Improvement in Ecological Status with Grazing Management and Range Chiseling

Abstract: Rangeland chiseling is a practice that has been used by many ranchers to improve production on clubmoss or blue grama (*Bouteloua gracilis* (Willd. ex Kunth) Lag. ex Griffiths) dominated rangelands in the Great Plains and Rocky Mountain valleys. Two different chiseling trials along with deferred grazing were evaluated to assess the effect of rangeland chiseling and managed grazing on plant communities.

In November of 2005 and March of 2006, a replicated chiseling trial was done on the CB ranch near Cameron in the Madison River valley of southwest Montana. The replicated trial compared fall versus spring chiseling versus deferment alone. The plant community was about 20% similar to potential with a 70% basal cover of clubmoss (*Selaginella densa* Rydb. var. *densa).*

In late March and early April of 2002 a range chiseling was done on 640 acres of the Schott ranch near Broadview, Montana. The plant community was 25% similar to potential consisting of some blue grama and club moss, western wheatgrass *(Pascopyrum smithii* (Rydb.) A. Löve), etc.

On the CB ranch the spring chiseling economic return was $3.60/acre/year greater than the control, fall was $2.40 greater, and the Schott chiseling averaged $2.00 above the control.

Analysis of variance (ANOVA) was used to evaluate the treatment effects on the CB ranch. Bluebunch wheatgrass (*Pseudoroegneria spicata* (Pursh) A. Löve) production was 50% greater than the control with fall chiseling and 88% greater with spring chiseling (P=.05).

The Similarity Index improved from 20% to 41% with deferment on the control (more than doubling the stocking rate), from 20% to 57% on the fall chisel (more than doubling the stocking rate), and from 20% to 70% on the spring chisel (four fold increase in stocking rate in four years).

Spring chiseling appeared to be more effective, bluebunch wheatgrass is still increasing relative to the controls, and grazing management improves production significantly. In addition, ecological values and economic returns are improved substantially with grazing management alone and especially with chiseling plus grazing management.