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Application of Patch Burn Grazing for Landowners

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WHAT IS PATCH BURN GRAZING?

Patch burn grazing is burning different patches of a pasture at different times and allowing animals to select where they want to graze. Animals are attracted to the palatable vegetative regrowth after burning. As different patches are burned through time, grazing follows the movement of fire across the landscape creating a shifting mosaic of vegetation structure. Patch burn grazing mimics the fire and grazing interaction which was a formative ecological process that helped shape grasslands of the Great Plains. Originally conceived as an alternative to uniform utilization (homogeneity), patch burn grazing manages for vegetation structural diversity (heterogeneity) to conserve biodiversity while also sustaining the rangeland resource. Patch burn grazing is compatible with livestock production as well as other conservation goals and fire management benefits that private landowners should consider. The ultimate benefit is it provides a practical framework for applying fire and grazing at the same time, a challenge for many landowners.

Integrating fire and grazing is a challenge for many landowners.



Cattle grazing the burn patch. Note the lack of woody plants.



BENEFITS OF PATCH-BURN GRAZING

1. **Suppress woody plant encroachment:** Woody plants encroach on rangelands and prairies and can convert open grassland to woodland. Eastern redcedar (*Juniperus virginiana*) can accomplish this conversion in as little as 40 years, negatively impacting forage production for livestock, native plants and wildlife.
2. **Allows for natural movements of livestock:** Livestock often preferentially graze specific areas while neglecting others. Patch burn grazing utilizes animal preference for high quality, highly palatable forage to attract grazers to the burn patch which moves over time. This management technique is called 'pyric-herbivory' which means fire driven grazing. Without the need for cross-fences, livestock are free to make resource selection decisions based on factors such as dietary preference, thermal regulation, forage availability, etc.
3. **Interrupt parasite cycles and habitat:** Parasites on livestock can reduce performance and economic returns. Parasite habitat can be impacted by fire (ticks use plant structures and horn flies use cattle feces). Fire reduces important parasite habitat resources and attracts grazing animals to the most recently burned (altered) areas.
4. **Minimize wildfire hazard:** Burning portions of a pasture creates areas that are free of fuels which can serve as fire breaks should wildfires occur. Practitioners of patch burn grazing often use previous year's burn patch as a firebreak for the next burn.
5. **Optimize livestock production:** Cow-calf and stocker cattle research in the southern Great Plains has shown that patch burn grazing at least sustains production (body condition and weight gain), and in certain instances, may optimize or increase production.
6. **Enhance natural resources:** Patch-burn grazing benefits natural resources by enhancing biodiversity, root tissue quality of plants, nutrient cycling, habitat diversity for wildlife and more.

KEY CONSIDERATIONS FOR GETTING STARTED

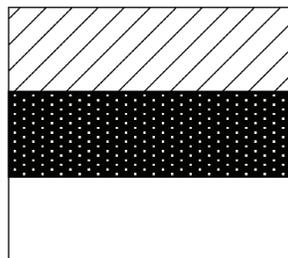
1. **Stocking rate is critical:** A moderate stocking rate is essential for patch-burn grazing to work well. A key indicator that a pasture is properly stocked is the pasture contains at least one patch that is a grazing lawn (burn patch grazed to a short stubble height) and one patch that shows little evidence of grazing (patch with greatest elapsed time since it was burned).
2. **How many patches should I have and how often should I burn?:** The number of patches should be kept flexible and simple to facilitate burning operations. More arid or less productive areas may need additional patches to lengthen the burn frequency (e.g., five patches in a pasture with spring burning = five year fire return interval). In tallgrass prairie projects we target a 3 year fire return interval and number of patches varies from 3 to 6.
3. **Use natural or existing boundaries:** Boundaries between patches will also serve as fire lines. Natural features such as creeks or bluffs work well. You can also use existing ranch roads, feeding areas or right of ways.
4. **Embrace variation:** Patch-burn grazing mimics the messy fire and grazing patterns that formed the Great Plains. Given the variation in size and timing of fires, patch-burn grazing should not be a regimented protocol but rather a flexible approach to restoring the interaction of fire and grazing.
5. **Consider burning at different times of year:** Burning during different seasons of the year mimics the variation of when wildfires occurred and expands the window of burning which can be important to actually getting fires accomplished.
6. **Maintain flexibility:** Patch-burn grazing is not a management scheme to get locked in to but is a conceptual approach to restoring the fire and grazing interaction and processes. The biggest limitation is simply getting started with fire.

Conceptual diagram of a single pasture with three patches for a three year fire return interval. Pasture only has an exterior fence

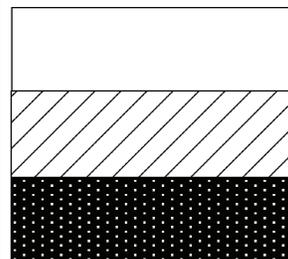
YEAR ONE: The North patch is burned and cattle focus grazing in the North patch. Fuel accumulates in the other patches. Note that there is no intermediate patch the first year (diagonal lines).



YEAR TWO: The Center patch is burned and cattle focus grazing in the Center patch. Using a South wind to burn, the North patch can now serve as a fire break. Fuel accumulates in the South patch for the next burn.



YEAR THREE: The South patch is burned and cattle focus grazing in the South patch. Using a South wind to burn, the Center patch can now serve as a fire break. Fuel accumulates in the North patch for the next burn.



Cattle grazing the most recently burned patch (Center patch) 60 days after a late March burn in Iowa. The other patches (in the foreground and background) are visually obvious.

ACKNOWLEDGEMENTS

Pictures are credited to the author. Appreciation is extended to colleagues at Oklahoma State University. For more information on go to: http://fireecology.okstate.edu/patch_burning.html

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