



## Ecological Responses Following Harvest of Mesquite for Bioenergy Uses

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Honey mesquite (*Prosopis glandulosa*) may have potential for bioenergy uses in the southern Great Plains because of abundant distribution, relatively high standing crops, reliable growth during drought, no cultivation costs, and high re-growth capacity following above-ground harvest. Reducing mesquite competition with grasses after mesquite harvest has the added benefit of increasing herbaceous forage production for livestock and possibly restoring rangeland health. We evaluated ecological responses following mesquite harvest in the fall of 2006 with a mechanical system that removed above ground biomass but left root systems intact to allow re-growth for future harvest. Initial mesquite standing crop was 18 Mg/ha and canopy cover was 60%. The mechanical system harvested 47% of the standing crop and the remaining mesquite wood was left on the ground as fine mulch. Pre-harvest herbaceous community was dominated by C3 Texas wintergrass (*Nasella leucotricha*) (22% cover). Cover of C4 grasses, pricklypear cactus (*Opuntia* spp), bare ground, and litter was 8, 8, 23 and 33%, respectively. Perennial grass production tripled the first year following mesquite clearing, but this was due to increases in C3 grasses only. Pricklypear cover was reduced to zero but bare ground increased to 37% in the mesquite cleared treatment. During the second year after mesquite harvest, herbaceous species composition remained dominated by C3 grasses in both treatments. The results indicate no negative effects of the mesquite harvesting process on the grass community but a shift in grass species composition toward C4 grasses was not yet apparent.

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