1995, emergence of Illinois bundleflower, leadplant, partridge pea, roundhead lespedeza, and Canada tickclover were greatest when treated with imazethapyr. In 1996, experiments were conducted at four locations in eastern Nebraska to determine the establishment of mixtures of Illinois bundleflower:big bluestem (*Andropogon gerardii* Vitman) (110:220, 165:165, and 220:110 PLS m^{-2}) treated with imazethapyr and imazameth at 0.07 kg ai ha^{-2}. Two months after herbicide treatment, similar weed control was observed in areas treated with imazethapyr and imazameth. Seedling emergence was high (>100 plants m^{-2}) for all mixtures and seedling density was not reduced by the herbicide treatments at three locations. Imazethapyr and imazameth improved establishment of selected legumes and seeded mixtures containing Illinois bundleflower and big bluestem.

Prescribed Fire Effects On The Agua Fria Grasslands To Adjacent Riparian Areas: Nitrogen. *John H. Brock* and *Douglas MacPhee*, Arizona State University, Tempe, AZ 85287-2005 and Verde Ranger District, Prescott National Forest, Verde, AZ 86322.

About 600 ha of the Agua Fria grasslands near Dugas, AZ on the Prescott National Forest was treated with a prescribed fire on June 28, 1994. The primary research question centered on: do prescribed fires on upland plant communities influence adjacent riparian areas by the import of nutrients? Approximately 1 week before the fire, pre-burn surface soil samples were collected from 27 sites across the burn area and adjacent lands which served as controls. Post-burn soil samples were collected at 1 week, 1, 2, 3, 4, 7, 10, and 12 months after the fire. These soils samples were analyzed in laboratories at Arizona State University for ammonia and nitrate content. The most responsive form of soil nitrogen in this study was found to be ammonia. Only small and statistically insignificant changes were noted for soil nitrates. Soil ammonia did increase immediately after the burn and showed higher levels associated with warm soil temperatures and precipitation events. The small changes in soil ammonia and nitrates in upland and mid slope surface soils were apparently not transported to the adjacent riparian habitats.

Decline Of Aspen *(Populus tremuloides)* In The Interior West. *Dale L. Bartos*, Intermountain Research Station, Logan, UT 84321.

It is commonly recognized that aspen (*Populus tremuloides*) ecosystems in the Interior West provide numerous benefits: (1) forage for livestock, (2) habitat for wildlife, (3) water for downstream users, (4) esthetics, (5) sites for recreational opportunities, (6) wood fiber, and (7) landscape diversity. Loss or potential loss of aspen on these lands can be attributed primarily to the successional process, reduction (or elimination) of fire, and long-term overuse by ungulates. Western aspen forests are unique because they reproduce primarily by suckering from the parent root system. Generally a disturbance or die back is necessary to stimulate regeneration of the stands. Unlike other tree species, if aspen stands are lost from the landscape, generally they will not return through natural processes. If current conditions continue (e.g., lack of fire, wildlife use, grazing by livestock) that have prevailed for the past 100 to 140 years, most aspen stands will eventually be replaced by conifers, sagebrush, or possibly tall shrub communities. Data for the State of Utah (Renee O'Brien, personal communications) show that there has been a 60% decrease in aspen dominated lands since the arrival of European man. Others have reported similar results. This loss of aspen from the landscape translates to a loss of water, forage, and biodiversity. Numerous areas throughout the West that were once dominated by aspen are in a late successional stage and are at high risk of losing the aspen entirely. Many treatment alternatives (e.g., burning, cutting, fencing, spraying, ripping, chaining, etc.) exist that could be used by the managers. If restoration treatments are to be successful, action must be taken soon.

Stream Temperatures Related To Subsurface Waterflows Originating From Irrigation. *Tamzen K. Stringham* and *John C. Buckhouse*, Oregon State Univ., Corvallis, OR 97331.

The source of water, relative contribution of groundwater and discharge level of the stream are the most important hydrologic factors impacting the thermal regime of lotic ecosystems. Groundwater discharge provides baseflow and has been found to moderate daily maximum stream temperatures. Subterranean irrigation, where water is diverted from the stream, carried by a ditch along the flood plain edge and allowed to return to the stream via subsurface interflow may mimic the cooling effect of groundwater discharge. Continuous stream temperature data were collected on adjacent stream segments located within non-irrigated and irrigated meadows. Sensors were placed in the stream above a head-ditch diversion, in the irrigation ditch, in the subsurface (interflow) groundwater, and in the stream reach within the irrigated meadow. Daily maximum stream temperatures in the irrigated meadow reach were 1.0° to 3.0°C cooler than the non-irrigated reach.

Determining The Effect Of Prior Management Practices On Haying And Grazing CRP Land For Three Years. *Paul D. Ohlenbusch*, Extension Agronomy, Throckmorton Hall, Kansas State Univ., Manhattan, KS 66506-5504, *Michael R. Langemeier* and *Rodney D. Jones*, Agriculture Economics, Waters Hall, Kansas State Univ., Manhattan, KS 66506-4026.

As Conservation Reserve Program (CRP) contracts begin expiring in 1997, producers are concerned about the ability of CRP land to produce at economical levels.