2017 Winter/Spring Grass Loadings for the Grass Dominant Fuels of the Texas Plains

Gauging the amount of grass on the landscape of the Texas Plains is one of three elements needed to forecast the seasonal fire potential outlook for the traditional winter/spring fire season in this grass dominant fueblescape. The existence, emergence or absence of drought and seasonal weather trends are the other two elements that feed the fire potential outlook.

A robust crop of grass on the Texas Plains translates into a dense, continuous, and sometimes tall bed of grasses that will produce fires with faster rates of spread, increased fire intensities and generally produce more resistance to suppression efforts. An objective measure of grass loading would be to clip and measure the grass and convert the sample into tons per acre of grass. This objective method is not practical for a regional estimate of grass loading so a subjective method of ranking grass loading into below normal, normal, and above normal loading will be used here. These rankings are loosely correlated to the Gr1, Gr2, and Gr3 grass fuel models described in Scott and Burgan’s Standard Fire Behavior Fuel Models.


Rate of spread and fire intensities produced by grass fuel model Gr1 are similar to fire behavior produced in below normal grasses. The same holds true for normal grass loading compared to grass fuel model Gr2 and above normal loading compared to fuel model Gr3.

The two factors that control the amount of grass present during the winter dormant season are the previous growing season rainfall and the extent and intensity of livestock grazing. The 2016 growing season rainfall was well above normal for the Plains of Texas. This above normal rainfall produced an above normal crop of grasses on the Plains. This above normal grass loading is still present where livestock grazing has been excluded.

Shown here is the April through September percent of normal rainfall for Texas. There was more than enough rainfall through the 2016 growing season to produce an above normal crop of grass over the majority of the Texas Plains.
So we start with widespread above normal grass loading and now must gauge the reduction of grass or fine fuel loading due to grazing. This is a difficult task as grazing intensities vary greatly across the multitude of private ownerships in the state. We can acknowledge there are varied levels of grass loadings across the landscape due to the effects of livestock grazing. We are not able to quantify the extent of each ranking. The NASS (National Agricultural Statistics Service) cattle inventory for Texas Counties captures the distribution of all cattle in the state. This includes inventory for feedlot and dairy cattle.

The NASS annual inventory trends for Texas show a significant drop in numbers following the 2011 drought. The last two years have shown an increase in the statewide inventory. The improved range conditions due to above normal rainfall in 2015 and 2016 may be a reason to expect a continued increase in 2016 Texas cattle numbers when the NASS inventory is published in January. An increasing cattle inventory in the state would suggest an increase in grazing which will decrease the amount of above normal grass loading.
Following are some examples of grass loading found in areas that received above normal rainfall this past growing season.

Shown here is below normal grass loading due to high intensity grazing. This is a view of the 2011 Copper Mountain fire scar just north of Rotan in Fisher County. High wind would be needed to push a surface fire through this sparse, discontinuous fuel bed.

Here is a similar landscape to the Fisher County site in adjacent Kent County just north of Jayton. This site is ungrazed and supports an above normal load of cured grasses. A fire burning in these grasses with this topography would be highly resistant to control, even with light to moderate wind conditions.
Here is a comparison of a grazed CRP pasture or improved pasture and an ungrazed CRP pasture. These pictures were taken on the same ownership in Dickens County east of Dickens. The pastures were separated only by an electric fence and dirt road.
This Motley County landscape southeast of Matador has been grazed but is still supporting a normal loading of grass. There is enough continuity in this fuelbed to support surface fire spread with moderate wind conditions. Much of the grazed range we observed was still supporting normal to just above normal grass loading like this example.

This high risk, grass and brush fuel type in Hall County is also dependent on grass loading. The grasses provide the catalyst for fire spread. The Juniper brush adds intensity to the fire and increases the fire’s resistance to control. Above normal grass loading as seen here facilitates fire spread into the scattered brush fuels.

Above normal grass loadings along rural roadways will facilitate roadside ignitions. Many roadsides have been mowed but there are some like this Hall County road that remain to be mowed. We actually saw the contract mower working this roadway several miles back from this location.
Above is a side by side view of an improved pasture in Childress County. The photo on the left was taken during the February 2016 Rocking Chair fire. The picture on the right shows a current view of the same pasture in December of 2016. The above normal grass loading in place for the 2017 winter is very similar to the 2016 winter grass loading that burned on the Rocking Chair fire.

Pictured here is above normal grass loading in Donley County just south of Clarendon. This high risk grass and brush fuel type is situated just above the breaks that drop into the Prairie Dog Town Fork of the Red River.

A prescribed fire was conducted on this Donley County range in February of 2015. This ungrazed range is currently supporting an above normal grass loading going into the winter of 2017.
Pictured here are above normal grass loadings in Potter County. This location is just outside the fire scar of the February 2016 Estate fire that is west and a little north of Amarillo. It does not appear that this area has been grazed.

This view in Oldham County just north of Boys Ranch shows normal to above normal grass loading on range that is being grazed. It is unknown how long the cattle have been on this range or the number of cattle that are present in this pasture. Grazing intensity and grazing duration will determine the eventual grass loading here.

This Moore County location is just outside the fire scar of the deadly 2011 Masterson fire about 25 miles north of Amarillo. The robust crop of grass shown here from early December 2016 is representative of the grass loading that was present for the 2011 Masterson fire.
Here is an interesting contrast between high intensity grazing to the left of the fence and moderate intensity grazing to the right of the fence. My call would be normal loading on the right and below normal on the left.

Here is a heavily trafficked area that has been intensely grazed. The fence line separates a pasture that has not been grazed. This Roberts County location is just north of Pampa. High traffic areas around windmills and livestock feeding areas can serve as an alternative for staging areas if better options are not available.

Here is an obvious contrast between intense grazing and no grazing. The ungrazed is the federally owned McClellan National Recreation area located in Gray County just north of Interstate 40.
Moderate grazing here in Gray County southeast of Pampa leaves a normal loading of grasses on the landscape. This grazing intensity and resultant grass loading is representative of a large portion of the High Plains rangeland.

Here is a robust stand of Bluestem along a fence line in Gray County near Lefors. It is routine this year to stand knee to thigh deep in ungrazed Bluestem.

This is another picture from the same Gray County location as above looking across the pasture toward a homesite.
This King County location is just south of Guthrie. There is a heavy component of broomweed mixed in with the above normal load grasses here. Often there is no grass beneath the broomweed but that is not the case here.

Here is another example of King County broomweed in relation to the cow. Again there was an above normal loading of grass beneath the broomweed at the time this picture was taken.

Just another image of cows with no legs in above normal grasses.....please forgive me.

It does raise the question again about the duration and intensity of grazing here that still allows this above normal loading.
The pictures above are both taken within the 2011 Harkey Road fire perimeter in Schleicher County south of San Angelo. It is hard to see through the smoke but the grass loading back in April of 2011 was less than the grass loading that is now present in this area. The picture on the right shows the current loading in the fire area. The fire intensity from 2011 is more due to drought conditions creating low live fuel moistures in the Juniper canopies. There is currently no drought in this area or most other regions of the state.

Land use patterns in the Southern Plains and western Hill County differ from those in the Rolling Plains and High Plains. Livestock grazing here includes sheep and goats and cattle numbers are lower according to the NASS inventories. Another change is the prevalence of high fences in this region. High fences are much more numerous here than in the High Plains. High fences generally denote a priority for wildlife management rather than livestock production or grazing.
To sum up this discussion on grass loadings in grass dominant fuel types I will try to stay within the bounds of what we know and what we do not know.

- We are confident given the documented above normal rainfall, reports from the field and personnel observations that there is a widespread coverage of above normal grass loading where grazing is excluded.
- Grazing intensity and duration varies across individual ownerships so grass loadings will vary across ownerships.
- Grass dominant fuelscapes can be found from Amarillo to McAllen and from El Paso to San Antonio. There is a lot of grass in Texas.

In general, wildfires become more resistant to control when higher grass fuel loadings are present. Wildfires will become resistant to control at lower weather and fuel dryness thresholds when burning in above normal grass fuel loading. The presence of above normal grass fuel loadings this winter and spring will require close monitoring of daily fire environment conditions. Short term changes in fire weather and fuel dryness can bring about significant increases in wildland fire activity.

Brad Smith
Wildland Fire Analyst
bsmith@tfs.tamu.edu

Luke Kanclerz
Wildland Fire Analyst
lkanclerz@tfs.tamu.edu

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