

Published online 9 August 2005

Published in J Environ Qual 34:1559-1565 (2005)

DOI: 10.2134/jeq2005.0006

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677 S. Segoe Rd., Madison, WI 53711 USA

TECHNICAL REPORTS

Landscape and Watershed Processes

Fire and Grazing Effects on Wind Erosion, Soil Water Content, and Soil Temperature

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Received for publication January 10, 2005. Selective grazing of burned patches can be intense if animal distribution is not controlled and may compound the independent effects of fire and grazing on soil characteristics. Our objectives were to quantify the effects of patch burning and grazing on wind erosion, soil water content, and soil temperature in sand sagebrush (*Artemisia filifolia* Torr.) mixed prairie. We selected 24, 4-ha plots near Woodward, OK. Four plots were burned during autumn (mid-November) and four during spring (mid-April), and four served as nonburned controls for each of two years. Cattle were given unrestricted access (April–September) to burned patches (<2% of pastures) and utilization was about 78%. Wind erosion, soil water content, and soil temperature were measured monthly. Wind erosion varied by burn, year, and sampling height. Wind erosion was about 2 to 48 times greater on autumn-burned plots than nonburned plots during the dormant period (December–April). Growing-season (April–August) erosion was greatest during spring. Erosion of spring-burned sites was double that of nonburned sites both years. Growing-season erosion from autumn-burned sites was similar to nonburned sites except for one year with a dry April–May. Soil water content was unaffected by patch burn treatments. Soils of burned plots were 1 to 3°C warmer than those of nonburned plots, based on mid-day measurements. Lower water holding and deep percolation capacity of sandy soils probably moderated effects on soil water content

and soil temperature. Despite poor growing conditions following fire and heavy selective grazing of burned patches, no blowouts or drifts were observed.