

- Roberson, J.A. 1984. Sage grouse-sagebrush relationships: A review. pp. 157-165. *In: Proc., Symposium on the Biology of *Artemisia* and *Chrysothamnus**. July 9-13, 1984, Provo, UT, Intermountain Research Station, USDA, FS, Ogden, UT.
- Schuman, G.E., D.T. Booth, and J.R. Cockrell. 1998. Cultural methods for establishing Wyoming big sagebrush on mined lands. *J. Range Manage.* 51:223-230.
- Schuman, G.E., E.M. Taylor, Jr., F. Rauzi, and G.S. Howard. 1980. Standing stubble versus crimped straw mulch for establishing grass cover on mined lands. *J. Soil and Water Conservation* 35:25-27.
- Shannon, C. and W. Weaver. 1949. *The mathematical theory of communication*. University of Illinois Press, Urbana, IL.
- Stahl, P.D., S.E. Williams and M. Christensen. 1988. Efficacy of native vesicular-arbuscular mycorrhizal fungi after severe soil disturbance. *New Phytol.* 110:347-354.
- Tessman, S. and L.H. Kleinman. 1989. Point and counterpoint: Should the mining industry be required to increase the amount of sagebrush planted at reclaimed sites? *The Mining Claim.* 15(2): 8-11. The Wyoming Mining Association, Cheyenne, WY.
- White, J.A., L.C. Munn, and S.E. Williams. 1989. Edaphic and reclamation aspects of vesicular-arbuscular mycorrhizae in Wyoming Red Desert soils. *Soil Sci. Soc. Am. J.* 53:86-90.
- Yoakum, J. 1984. Use of *Artemisia* and *Chrysothamnus* by pronghorns. pp. 176-180. *In: Proc., Symposium on the Biology of *Artemisia* and *Chrysothamnus**. July 9-13, 1984, Provo, UT, Intermountain Research Station, USDA, FS, Ogden, UT.
- Young, J.A. and R. Evans. 1989. Dispersal and germination of big sagebrush (*Artemisia tridentata*) seeds. *Weed Sci.* 37:201-206.
- Young, J.F. and P.C. Singleton. 1977. Wyoming general soil map. Wyoming Agricultural Exp. Stn. Bull., Research Journal 117, University of Wyoming, Laramie.

H. Appendix

1. Abstracts of Resulting Theses/Dissertations

Gores, Jim K. 1995. *The Evaluation of Big Sagebrush and Fourwing Saltbush Establishment Success on Pre-1985 Wyoming Reclaimed Mine Sites*. M.S. Thesis, Department of Rangeland Ecology and Watershed Management, University of Wyoming

Several ten-year or older shrub communities on reclaimed mine sites across Wyoming were evaluated for density, cover, height, survival, diversity and dominance. Two treatments were utilized. Treatment #1 sites were seeded to fourwing saltbush (*Atriplex canescens* (Pursh) Nutt.) and various perennial grass species. Treatment #2 sites were seeded to big sagebrush (*Artemisia tridentata* Nutt.), fourwing saltbush and various perennial grass species.

Shrub densities ranged from 0.08 to 0.70 shrubs/m² on treatment #1 sites and from 0.09 to 1.92 shrubs/m² on treatment #2 sites. Shrub cover ranged from 2% to 15.7% on treatment #1 sites and from 1% to 13.2% on treatment #2 sites. Diversity indices ranged from 0.01 to 0.43 on treatment #1 sites and from 0.04 to 0.45 on treatment #2 sites. Treatment #1 sites were dominated by fourwing saltbush, treatment #2 sites by big sagebrush. Average heights and survival rates varied between species and sites.

2. Citations of resulting publications and those submitted for publication

Cockrell, J.R., G.E. Schuman and D.T. Booth. 1992. Establishment of big sagebrush on Wyoming mined lands. pp. 14-15. In: J. Colorado-Wyoming Academy of Science, Vol. XXIV, No. 1.

Cockrell, J.R., G.E. Schuman and D.T. Booth. 1993. Strategies for establishing big sagebrush on mined lands. pp. 889. In: *The Challenge of Integrating Diverse Perspectives in Reclamation*. May 16-19, 1993, Spokane, WA. American Society for Surface Mining and Reclamation, Princeton, WV.

Cockrell, J.R., G.E. Schuman and D.T. Booth. 1995. Evaluation of cultural methods for establishing Wyoming big sagebrush on mined lands. pp.784-795. In: G.E. Schuman and G.F. Vance (eds). *Decades Later: A Time for Reassessment*. June 3-8, 1995, Gillette, WY. American Society for Surface Mining and Reclamation, Princeton, WV.

Stahl, P.D. , G.E. Schuman, S.E. Williams, and S.M. Frost. 1996. Influence of arbuscular mycorrhizae on water stress tolerance of big sagebrush seedlings. *Agron. Abstracts*. p. 232.

Schuman, G.E., D.T. Booth, and J.R. Cockrell. 1998. Cultural methods for establishing Wyoming big sagebrush on mined lands. *J. Range Management* 51: 221-228.

Stahl, P.D., G.E. Schuman, S.M. Frost and S.E. Williams. 1998. Interaction of arbuscular mycorrhizae and seedling age on water stress tolerance of *Artemisia tridentata* ssp. *wyomingensis*. *Soil Science Society of America J.* 62: (In press)

Booth, D.T.,J. K. Gores, G.E. Schuman and R.A. Olson. 1998. Shrub stands on pre-1985 reclaimed mined lands in Wyoming: I. Shrub densities and wildlife implications. *Restoration Ecology* (In press)

Olson, R.A., J.K. Gores, D.T. Booth, and G.E. Schuman. Suitability of shrub establishment on Wyoming mined lands reclaimed for wildlife habitat. *Great Basin Naturalist* (In review)

3. Data on scientific collaborators

Dr. Richard A. Olson, Associate Professor, Rangeland Ecology and Watershed Management, University of Wyoming, Laramie, WY

Dr. Peter D. Stahl, Temporary Assistant Professor, Plant, Soil, and Insect Sciences Department, University of Wyoming, Laramie, WY

Dr. Stephen E. Williams, Professor, Plant, Soil, and Insect Sciences Department, University of Wyoming, Laramie, WY

Dr. D. Terrance Booth, Rangeland Scientist, High Plains Grasslands Research Station, USDA, ARS, Cheyenne, WY

Dr. Gerald E. Schuman, Soil Scientist, High Plains Grasslands Research Station, USDA, ARS, Cheyenne, WY

J.R. Cockrell, Graduate Research Assistant, Ph.D. program, Plant, Soil and Insect Sciences Department, University of Wyoming, Laramie, WY

J.K. Gores, Graduate Research Assistant, M.S. program, Rangeland Ecology and Watershed Management, University of Wyoming, Laramie, WY

Larry W. Griffith, Agricultural Science Research Technician, High Plains Grasslands Research Station, USDA, ARS, Cheyenne, WY

Pamela Freeman, Biological Science Technician, High Plains Grasslands Research Technician, USDA, ARS, Cheyenne, WY

Matthew Mortenson, Biological Science Technician, High Plains Grasslands Research Station, USDA, ARS, Cheyenne, WY

Christopher Mahelona, Physical Science Technician, High Plains Grasslands Research Station, USDA, ARS, Cheyenne, WY

Sandra M. Frost, Lab Assistant, Plant, Soil, and Insect Sciences Dept., University of Wyoming, Laramie, WY

4. Description of Inventions: None