

Using Agroforestry to Winter Cattle

Final Report for FNC02-426

Project Type: Farmer/Rancher

Funds awarded in 2002: \$4,760.00

Projected End Date: 12/31/2006

Region: North Central

State: Kansas

Project Coordinator:

[Dale Strickler](#)

Project Information

Summary:

PROJECT BACKGROUND

I have a very small farming operation (150 acres) and have maintained a small (15 pair) cowherd in the past. I currently have no cattle, but am taking on approximately 40 head this spring. Prior to this project, my farm ground was primarily in a furrow irrigated corn-soybean rotation with conventional tillage. I transitioned to a longer crop rotation that included wheat and cover crops along with no-till, made feasible by the installation of subsurface drip irrigation. These moves have drastically reduced the amount of erosion occurring on my farm. However, I would like to move towards a system of agriculture that requires no machinery or petroleum inputs. This spring I am converting the majority of my cropland to grass/forbs/legume mixtures designed to provide quality green, growing forage from early March until late December. However, in Kansas winters, there are no plants that will grow in January and February most years. This leaves cattle producers faced with providing mechanically stored feed during midwinter even with the best of forage plans, requiring a tractor, swather, baler, etc. I would like to explore the feasibility of growing plants that retain their forage quality in the winter, and would stick out above snow cover to provide the missing link in a year-round grazing system.

PROJECT DESCRIPTION

I identified several plants that could provide midwinter grazing or browse. One of the most promising is fourwing saltbush (*Atriplex canescens*), a shrub native to the American west that retains its leaves over winter and is palatable to cattle. Fourwing saltbush is very deep rooted and drought tolerant. Another very promising plant is prostrate kochia (*Bassia prostrata*), a relative of the weedy kochia (*Kochia scorparia*) (tumbleweed) that plagues the American west. Unlike kochia, prostrate kochia is a perennial that does not tumble or spread, and does not get hard and woody like annual kochia. It retains some green growth throughout winter and is reported to be very drought tolerant and palatable to cattle. A proven plant in this area is honeylocust. Cattle find the sugary pods of honeylocust to be a treat in late fall and winter, which unfortunately contributes to the spread of this thorny tree. Honeylocust seeds receive needed scarification in the digestive tract so that the resulting cowpies sprout thickets of thorny trees. However, thornless cultivars of

honeylocust exist, and an obscure few cultivars exist which were selected on the basis of the sugar content of their pods in the early part of the 20th century for use in a sugar industry that never came to fruition. These cultivars are very difficult to obtain, but are available through Hidden Springs Nursery in Cookeville TN. Some of these cultivars include Calhoun, Millwood, and Hershey. Yet another potential over winter forage is switchcane, a native bamboo that retains its leaves over winter. Switchcane grow in thickets in river bottoms in the American South, and these thickets were attractive locations for pioneers to overwinter cattle. However, these same areas were also the most fertile farm ground and most were plowed to grow crops. Pasturable stands of switchcane are rare today. Switchgrass seldom produces seed and must be vegetatively propagated, which limits the acceptance of this unique forage.

Another desirable vegetable component for over wintering cattle is a coniferous windbreak, which will reduce inclement weather stress and nutritional needs. The original intended site location, at my farm, was changed after I purchased a small acreage and house six miles from my farm. I thought it would be convenient to have this over wintering location close to my house, so I moved the experiment to the roughly 3 acres of crop ground next to my house. The field lies next to a small, wooded creek so a windbreak already existed. I planted the field to a mixture of fourwing saltbush and prostrate kochia in late April after burning down the existing vegetation with Roundup. The saltbush was planted with a one-row planter in approximately six-foot rows to allow cattle to move between rows. The prostrate kochia was broadcast on the surface. I also located an existing stand of switchcane near Wilburton, Oklahoma and dug ten plants for transplanting. The plants were transplanted in early April. I obtained seed from a thornless honeylocust selected for high sugar pods and started them in a greenhouse. I had difficulty getting the seeds to sprout. I had trouble figuring out how long to soak the seeds in hydrochloric acid to scarify them. After only four trees established, I decided that purchasing grafted seedling trees would be more certain route to getting trees established.

The fourwing saltbush established very well despite severe dry weather after planting. The prostrate kochia started slowly with plants barely visible for much of the summer. Weeds started to come on strong, particularly weedy kochia and foxtails. I decided to spray the foxtail with Select herbicide, but there was nothing that could be done to control the kochia since it was so closely related to the prostrate kochia. If the saltbrush had been planted in precise rows, it could have been cultivated to control weeds but would have resulted in the loss of the prostrate kochia. I think the weed competition really set the plants back. The drought was particularly very hard on the switchcane. Only three of the ten plants survived the summer, despite receiving supplemental watering. I don't know if this is because switchcane can't tolerate Kansas weather or if there were too many roots lost during transplanting. The only way to find out will be to plant potted switchcane in an area with favorable soil moisture conditions. I have a location that gets sprinkled by my pivot that I plan to try placing potted plants to see if they catch on. If they do, switchcane spreads by rhizomes and should fill in.

By winter, there was a decent stand of saltbush established, with many plants standing roughly two foot tall, and the prostrate kochia was beginning to come on strong. After the first snowfall, the saltbush looked quite beautiful with its silvery-gray leaves sticking up out of the snow and the project looked like a resounding success. I should have taken pictures then, because that's when plants started disappearing. Each time I looked there seemed to be fewer plants. Upon inspection, I found out why. There were circles of rabbit tracks around little gnawed stems where plants used to be. Two-foot tall plants became half-inch tall stumps overnight. By spring, I could only find three surviving saltbush plants. The prostrate kochia

survived the rabbits better, as they not only seemed to prefer it less, but it also maintained many more basal leaves than the saltbush and recovered better after rabbit feeding. Come spring, what had once looked like a promising project now looked like a complete failure.

However, I still believed this project had promise. I decided this past spring to move the project back to my main farm, where there currently is not much rabbit cover and far less weed competition than the three acres next to the house. I burned down the existing alfalfa in a pivot corner with Roundup to begin a new location. It took a second spraying with Roundup as the alfalfa came back very strong after the first spraying. I tried without much success to plant saltbush with a rowcrop planter in 36 inch rows which would allow cultivation. The prickly saltbush seeds would not flow through a planter. Finally, I got the man who does the native grass seeding for the local NRCS on contract to plant the saltbush with a native grass drill, which worked well. The saltbush seemed poised for success. However, the planting was followed by extremely hot weather, and the saltbush failed to sprout despite favorable rains during the summer. A walk over the entire five acres revealed only two seedlings. A sunflower crop planted nearby under at nearly the same time flourished. I later learned that saltbush seed becomes dormant when the soil temperature gets over about 80 degrees. Thus, the second saltbush planting was also a failure, at least based on this year's results. I did receive grafted thornless honey locust seedlings from the nursery and planted them this fall. Success of these seedlings will have to be evaluated next fall.

Despite the currently discouraging results of my trial so far, I still don't want to give up on the project. I plan to continue the project after the grant period ends with yet another planting this coming spring, and a planting of a windbreak to the north and west of the project area, which is already in progress. I really feel that finding plants that don't require mechanical harvesting in order to provide winter feed would truly revolutionize the cattle industry in this area. I would hate to give up when the discovery of those plants may be just a year away.

I feel in order to make this planting successful; the barriers of rabbits and weeds need to be addressed. A larger planting area would help the rabbit problem, so that the area can't be overwhelmed by rabbits from the surrounding area like my first planting. The weed problem could possibly be solved or at least minimized with cultivation if the saltbush were established in precisely spaced six-foot rows, perhaps with the prostrate kochia planted exactly halfway between those rows so that cultivation would not wipe out the kochia. A shielded sprayer might also be an option, with a non-selective herbicide sprayed between the rows to kill existing weeds without planting a new crop like a cultivator would. Even with good control of rabbits and weeds, this would have to be considered a long-term project, perhaps best suited to CRP plantings where a person could afford to have land out of production long enough to get the plants established.

PROJECT IMPACTS

Unfortunately at this time, with no results there can be no impacts. However, I firmly believe that if my future efforts are successful, we could see a dramatic shift in how cattle are raised in the Great Plains. I saw enough promise to feel there is potential for this system. Feeding hay costs about \$1 per head per day; if cattle could simply be allowed to get their own feed, then those costs could be reduced dramatically. Hay costs will probably also continue to rise as fuel and steel prices continue to climb.

OUTREACH

In the first fall after planting, I gave two tours to college students and one to high school students from several area high schools. Approximately thirty college

students and about 70 high school FFA students along with advisors attended the tours. I sent earlier the posters I used for the talks. I am also a member of the Kansas Grazers Association and hope one day to have a successful project that I could feature for one of their tours.

PROGRAM EVALUATION

I think the program is wonderful and works just fine the way it is. I truly enjoyed the visit by the evaluator when he came early and learned a great deal from him about what other people are doing for projects. This program really stimulates some worthwhile projects that would probably never otherwise be attempted. The paperwork is cumbersome but necessary. Everyone I have worked with has just been great. I would change only one thing: I would include some provision for long-term projects that cannot be completed in one year. I feel this project is being brought to a close too soon. That's why I plan to continue it at my own expense.

Research

Participation Summary

Any opinions, findings, conclusions, or recommendations expressed in this publication are those of the author(s) and do not necessarily reflect the view of the U.S. Department of Agriculture or SARE.



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