University of Idaho Extension

Owyhee County

Cattlemen's Corner Beef Newsletter

July, 2013

Inside this issue:	
Management Tips to Survive Drought	2,6
Impact of Western Juniper Treatment Costs on Ranch Level Profits	3-5
Nitrate Problems in Hay	7

Owyhee Cattlemen's Association
135th Annual Summer Meeting
Saturday, July 27
Silver City

This newsletter is provided as a public service to producers and others in beef industry related fields. If you do not have an interest in receiving the Cattlemen's Corner Beef Newsletter in the future, please contact the Extension Office and we will remove your name from our mailing list. Likewise, if you know of someone who would like to receive the newsletter, please let us know.
http://www.extension.uidaho.edu/owyhee
208-896-4104

Monitoring With A Purpose

K. Scott Jensen, UI Extension Educator, Owyhee County
Jeffery B. Olson, UI Student Intern

Monitoring seems to be the current "buzz word", and there is good reason for that. Frankly, there has not been enough monitoring done to document the current good management practices that exist in order to preserve the rich agricultural history and traditions we cherish. When many ranchers and farmers ride out to see their land, they can evaluate the soils, plant life and water quality based on personal knowledge gained over decades of caring for the land. Some ranchers still remember a time when the most prominent plant in the borrow pit was not cheat grass. Those memories of a better day, as sweet as they may be, are not enough to prove whether our land management practices are working or not.

Monitoring, as defined in the Code of Federal Regulations, is "the periodic observation and orderly collection of data to evaluate: 1) Effects of management actions; and 2) Effectiveness of actions in meeting management objectives." (43 CFR 4100.0-5 – Definitions, n.d.).

This definition, is illustrated in part by every rancher who goes to an allotment and observes the Bluebunch coming up through the Sagebrush or even the increase in forbs throughout the year. That statement in passing means very little, but when recorded in a log could be the one thing that protects you from of anti-ranching minded groups. This sort of record keeping is not optimal, yet it is without a doubt better than none at all. How much more valuable would a picture and a GPS coordinate be?

The obvious answer to our problem is to get out and monitor. There are 6 basic steps as defined by Herrick et al. that may guide you in your monitoring activities.

- Determine your management and monitoring goals.
- Stratify land into monitoring units
- Assess current status
- Select indicators and number of measurements
- Select monitoring plot locations
- Establish monitoring plots

One goal of a typical rancher is likely to be to make money and keep ranching. Monitoring is an important step to help accomplish this goal and maintain your way of life. It has been said that the most important day you monitor is the day you actually start. First, make a mental survey of the land you use and look for changes you may need to make. Note where those areas are located, and get a picture at the very least.

. . . this takes time and money; however, litigation takes more time and even more money.

As you visualize the problem areas divide them into areas that are similar by vegetation, soil, slope and whatever other characteristics that are alike. These will be your monitoring units.

. . . continued on page 6

Management Tips to Survive Drought

Jim Church, UI Extension Educator

The Situation

This has been an interesting year weather wise in northern Idaho, with a long dry grazing season and the hay yields below normal.

The mid-west and south have been in the grip of a drought for a couple of years and it has had a dramatic affect on the cattle business in that area. Hopefully we will not see that kind of situation here. However, it is wise to plan ahead just in case. Following are some strategies for surviving dry conditions and limited forage supplies.

Making a Plan

Jerry Linquist, a Michigan State University Extension Educator, authored a paper entitled, "Drought Planning Should Begin With Green Pastures". In this paper, Linquist outlined options cattle producers should consider when developing a drought plan.

Linquist's recommended options for a drought plan:

1. **Buy extra feed early.** If you think that you may be short on hay for next winter, consider buying left over hay from last year if you can find some.
2. **Hold cattle off pasture in the early days of the grazing season.** If rains do come, the grass will respond better if it is not over grazed early in the season. The drawback to this will be having to feed hay that will be needed next winter.
3. **Look for fall grazing options such as crop aftermath.** Graze hay fields and wheat stubble. These fields may not be fenced or have a water source, but putting up electric fencing and hauling water is much cheaper than buying hay and feeding the cattle.
4. **Consider early weaning of calves.**
5. **Cull the cow herd hard.** When feed resources are short, send any problem cow to market. Cull for poor performance, disposition, structural problems, late calvers and whatever you think is important to your herd.

Chuck Coffey, an agricultural specialist with the Noble Foundation in Ardmore, Oklahoma, also established some tips for cattle producers experiencing drought. Coffey's additional recommendations include:

- **Adjust the stocking rate.** In dry years the stocking rate has to be reduced. This requires careful planning to either locate additional pastures, reduce cowherd numbers or feed part of the herd using low cost forages.
- **Calculate how much pasture forage is available to help determine stocking rate.**

Forage yield can be calculated by measuring the height of the grass. The estimated amount of forage or dry matter per acre inch of grass is 200 pounds, plus or minus 50 pounds. Research conducted on estimating available forage at Iowa State University, showed that forage produced varied based on the stand and pasture condition. With mixed pasture grasses the yield under fair pasture condition was estimated at 150 to 250 pounds and if it was in excellent condition, could go as high as 350 pounds or more. In our area, it would probably be wise to use the 200 pound per acre inch of grass as an estimate.

If we measure the grass height at five inches tall and we need to leave three inches after we graze the pasture, we have two inches of grass to graze. Simply multiply two inches by 200 and we have 400 pounds available forage per acre. Cows will eat 30 pounds of dry matter per day. Therefore, one cow will eat the 400 pounds of available forage on the one acre in 13 days. To determine what is available over the entire pasture, multiply 200 by the acreage and divide it by the amount of forage needed for the number of cows owned.

- **Plan for water availability.** Either develop new water sources or make other plans.
- **Add fences.** Cross fencing can allow for rotating pastures which will provide better forage utilization and will improve pasture forage health.
- **Lengthen rest periods for pastures.** Pasture grasses are tough and can withstand drought if they have time to recover after grazing. Continuously grazing drought stressed grasses will weaken the plants and reduce stands.

Last Resort if Drought Persists?

Dispersing the herd is always an option or last resort if drought gets really bad and

. . . continued on page 6

Impacts of Western Juniper (*Juniper occidentalis*) Treatment Costs on Ranch Level Profits

Ashley McClain, Neil Rimbey

Introduction

About a year ago, we published an article in this newsletter on the ranch-level economic impacts of juniper encroachment. Our economic model of a western ranch showed substantial impacts on long-term profitability and sustainability as junipers moved from Phase 1 (few trees) to Phase 3 (tree dominance) levels of encroachment. The next question in this research was to attempt to determine what the ranch could afford to invest to keep junipers under control and thus not lose the forage component of the system. This article will focus on the ranch-level feasibility of juniper removal, balancing high treatment costs against the value of increased forage and analyzing the ranch's willingness to pay for these improvements.

Understory composition at the time of removal and removal method are the primary characteristics determining the production response to juniper treatments. Removing western juniper at earlier stages has been shown to increase understory productivity, as much as 8 to 10 times (Bates et al. 2000, Bates et al. 2005, Bourne and Bunting 2011, Young et al. 1985). Understory biomass averages 5 times higher after juniper treatment as compared to untreated areas. Of these increases in total biomass after juniper treatment, perennial grasses had the greatest recovery, increasing up to 16 times compared to untreated areas. Other grasses and perennial forbs tend to increase initially, but the increase is not sustained on a long term basis (Bates et al. 2005). The potential for invasive annuals such as cheatgrass (*Bromus tectorum*), to enter a site also increases when junipers are removed. The potential for invasion is greater in years of higher precipitation, especially after juniper removal, and also increases as more disturbances are caused to the site (Bates et al. 2005, Young et al. 1985). The success of removing juniper on restoration of a desired plant community depends on pre-treatment understory composition, treatment method, and management of the site after juniper has been removed. Chainsaw cutting, prescribed fire, chaining and mastication machines are a few different methods that can be used to reduce juniper cover (Bates et al. 2005, Miller et al. 2000).

Methods

The economic situation, available resources and production rates were defined for a representative 300 head cow/calf ranch in the Jordan Valley area of Owyhee County, Idaho, as described in the previous article. A dynamic multi-period linear programming (LP) model was used to determine optimal production levels and economic returns over a 40-year planning horizon. The LP model maximized net present value of the net annual ranch returns, subject to the various resource and production constraints. Real (constant 2005) livestock prices were used with 100 different price iterations per year.

Forage availability was calculated using herbage data by western juniper encroachment Phase from Bourne and Bunting, 2011, and Stebleton

. . . continued on page 4

and Bunting, 2011. Total herbage production was converted to available AUMs per acre and incorporated into the model as AUMs available on the grazing parcel.

Treatment costs for removal of juniper ranged from $50 per acre, for Phase 1 - 2 chainsawing, to $275 per acre, for heavy Phase 2 mastication. When the site enters a Phase 3 encroachment level treatment options and feasibility decline (Barrett 2005, Barrett 2007, and Talsma 2011). Juniper treatment on a landscape scale is a considerable financial investment that cannot be afforded by a ranch without outside financing. Rangeland improvement loans are not available on a 40 year basis, so financing was assumed to be available in 5, 10, or 20 year loans, at fixed interest rates of 5.5% 5.0% and 5.75%, respectively, as shown in Table 1 (Zions Bank, personal correspondence). Since the model used a 40 year planning horizon, 5 year loans were obtained every 5 years for juniper treatments on an eighth (941 acres) of the parcel; 10 year loans were obtained every 10 years for a fourth of the allotment (1,883 acres); and 20 year loans were obtained in years 1 and 20 for half of the parcel (3,766 acres). These treatment sizes lead to AUM increases of 97, 194, and 388 for the 5, 10, and 20 year loans respectively, when the model started at a Phase 2 encroachment level. The model was also run using Phase 3 as a base; the 5, 10 and 20 year loan option had AUM increases of 158, 316, and 632 respectively. Every year a treatment loan is obtained, the AUMs increased by the respective amount for the loan term. Loans were entered as a total loan required for the treatment: cost per acre multiplied by the acres treated in that loan period. Annual treatment loan payments were accrued as a fixed cost throughout the planning horizon.

Table 1: Treatment Loan Calculations

Loan Term	Interest Rate	Acres Treated	Phase 2 AUM Increase	Phase 3 AUM Increase
5 Year Loan	5.50%	941	97	158
10 Year Loan	5.00%	1,883	194	316
20 Year Loan	5.75%	3,766	388	632

Results

Treatment cost and revenues were compared across several costs per acre for both the Phase 2 and Phase 3 baseline models. Results showed that when the ranch was assumed to be in a Phase 2 encroachment level, it could afford to pay up to $30 per acre for treatment, but this cost decreased the ranch's NPV below the NPV of the ranch if the allotment was left untreated; when the cost per acre was lowered to $20 per acre, the NPV of the ranch's income stream increased to a point where treatment became profitable. When the ranch was assumed to start in a Phase 3 encroachment level it could afford to pay up to $20 per acre, and it caused a large enough increase in profits that the ranch is willing to pay for the improvement.

Costs and revenues were also compared across the three different loan terms. Loans obtained every 20 years provided the largest initial increase in AUMs, allowing for higher cattle numbers throughout the 40 year planning horizon. When the ranch was assumed to start in a Phase 2 encroachment level the difference between the NPV across the three loan terms was minimal, though the 20 year loan term did show a slightly higher, $1,468 to $4,516, NPV on average. When the ranch was assumed to start in a Phase 3 encroachment level obtaining a 20 year loan showed a NPV of $350,000, an average increase of $20,000 to $34,000 compared to the 5 or 10 year loan terms.

Conclusions and Implications

The ranch can afford to pay up to $5,648 per year, $30 per acre, for juniper removal on the juniper invasion parcel when it starts in Phase 2 and is converted back to Phase 1 encroachment level. However, this price level drops the ranch's NPV below the NPV if the allotment was not treated. Only when the cost of treatment is dropped to $3,766 per year, $20 per acre, or less, does the NPV for treating juniper become higher than

. . . continued on page 5

when left untreated. When the parcel is in Phase 3 and being converted back to Phase 1, the ranch can afford to pay $3,766 per year, $20 per acre, for treatment. Once the parcel reaches a Phase 3 level of encroachment, treatment costs increase dramatically and the understory response to juniper removal becomes more uncertain. These numbers are presented for comparison purposes, yet show the potential "cost" of not treating juniper and allowing succession to proceed to Phase 3.

When the 5, 10, and 20 year loan options are compared, the 20 year loan option yields the highest NPV when the allotment starts in either a Phase 2 or a Phase 3 at treatment costs of $20 per acre. When treatments are financed using the 20 year loan option half of the parcel is treated at once, causing the largest increase in AUMs in year 1. This initial increase in forage allows the ranch to raise greater cattle numbers from year one, increasing overall revenues and profitability. Treatment costs and interest incurred over the long term loans, is compensated for by increased forage availability, and the ability to raise additional cattle.

Treatment costs usually average considerably higher than $20-$30 per acre, and vary depending on the type of treatment chosen, the terrain to be treated, and the Phase of encroachment. Since the benefits of removal apply to more than just the ranch owner, there are multiple government agencies and conservation groups that have been working in partnership with ranchers to partially cover the costs of removal. U.S. Department of Agriculture, Natural Resources Conservation Service (NRCS) has programs available to cost share for juniper removal. Their maximum amount allowed per acre depends on the treatment used and the level of intensity; chainsawing or chaining on a medium intensity terrain will pay $135, while mastication is eligible for maximum payments of $280 or $360 per acre, depending on the difficulty of the terrain. Under the NRCS programs, treatments are only cost-shared in Phases 1 or 2. These programs are essential for rangeland improvement projects to occur. Ranchers receive most of the market benefits from juniper removal through enhanced forage production, but the non-market benefits of removal, such as sage-grouse habitat rehabilitation and overall ecosystem stabilization, are shared across all users of the range, thus suggesting justification of the cost share programs.

References

Barrett, R.H. 2005. OWEB Juniper Treatment Effectiveness Monitoring Final Report. CSR Natural Resources Consulting, Inc. Contract No. 204-937.

Barrett, R.H. 2007. OWEB Juniper Management Effectiveness Monitoring Phase II Final Report. CRS Natural Resources Consulting, Inc. Contract No. 204-937.

Bates, J.D., R.F. Miller, and T. Svejcar. 2000. Understory Dynamics in Cut and Uncut Western Juniper Woodlands. Journal of Range Management. 53:119-126.

Bates, J.D., R.F. Miller, and T. Svejcar. 2005. Long-Term Successional Trends Following Western Juniper Cutting. Rangeland Ecology and Management. 58:533-541.

Bourne, A. and S. Bunting. 2011. Guide for Quantifying Post-treatment Fuels in the Sagebrush Steppe and Juniper Woodlands of the Great Basin. Technical Note 437. Bureau of Land Management, Denver, CO, BLM/ID/PT-11/003+2824. 115p.

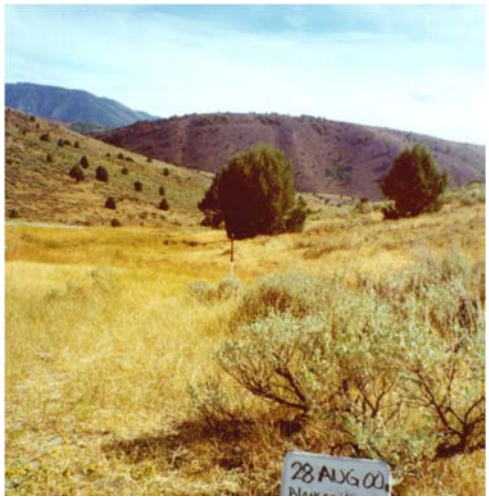
Dines, D. February 24, 2012. Zions Bank Interview by A. McClain [Personal Interview].

Miller, R.F., T.J. Svejcar, and J.A. Rose. 2000. Impacts of Western Juniper on Plant Community Composition and Structure. Journal of Range Management. 53:574-585.

Stebleton, A. and S. Bunting. 2011. Guide for Quantifying Fuels in the Sagebrush Steppe and Juniper Woodlands of the Great Basin. Technical Note 430. Bureau of Land Management, Denver, CO, BLM/ID/PT-09/002+2824. 81p.

Talsma, A.R. 2011. Juniper Mastication to Restore Sage-Grouse Brood Rearing Habitat. Idaho Fish and Wildlife. The Nature Conservancy 2011 Completion Report. 14p.

Young, J.A., R.A. Evans and C. Rimbey. 1985. Weed control and Revegetation following Western Juniper (*Juniper occidentalis*) control. Weed Science. 33: 513-517.



It is not necessary to have equal acres or square units, only that they are similar. These units will be where you can monitor for the duration of their use. Locate a most representative spot, mark it on a map, get the gps coordinates, and place some sort of a permanent marker there.

Indicator species need to be chosen at this point. These plant species will ultimately be defined by your objective and the land management agency that manages your allotment. There are materials available at the local extension offices such as the, Backpack Guide To Idaho Range Plants by the University of Idaho Rangeland Center and the Idaho Rangeland Resource Commission, that have information on plants in the sagebrush steppe that can help you choose your indicator species. These resources cite specific plants that define a healthy ecosystem. By managing for those plants, you can increase the probability of achieving your overall goal.

As you establish monitoring plots you have resources that can guide you or even assist you. The extension office offers knowledgeable representatives that are willing to visit your location and give help when possible. If you choose to set it up on your own plots, the Monitoring Manual by Herrick et al. is a guide that offers an easiest and productive method. The manual by Herrick can be downloaded from the internet without charge.

Annual use records are also an important part of monitoring. They can provide a history of actual use over time and should be kept by anyone grazing public lands. When kept up-to-date in conjunction with photo monitoring they become a powerful testimony to your management practices.

One last point, this takes time and money however, litigation takes more time and even more money.

Literature Cited

Herrick, J. E., Van Zee, J. W., Havstad, K. M., Burkett, L. M., & Whitford, W. G. (2005). Monitoring Manual for Grassland, Shrubland and Savanna Ecosystems, Volume II: Design, Supplementary Methods and Interpretation. Las Cruces, NM: USDA-ARS Jornada Experimental Range.

Ranellucci, C. L., Koper, N., & Henderson, D. C. (2012). Twice-Over Rotational Grazing and Its Impacts on Grassland Songbird Abundance and Habitat Structure. Rangeland Ecology & Management, 65(2), march, 109-118. doi: 10.2111/REM-D-11-00053.1

43 CFR 4100.0-5 - Definitions. (n.d.). 4100.0-5. Retrieved June 21, 2013, from http://cfr.vlex.com/vid/4100-0-5-definitions-19823245

there is limited hay or the hay is too expensive to buy.

There are tax consequences that need to be reviewed if a dispersal is considered. It would be wise to talk to an accountant or some other tax expert prior to making this decision.

Also, a life's work in putting together a cowherd will be lost, so a complete dispersal in my opinion is the definite last resort.

Summary

It has been a long time since it was this dry in early May. Be wise to develop a drought plan and be ready. The plan should consider these options:

- Buying feed early.
- Grazing management.
- Fall grazing options.
- Alternative pastures.
- Alternative forages.
- Water sources.
- Stocking rate.
- Culling decisions.
- Weaning early.
- Alternative winter feedstuffs.

The key to surviving dry conditions is to be flexible and creative in your management decisions so that the ultimate last resort of dispersing the herd can be avoided.

Nitrate Problems in Hay

Stephanie Etter, UI Extension Educator, Canyon County

There may be no such thing as cheap feed come this fall and winter with our hot weather and irrigation water shortages. To stretch short water supply more cereal grains may be used for hay this year compared to normal. If put up properly the feed quality of these are just fine, but what can be a problem are nitrate levels.

All plants contain some nitrates and under normal conditions the nitrates taken up by the plants are converted to protein at about the same rate as uptake. This conversion takes place in the leaves and parts of the plant engaged in photosynthesis. But under certain environmental stressors uptake is faster than the plant can convert it and excessive amounts of nitrates may accumulate. Any condition that stresses the plant may result in high nitrate levels. These include heat and water stress and frost or hail damage. Nitrates tend to accumulate in stalks, stems and leaves of plants, with the highest level in the bottom third of the plant. Other than small grains, plants know to accumulate nitrates that are common in our area include corn, ragweeds, pigweed bindweed, kochia, lamb's quarter, Canada thistle and sunflower.

Nitrates are not actually toxic to the animals, but in the rumen are broken down into nitrite which causes the problem. Nitrites are absorbed into the blood stream changing the hemoglobin to methemoglobin which cannot carry oxygen. If 70-80 percent of the hemoglobin gets converted to methemoglobin the animal will die. Lower levels of methemoglobin can still result in problems, especially if they are sustained for a period of time. Poor growth rates, abortion, repeat breeding and Vitamin A deficiency have all been linked to high nitrate feeds. This is especially true if animals are already in less than ideal condition.

If you think that any of your hay has the possibility of being high in nitrates it is recommended that you get it tested. Nitrates can be reported by the lab as nitrate nitrogen, nitrate, and potassium nitrate. Many different charts exist showing toxic levels for each reporting method and conversion tables between the different forms. One of those charts can be found in the Cattle Producers Library (aka Yellow Book) article CL355, Nitrates in Cattle Feed and Water. Water can also contain nitrates which are rarely at a level to be problematic on their own. However, when feeding high nitrate feed, nitrates in the water can have a cumulative effect and may increase the problem. If you know you will be feeding high nitrate hay a nitrate water test is also recommended.

Just because the hay contains nitrates doesn't mean it isn't usable, but it does take some management. Nonpregnant animals can be fed higher nitrate hay by adapting cattle to high nitrate hay and mixing the hay with low nitrate hay and grain. Pregnant animals can be fed some high nitrate feed diluted with low nitrate hay, but the level of nitrates they can safely consume is lower than nonpregnant animals. A little bit of planning in terms of testing and management can go a long way to prevent a problem down the road.

University of Idaho Extension

Owyhee County

238 8th Ave. W., P.O. Box 400
Marsing, ID 83639
(208) 896-4104 FAX (208) 896-4105
Owyhee@uidaho.edu
http://www.extension.uidaho.edu/owyhee

ADDRESS SERVICE REQUESTED

NONPROFIT ORGANIZATION

U.S. POSTAGE PAID

MARSING, IDAHO
PERMIT NO. 11

Upcoming Events . . .

July 27	Owyhee Cattlemen's Association 135th Annual Summer Meeting, Silver City
August 5-7	Owyhee County Fair Horse Show
August 7-10	Owyhee County Fair and Rodeo!
August 10	Owyhee County Junior Livestock Sale — Buyer's Lunch at Noon with the Junior Livestock Sale immediately following
September 9-12	Lost Rivers Grazing Academy, Salmon
January, 2014	Farm and Ranch Estate Planning Class, *"Keeping the Legacy Alive"* will meet once a week for four weeks. More details coming soon!