into the local area. Outside of the urbanized, metropolitan areas (Maricopa and Pima counties) and Mohave County, where specialization in mining is important, ranching remains a basic sector in Arizona county economies. **Arizona's remaining 12 counties are more specialized in cattle production than the nation as whole and employ relatively more people in ranching.** Looking only at state averages can understate the continuing importance of ranching in Arizona's rural counties.

How Was the Study Conducted?

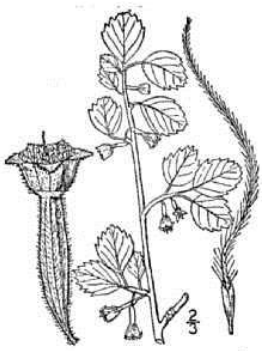
- Using data primarily from the *2012 Census of Agriculture and 2011 Arizona Agricultural Statistics Bulletin*, we conducted an overview of the beef industry in Arizona, tracing the stages of production from cow-calf and feedlot operations to processing operations (including slaughter plants and leather and hide tanning and finishing operations).
- The importance of the beef industry at the state and county levels were determined by conducting an economic base analysis. This analysis allows for the identification of industries that serve as part of the economic base as well as highlights whether the

industry employs more people in the region than the national average.

- The economic contribution of the beef industry to the state of Arizona was estimated using input-output modeling and the premiere software for this type of analysis, IMPLAN. The beef industry's contribution to total output, value added (GDP), employment, and labor income was estimated.
- **Individual profiles were developed for each Arizona county, estimating the economic contribution of cattle ranching and the beef industry to local county economies.**

Link to full article and summaries of the contribution of the beef industry broken down by county
http://cals.arizona.edu/arec/publication/contribution-beef-industry-arizona-economy

Featured Plant: Mountain Mahogany (*Cercocarpus spp.*)



A shrubby to tree-like woody plant, mountain mahogany is native to the western United States and Mexico. There are five species of *Cercocarpus* in Arizona. Some species may grow to 15 feet tall, depending on the local habitat. Mountain mahogany is part of the rose family, with small flowers consisting of yellowish sepals and no petals. The flowers are either single or in clusters. The seed is enclosed in a hairy capsule with a long, feathery "tail." The sharp pointed basal end of the seed casing and the corkscrew-like "tail" enable it to penetrate the ground. The "tail" coils and uncoils in response to changes in humidity, similar to needle grass and filaree.

Mountain mahogany occurs commonly in the chaparral, juniper woodland, oak woodland and ponderosa/Apache pine types, on dry slopes and mesas. It is found in most counties of the state at elevations between 4,500 and 8,000 feet.

The plants are sometimes known locally as deer-browse, and certain species are useful in protecting the soil against erosion. The plants are excellent browse for cattle, sheep, and goats, as well as for deer and bighorns. The Hopi Indians are reported to use the bark of one species to dye leather red-brown.

While mountain mahogany is valued as forage, it can be poisonous at certain times. The toxic agent is cyanogenic glycosides. Poisoning occurs most often in the fall of the year following frosts. Pasture management and moves between pastures without mountain mahogany during susceptible times is the best prevention method to guard against poisoning.

Line Drawing Credit: USDA-NRCS PLANTS Database / Britton, N.L., and A. Brown. 1913. *An illustrated flora of the northern United States, Canada and the British Possessions. 3 vols.* Charles Scribner's Sons, New York. Vol. 2: 274.

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Kearney, T. and R. Peebles.1960. *Arizona Flora*. The University of California Press. Berkely and Los Angeles, California. pp. 388-390.

Knight, A. and R. Walter. 2001. *A Guide to Plant Poisoning of Animals in North America*. Teton New Media. Jackson, Wyoming. Pp. 1-5, 8.

Schmutz, E., B. Freeman and R. Reed. 1968. *Livestock Poisoning Plants of Arizona*. The University of Arizona Press. Tucson, Arizona. p. 32.

Understanding Soils: Part 1

What is Soil?

Apparently unchanging and lifeless, soils are dynamic mixtures, teeming with life. One teaspoon of soil in the temperate regions can contain billions of organisms ranging from simple bacteria and fungi to more advanced forms. Earthworms, insects, and spiders are examples. Bedrock is continually fractured, dissolved, and changed into soil; but the process occurs slowly so we usually never notice.

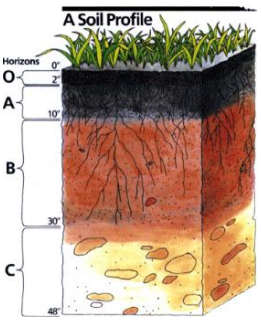
Soil is a naturally occurring mixture of mineral and organic ingredients with a definite form, structure, and composition. The exact composition of soil changes from one location to another. The following is the average composition by volume of the major soil ingredients: 45% Minerals (clay, silt, sand, gravel, stones); 25% Water (the amount varies depending upon precipitation and the water-holding capacity of the soil); 25% Air (an essential ingredient for living organisms); and 5% Organic matter or humus (both living and dead organisms).

A soil is composed primarily of minerals which are produced from parent material that is weathered or broken into small pieces. Beyond occasional stones, gravel, and other rock debris, most of the mineral particles are called sand, silt, or clay. These mineral particles give soil its texture.

Water and air occupy the pore spaces - the area between the mineral particles. In these small spaces, water and air are available for use by plants. These small pore spaces are essential to the life of soil organisms, to soil productivity, and to plant growth.

The final ingredient of a soil is organic matter. It is comprised of dead plant and animal material (detritus) and the billions of living organisms that inhabit the soil.

Soil Horizons



Soils develop into layers. These layers, called horizons, are usually seen along road cuts and other areas where the soil is exposed. In the hypothetical situation, there are four horizons in a soil profile. The thickness of each varies with location, and under disturbed conditions -heavy agriculture, building sites, or severe erosion, for example - not all horizons will be present.

The upper layer, called the O horizon, is made up of organic matter, including decayed leaves, grass and animals. This layer is dark because of the decomposition that is occurring.

The second layer, called the A horizon, is the most fertile growing area. It is often called topsoil. There is some organic matter in this area, as well as most of the creatures that live in the soil. In a cultivated field, the O horizon does not exist and the A horizon is the upper soil layer. As water moves down through the topsoil, many soluble minerals and nutrients dissolve.

The dissolved materials leach from the topsoil. In fact, the A horizon is a zone of leaching.

Below is the B horizon or subsoil. Subsoils generally have more clay, are usually light colored, dense, and low in organic matter. The subsoil is a zone of accumulation since most of the materials leached from the topsoil accumulate here. Still deeper is the C horizon. It is a transition area between soil and parent material. Partially disintegrated parent material and mineral particles may be found in this horizon. Below the C horizon is the parent material – bedrock or sedimentary layers of alluvial materials from which the soil was formed. The depth of each soil layer depends on the soil's age and the climatic conditions that formed the soil.

From: Howery, L., K. McReynolds, S. Pater, and G. Ruyle. *Arizona Natural Resource Wonders*, 1999. The University of Arizona Cooperative Extension.

Evaluating Bull Fertility

Producers spend a lot of time worrying about the fertility of their cow herd, but the importance of bull fertility can sometimes be forgotten. Each cow contributes only ½ of the genetic material in one calf each year, while each bull can contribute ½ of the genetic material in 20 to 50 calves. One infertile or subfertile bull is going to have a much larger effect on the overall reproductive rate of the herd than one infertile cow. A bull's ability to successfully breed cows is a crucial part of a successful calf crop. Too often breeding soundness exams are overlooked as an unnecessary expense, but you should consider the implications of turning out bulls with reduced fertility. The cost of a reduced calf crop with more calves born later in the season can easily exceed the relatively small cost of a breeding soundness exam.

Physical Exam

The physical examination considers the overall health and appearance of the bull, his general condition, feet and legs, and reproductive tract. For him to have a successful breeding season, he needs to enter it carrying a moderate amount of flesh. Too fat, and he will lack the vigor needed to breed cows, too thin and he may not have the stamina to last throughout the season. The conformation and condition of the feet and legs are also very important. Not only are these traits heritable, a lame or injured bull will have difficulty traveling and successfully mounting a cow.

A second part of the physical examination is assessing both the internal and external structures of the reproductive tract. The internal structures of the reproductive tract can be evaluated via rectal palpation. Externally, the prepuce, penis, spermatic cord, scrotum, testicles, and epididymis should be examined for signs of injury, abscess, adhesions, or tumors. Scrotal circumference has been highly correlated with sperm production and the onset of puberty both in the bull and his female offspring. The bull must meet minimum circumference requirements based on his age to score as satisfactory.

Semen Exam

Following the physical examination, a semen sample is collected. Typically, this will be done using an electroejaculator. Collected semen is evaluated under a microscope for motility and morphology. Motility refers to the number of sperm that are progressively moving forward. At minimum 30% progressive motility is required. Morphology is a measure of sperm normality. At least 100 sperm are graded on their shape and structure. Abnormalities (bent tails, malformed heads, etc.) should be less than 30% of the total sperm cells.

Libido

It is difficult to quantify a bull's libido and ability to mate with a cow during a breeding soundness exam. A bull that is too timid around the cows, bullied by other bulls, or simply lacks libido will not breed well regardless of the outcome of a breeding soundness exam. Taking the time to observe bull behavior at the start of the season can give you an idea if a bull lacks libido or is too timid to breed properly.

Retesting

Retesting bulls at the start of each breeding season is important to detect changes in fertility. A breeding soundness exam is only a picture of his suitability for breeding at the time of the exam. Bulls that fail their exam but whose suitability for breeding has the potential to improve (especially yearling bulls

that may not have fully matured yet) can be placed in a "classification deferred" category and retested at a later date.

Trichomoniasis

Testing for the venereal disease trichomoniasis (caused by the protozoan *Tritrichomonas foetus*) is as important as performing breeding soundness exams. The one celled organism inhabits the pockets that line the bull's sheath. An infected bull then transmits the disease to the cow at breeding, causing her to abort her fetus within a few months. Most cows clear the infection after two to three cycles. However, during that time she has the potential to spread the infection to other bulls who attempt to breed her. Bulls tend to remain chronically infected especially as they mature and develop deeper crypts within the sheath. As there is no effective treatment, the most important control mechanism for trichomoniasis is routine bull testing.

Often the first symptoms of a trichomoniasis infection in the herd is a reduced pregnancy/calving rate and later calving dates. This becomes more pronounced with longer breeding seasons as bulls continue to attempt to rebreed infected cows, spreading the infection further. While most cows recover fertility after two to three cycles their immunity is short lived and they can be re-infected the following breeding season. Pyometra (uterine infection) is possible in some animals and a few cows may remain infected and give birth to a live calf. These cows may be a source of reinfection for clean bulls the next season.

Testing in the bull is done using a preputial scraping. The sample is cultured for three to seven days and examined for evidence of *T. foetus*. The culture test is around 80% accurate; three negative tests one week apart are required to ensure a mature bull is truly clean. Polymerase Chain Reaction (PCR) assay is newer method used to detect *T. foetus*. While costlier, it's more accurate and only one negative test is required.

There are some management strategies to reduce the risk of introducing trichomoniasis into your herd.

- Test your current bulls prior to breeding
- Only purchase virgin replacement bulls and heifers
- Use only younger bulls if possible
- Don't lease, borrow, or lend out bulls
- Repair fences to keep neighbor bulls out
- Shorten your breeding season to 60-90 days, remove bulls from the cow herd at the end of the season
- Pregnancy test and cull open cows

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Statewide Livestock Survey

The University of Arizona Cooperative Extension is conducting a statewide voluntary survey to develop a strategic plan for livestock related programs. The information gained will be used to focus our educational efforts for the next three to five years. As stakeholders, your input is vital to ensuring the outreach we provide meets your needs and interests. The information you provide will only be used by Cooperative Extension to develop the strategic plan, no identifying information will be collected. If you have already completed this survey, please do not duplicate your response by filling it out again.

Enter into your web browser:
tinyurl.com/livestock2015

Or find it on our webpage:
extension.arizona.edu/beef-extension

If you would prefer to have a paper version of the survey mailed to you, please contact Ashley Wright at awright134@email.arizona.edu or 520-766-3605

Graham County Farm, Home and Ranch Day

Graham County Farm, Home and Ranch day is coming up Wednesday, March 2nd! The ranch portion of the day will include hands on trich testing and body condition scoring as well as talks on marketing and vaccinations. A Beef Quality Assurance certification workshop will be held after lunch at 1 pm. Contact the Graham County Extension office at (928) 428-8810 for more information and to register for lunch!

Upcoming Events

February 20th.....Greenlee County Cattle Growers Meeting

March 2nd .....Graham County Farm, Home and Ranch Day

April 13th .....Livestock Nutrition Workshop, Valley Telecom – Willcox