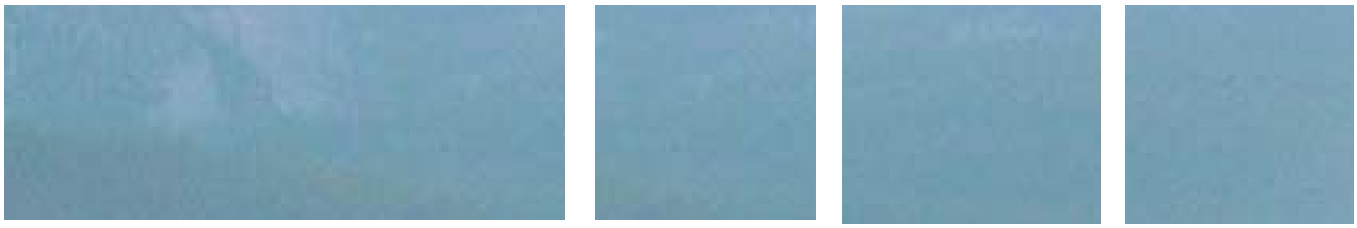

IdahoRangeLivestockSymposium

INTEGRATING THE NEEDS OF **ANIMALS, RANGELANDS, AND PEOPLE**

2015

APRIL 7
Idaho Falls,
Shilo Inn

APRIL 8
Burley,
Best Western

APRIL 9
Marsing,
American
Legion Hall

APRIL 10
Tour in the
Treasure Valley

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WORKSHOP RECOGNITION

RECOGNITION

PLANNING COMMITTEE

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John Biar

Brendan Brazee

Chad Cheyney

Tyanne Freeburg

Diane French

Amanda Gearhart

Marty Gill

Benton Glaze

Samantha Graf

Danielle Gunn

John Hall

Meranda Hazelbaker

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Neil Rimbey

Lovina Roselle

Karen Williams

PARTNERS

University of Idaho Extension

University of Idaho Rangeland Center

University of Idaho Department of Animal and Veterinary Science

Idaho State Department of Agriculture

Idaho Rangeland Resource Commission

AGENDA

8:00 a.m.	**Trade Show and Coffee**
8:30 a.m.	**Registration**
9:00 a.m.	**Welcome**
9:05 a.m.	**Ranching in a New Climate:** Tony Svejcar, USDA-ARS Eastern Oregon Agriculture Research Center
	Climatic Variability — Something New for Cow/Calf Producers?: David Bohnert, Oregon State University
9:45 a.m.	**Cooperative Monitoring Program:** Brooke Jacobson and John Biar, Idaho State Department of Agriculture
10:05 a.m.	Introduction of trade show sponsors
10:15 a.m.	Break
10:30 a.m.	**Cooperation on Writing a Grazing Plan:** Panel and moderated discussion featuring Idaho Rep. Merrill Beyeler, Leadore rancher; Linda Price and Kyra Povirk, BLM Salmon Field Office
11:10 a.m.	**The Value and Importance of Using Genomically Enhanced EPD's in Beef Cattle Selection:** Bob Weaber, Kansas State University
11:55 a.m.	**LUNCH sponsored by Zoetis**
1:15 p.m.	**Perspectives from local livestock operations:** Jim Hagenbarth, Doug Pickett, Tony & Brenda Richards
1:45 p.m.	**Farm/Ranch Transition and Estate Planning Post Election:** Pete Volk, Volk Law PLLC
3:30 p.m.	**Economic Outlook for the Beef Cattle Industry:** Jessica Sampson, Livestock Marketing Information Center
4:00 p.m.	**Ranch-Level Economic Impacts of Changing Management to Protect Sage-Grouse:** Neil Rimbey, University of Idaho
4:20 p.m.	**Current Public Perceptions of Rangelands in Idaho:** J.D. Wulfhorst, University of Idaho
4:45 p.m.	Wrap-up; Evaluations; and Adjourn

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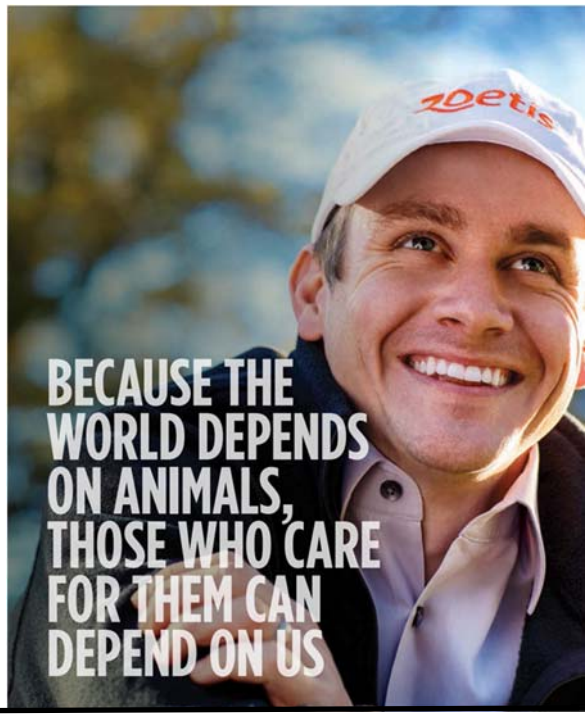

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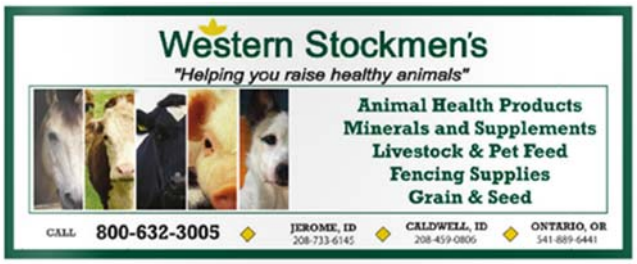

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N O T E S . . .

Ranching in a New Climate

Ranching in a New Climate

Tony Svejcar
Research Leader, USDA-ARS,
Burns, OR

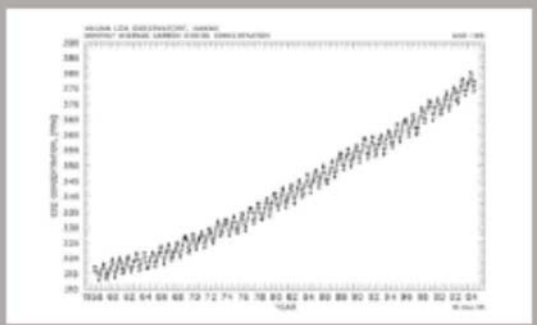
- The title has ranching as the focus, but really the information I plan to present applies to vegetation management in general.

Things have changed before!

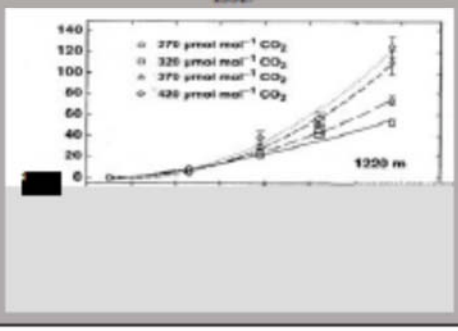
Let's break climate change into 3 separate issues:

1. Increasing atmospheric CO_2.
2. Changes in temperature.
3. Changes in precipitation and humidity.

Graph of Atmospheric CO_2 Concentration



Ziska, Reeves and Blank, 2005. The impact of recent increases in atmospheric CO_2 on biomass production and vegetative retention of cheatgrass (*Bromus tectorum*): implications for fire disturbance. Global Change Biology 11: 1325-1332.



PRESENTATIONS

Ranching in a New Climate

Fuel Loads Have Been Huge During Some Recent Years –Could Increasing CO2 have an impact?

Atmospheric CO2

- Is increasing in a fairly predictable manor.
- Atmospheric mixing causes much of the globe to have uniform values –but certainly not true around urban areas.
- Does influence plant growth and competition

What about temperature?

- Much more difficult to predict than CO2.
- May not be uniform across globe.
- Impacts on plant growth and competition may not be completely known.

Great Basin Analysis

- We looked at long term minimum temperatures from 5 sites in OR and 5 sites in NV. Dr. Ray Angell (ARS-Burns) conducted the data screening and analysis.
- Sites had at least 60 and in some cases 100+ years of data.
- Monthly data were analyzed. In other words we summed the data over monthly intervals.

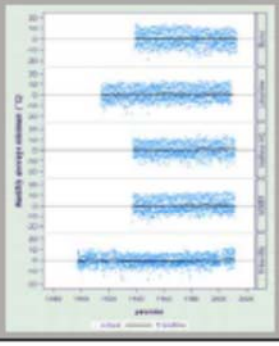
Data source for this effort was the online data archive at NCDC

http://www.ncdc.noaa.gov/cdo-web/search

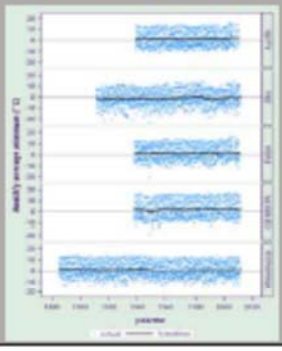
There are many sites on the COOP network

OR Locations – most variability is in winter months, same for NV

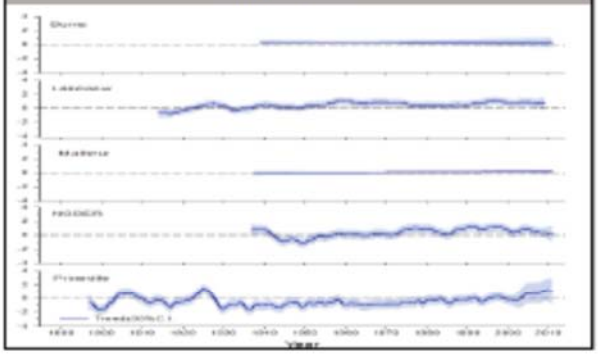
OR Station Trends –All months plotted over period of record



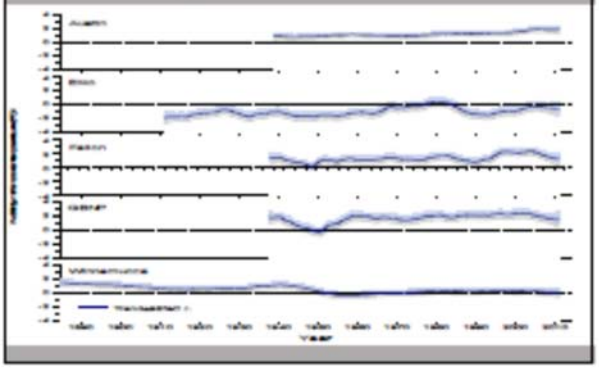
NV Locations – Fewer really cold months in recent decades



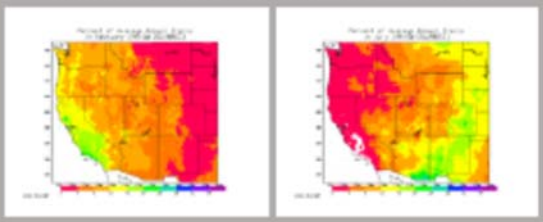
OR –Trend analysis – few consistencies across sites



NV –Again few consistencies.

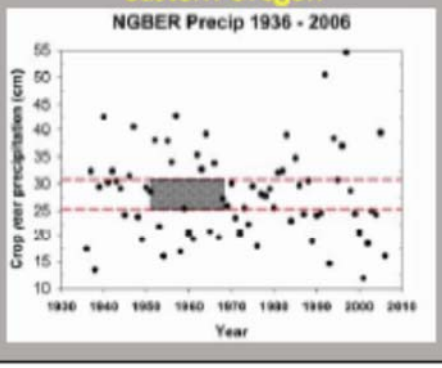


Percent of annual precipitation in February on left and in July on right – another factor that could change.



Ranching in a New Climate

Temporal Variability in Precipitation – eastern Oregon



Notes for previous slide

- Mean precipitation is 28 cm (11.0 inches).
- Lines are + or – 10% of the mean.
- Only 20 of the 71 years were within 10% of the mean. From 1951 to 1967 (16 years) only 1 years was within 10% of mean.
- Years regularly vary between 15cm (6 inches) and 45cm (18 inches).

Climate data is readily available to those who might be interested

The New Climate

- Will have higher atmospheric CO2, which may favor fast-growing species like cheatgrass.
- Will have higher temperatures for some locations and potentially lower temperatures for other locations.

The New Climate

- Regionally there are many predictions for earlier snow melt and runoff, and higher rain/snow ratios during the winter.
- It would make sense to use NOAA data for a particular area to see if any trends can be identified. What have we already adapted to?

The New Climate

- This part of the country has so much year-to-year variation that we already do a good deal of climatic adaptation. But it might be good for land management agencies and private landowners to look at past records of climate and management to anticipate how they might respond to changes in the future.

Climatic Variability — Something New for Cow/Calf Producers?

Oregon State University Agricultural Experiment Station

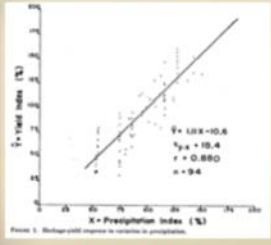
Climate Change & Rising CO_2

Factor	Potential Response	Management Options
Forage Quality	↑ Production ↓ CP ↓ Digestibility	- Supplementation - Utilize/interseed legumes where N is limiting and practice is feasible
Animal Performance	Warm regions: Reduced feed intake, feed efficiency, animal gain, milk production and reproduction. Increased disease susceptibility, and death. Cold regions: Enhanced animal performance, lowered energy costs.	- Select adapted animal breeds to match climate - Improve animal genetics - Diversify animal enterprise - Alter management (e.g., timing of breeding, calving, weaning)

POWERED BY ORANGE — Adapted from Hatfield et al. (2008)

Oregon State University Agricultural Experiment Station

Predicting Forage Production: Range



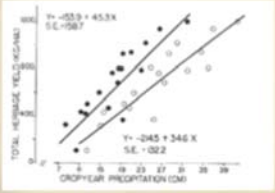
Based on 13 yr of data

Precip. Index (%)	Yield Index
40	34%
60	56%
80	78%
100	100%
120	123%
140	145%
160	167%
180	190%
200	211%

POWERED BY ORANGE — Adapted from Sneva & Hyder (1962)

Oregon State University Agricultural Experiment Station

Predicting Forage Production: Range



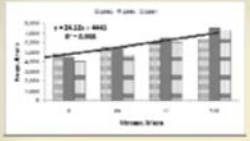
Based on 18 yr of data

	Period	
	Sep-Mar	Sep-Jun
Precip., in	Lbs/Acre	
4	273	122
5	376	201
6	479	279
7	581	357
8	684	436
9	787	514
10	889	593

POWERED BY ORANGE — Adapted from Sneva (1982)

Oregon State University Agricultural Experiment Station

Predicting Forage Production: Meadow



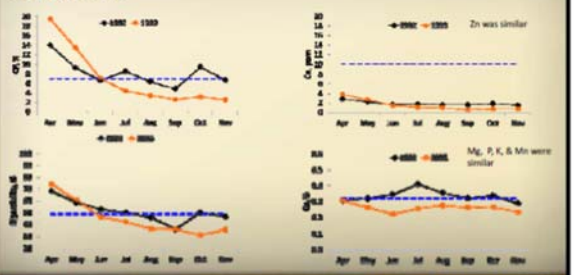
	Forage Increase, Tons/acre		
lbs N/acre	After Dry Year(s)	After wet Year(s)	Avg.
20	0.14	0.29	0.24
30	0.20	0.44	0.36
40	0.27	0.59	0.48
50	0.34	0.73	0.60
60	0.41	0.88	0.72
70	0.48	1.03	0.84
80	0.54	1.18	0.96
90	0.61	1.32	1.08
100	0.68	1.47	1.21
110	0.75	1.62	1.33

POWERED BY ORANGE — Adapted from Bohnert et al. (2011)

Oregon State University Agricultural Experiment Station

Precipitation Level & Forage Quality

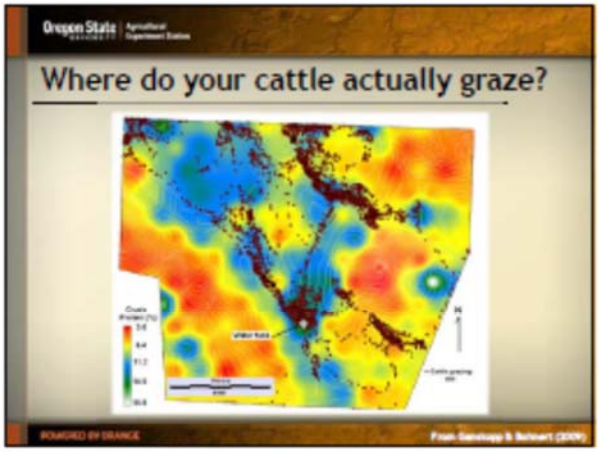
1992: 86% of Avg.
1993: 167% of Avg.

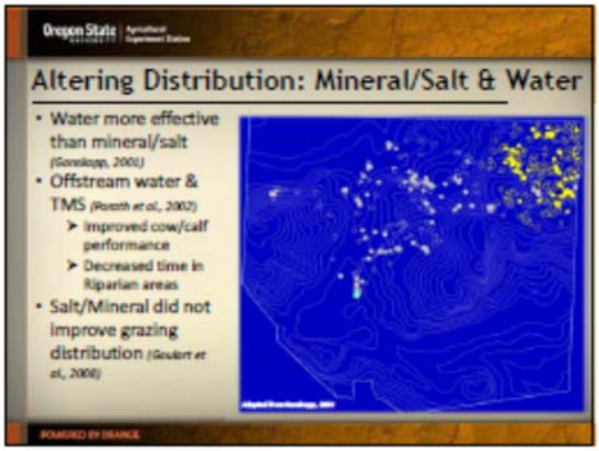


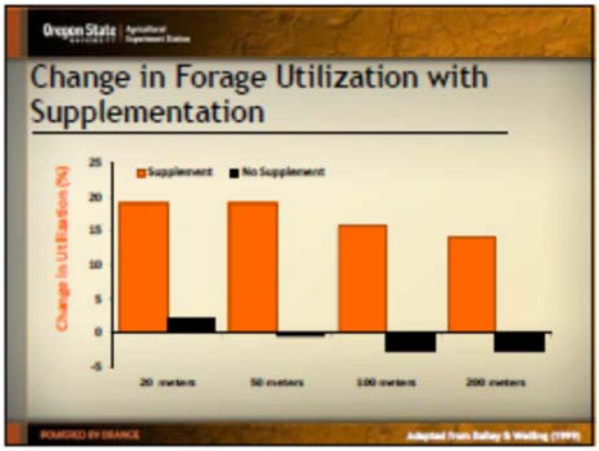
POWERED BY ORANGE — Adapted from Ganskopp & Bohnert (2001, 2003)

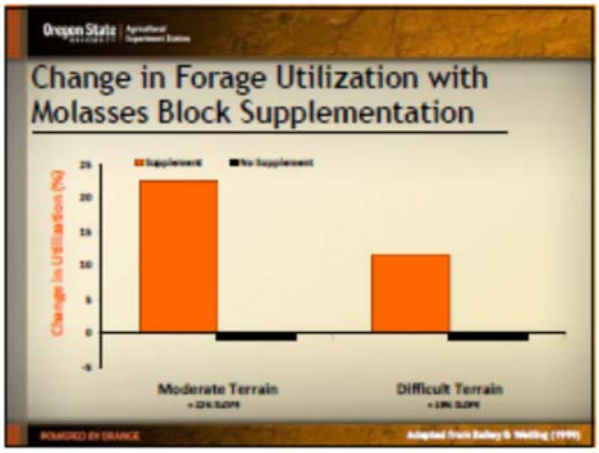
PRESENTATIONS

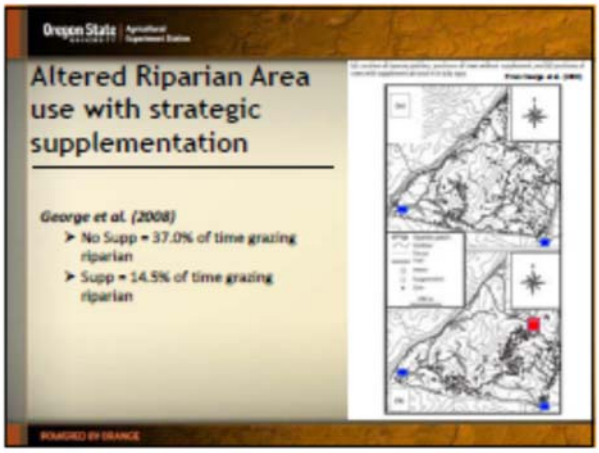
Climatic Variability — Something New for Cow/Calf Producers?



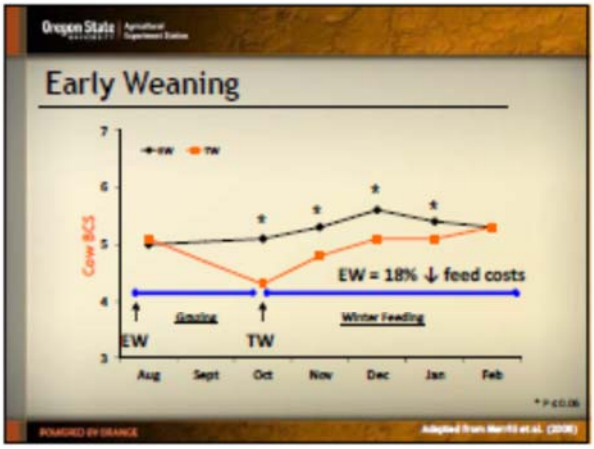


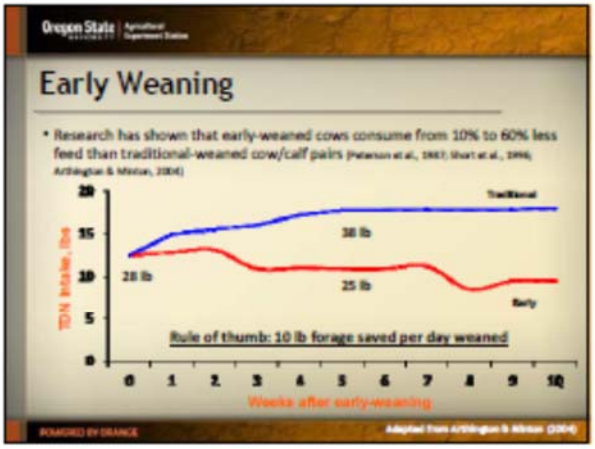


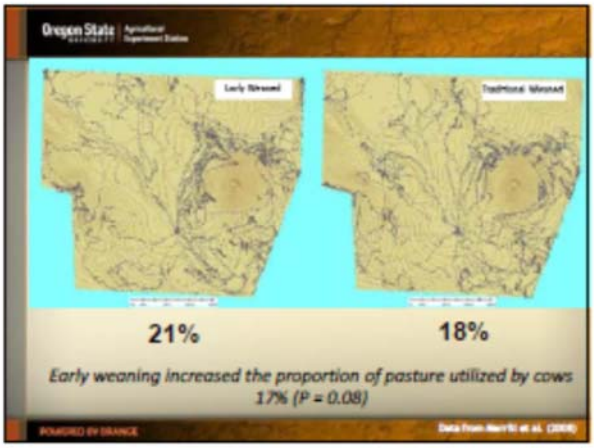


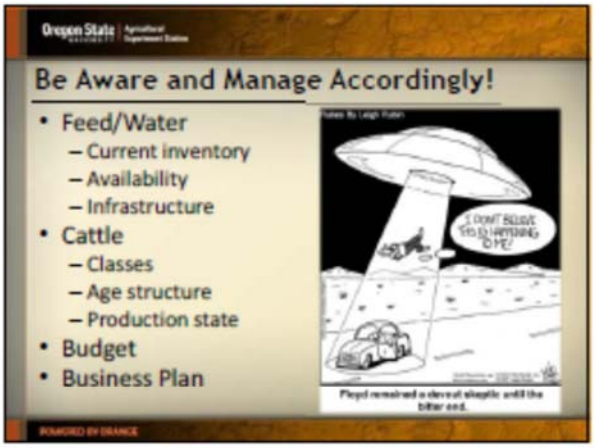


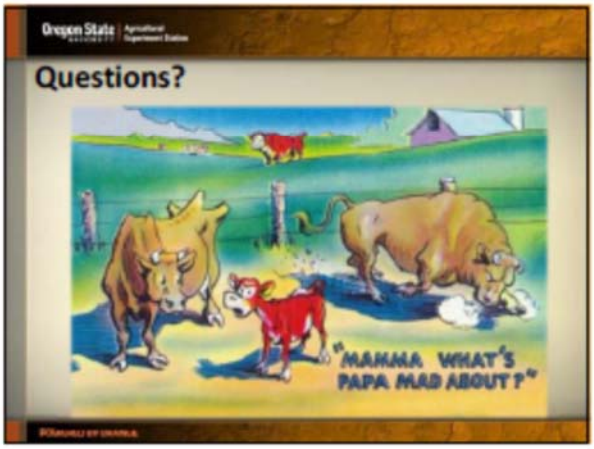
Climatic Variability — Something New for Cow/Calf Producers?











PRESENTATIONS

Cooperative Monitoring Program

Brooke Jacobson, Idaho State Department of Agriculture
John Biar, Idaho State Department of Agriculture

Maintaining the health of public and private lands for grazing is integral to the well-being and sustainability of Idaho's ranches. To help support these goals, ISDA has recently partnered with the BLM to promote the health of Idaho's public lands through cooperative rangeland monitoring.

The Idaho State Department of Agricultural (ISDA) entered into a Memorandum of Understanding (MOU) with the Bureau of Land Management (BLM) on July 17, 2014 to work with and assist ranchers in performing photo monitoring in their grazing allotments. The MOU was developed as a proactive and collaborative approach to monitoring. The MOU provides a framework for a cooperative, state-wide photo monitoring program on lands managed by the BLM. Annual photo monitoring data collected and submitted to the BLM by the ranchers using the methods identified in the ISDA-BLM Photo Monitoring MOU will be used in BLM's grazing permit renewal process. Three options identified in the MOU for incorporation in permit renewal include (1) Rancher photo monitoring at existing BLM trend sites; (2) Establishment of new photo monitoring sites in coordination with the rancher's local BLM office; and (3) Inclusion of rancher-established photo monitoring sites that are consistent with processes identified in the MOU.

Both ISDA and BLM agree that repeated photographs taken at permanent locations are an effective and efficient method for monitoring. Repeat photographs document range trend and provide an informative record of resource conditions for both ranchers and land management agencies. Continuous years of photo monitoring data collected using a credible monitoring protocol that is consistent with BLM policy helps to fill data gaps and "tell a story" about how the rancher's allotment is responding to management over time. ISDA's one-on-one assistance provides the rancher with support and training to get started with this program. The ISDA – BLM Photo Monitoring Program serves as a standardized, credible photo monitoring protocol for Idaho.

ISDA will coordinate with you and BLM to obtain copies of photo points currently existing on your allotment and determining if these sites are adequate or if additional sites will need to be established. ISDA will assist permittees in locating existing plots and taking initial photos and/or establishing new plots in coordination with BLM. Ranchers will then be responsible for taking annual photos; ISDA is available for technical assistance as needed. Photos will be submitted annually to BLM/ISDA to be verified and used as monitoring data in the grazing permit renewal process. The MOU allows for participation, coordination, and cooperation between ranchers, BLM, and ISDA, in both the collection and review of data. This standardization of the monitoring process gives more credibility to the dataset and these annual photos which follow the MOU/BLM protocol will be given substantially more weight than information from groups that submit random photos to the agencies during the rangeland health process. In addition, this photo monitoring process which follows the MOU/BLM protocol will also be given more weight and creditability if litigation occurs during the issuance of the grazing permit during the renewal process.

ISDA believes that with the strong collaborative and cooperative approach that this photo monitoring program provides, land management agencies will be able to make well informed grazing permit renewal decisions that are supported with good and current monitoring data. ■

Cooperation on Writing a Grazing Plan

Panel and moderated discussion featuring **Idaho Rep. Merrill Beyeler**, Leadore rancher
Linda Price and **Kyra Povirk**, BLM Salmon Field Office

Questions for Panel

Tell us who you are and a brief background of your position.

Linda Price, BLM Salmon Field Manager, moved to Salmon in 2011 after working as Monument Manager at the Vermilion Cliffs National Monument and prior to that as a Range Management Specialist on the Arizona Strip. Linda's experience working through the ESA listing of the desert tortoise and management of the Vermilion Cliffs National Monument gives her a unique skill set when working with the public on multiple use issues, specifically grazing and recreation, and the ESA.

Kyra Povirk, BLM, Range Management Specialist, worked in private industry as a range ecologist throughout the Rocky Mountain and Intermountain West prior to joining the Salmon BLM as a Rangeland Management Specialist in 2009. The blending of private industry and federal experience gives her a unique perspective on issues facing the agency and their customers, the public.

What is your biggest challenge with meeting grazing permit requirements?

One of the biggest challenges is the changing perspective on how land management should be done on BLM lands – the days of "turning them out the back gate" are gone – active management by permittees must occur if we are to meet permit requirements. In today's age of instant connection via the internet and social media, it is important to recognize that poor stewardship tends to go viral more easily than good stewardship – this can really impact the public perception and image of today's livestock producers. In short, it's getting people to pay attention and communicate with us as the season progresses so we can avoid any wrecks.

Tell us about one success in meeting grazing permit requirements.

A great example that has a proven track record is the creation and use of riparian pastures; these are pastures in which use occurs for about a month in the early season (between early and late spring) and mostly outside of the hot season (typically 7/15-9/15 in our country). We have seen permits with these types of requirements yield the results we were looking for - improved and upward trending riparian habitat, which is good for fish (in our area we have ESA listed fish, like steelhead and salmon). Improvements have occurred while still making these areas available for livestock grazing.

What is the most innovative or crazy thing you've implemented to meet requirements?

The grazing rotation implemented on Merrill's allotment was one of the more innovative ideas to be implemented in our area. On his allotment, the northern and southern pastures are rotated 2 years at a time for spring and fall use – all pastures can be used each year, but each half of the allotment gets two full years of deferment every 4 years. During the hot season, the cattle go to Forest, so we see recovery each year at springs and riparian areas on the allotment.

Cooperation on Writing a Grazing Plan

How does the partnership with the other 2 panelists work?

The partnership works through good communication and trust; only with both of these do we reach the desired outcome, which is keeping livestock on public lands while maintaining or improving habitat at the landscape scale.

What is the most important thing about permit requirements that you want everyone attending this symposium to know?

We strive to develop legally defensible permits that are effective for both the resource and the permittee – you need to work within the bounds of your permits. Strategies we try to incorporate into grazing permits include: 1) grazing riparian pastures/areas outside the hot season (roughly 7/15-9/15) most years, 2) not grazing turnout pastures repeatedly during the critical growth period (roughly 5/1-6/30), and 3) grazing in the fall/early winter, which can benefit both upland and riparian areas. ■

NOTES...

The Value and Importance of Using Genomically Enhanced EPDs in Beef Cattle Selection

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Introduction

Selection decisions in the beef industry have been fostered by the development and delivery of Expected Progeny Differences (EPD) for a wide variety of traits and across all major US beef breeds. Starting in the early 1970's, EPDs have been used by seedstock and commercial beef producers to make genetic change in their herds. Today, EPDs are widely accepted across the industry and are used frequently by producers making seedstock selection and purchase decisions. EPDs have gained broad adoption due to the fact that they do effectively explain genetic differences among evaluated individuals. The degree of confidence in an individual animal's EPDs is described numerically by a computed value called 'Accuracy.' Accuracy values in the US are scaled reliabilities and range from 0 to 1 representing the amount of information used to compute the EPD. An animal with accuracy values near zero has very little data available for evaluation while an animal with accuracy of 0.99 has very large amount of information evaluated.

The rate of genetic change that can be achieved in a beef cattle selection system is limited by a number of factors. Among these factors are selection intensity (how few or many animals we have to select or how choosy we can be), the amount of genetic variation in the trait(s) of interest, and finally, the accuracy of the genetic predictions we use in selection. The product of these three values divided by generation interval (average age of the parents when the next generation is born) yields the expected rate of genetic change per year. In the beef industry, producers have the ability to change each of these factors to some degree with the exception of genetic variation. Selection intensity may be changed by utilizing AI or perhaps purchasing very elite genetics. Generation interval may be manipulated by turn over the cow herd faster (higher culling rate) and/or the bull battery. Dramatically decreasing generation interval may have negative economic consequences to the operation due to lost capital incurred by selling young cows that have not been fully depreciated. The largest opportunity for changing rate of genetic progress in the beef industry is through improving the accuracy of the genetic predictions on which producers base a large portion of their selection decisions and thus decreasing the generation interval since younger sires can be used with more confidence.

Improvements in EPD accuracy have historically been driven by phenotypic record collection directly on the trait of interest or on indicator traits. Record collection schemes vary greatly depending on the trait and the age of the animal when the trait is observed. For traits like stayability or length of productive life, the evaluation of a sire's daughters is typically completed long after the bull has been removed from production. For other traits like carcass weight, marbling score, and rib-eye area, the animal must be harvested or ultrasound information collected as indicator trait data. All phenotypes incur cost of collection and processing. To achieve high levels of accuracy a great deal of progeny and/or grand progeny data must be included in the evaluation.

Timing is Everything

Accuracy values for bulls purchased by commercial producers as yearlings will be low. In most cases the bull's own performance records for traits observed before sale day will be included in the animals genetic predictions in addition to pedigree information. For the maternal traits like heifer pregnancy, stayability and maternal milk no daughters will have been produced so only pedigree estimate EPD are available and have the lowest accuracies. In order to improve the accuracy of the EPDs of yearling bulls another source of information is needed.

Genomic information, in the form of Single Nucleotide Polymorphisms (SNP), has always held the promise to increase the accuracy of Expected Progeny Differences (EPD). This promise has finally been realized for those breeds that incorporate this information into their EPD calculations. For those breeds that have not, genomic information for complex traits (those controlled by many genes) is available to producers in a disjoined context and is published separately from EPD.

One key advantage to genomic predictors (i.e. Molecular Breeding Values (MBV)) is that this information can be garnered early in the life of the animal thus enabling an increase in the accuracy of EPD particularly on young animals, which have not yet produced progeny. Ideally, MBV data should be used to influence the EPD of young animals prior to any selection decisions (performance based culling) made at the seedstock level. Seedstock genetic trends and subsequent genetic flow to commercial producers will only be improved if seedstock producers actually use the genomically enhanced EPDs to make selec-

tion decisions for animals that will be retained as breeding animals and offered for sale to commercial producers. Genotyping a group of animals immediately before sale after all selection has been completed does nothing to improve genetics of the population; it only fosters marketing efforts and only allows for better selection decisions within a highly selected subset of the sale offering.

Background

The US Beef Industry has witnessed considerable evolution in terms of the genomic tests available in the market place. The tests that are currently being included in EPD are comprised of 50,000 (50K) SNP, although some breeds utilize 80K panels and some are moving towards reduced (eg. 20K) panels with the aid of imputation (essentially using information from the population to "replace" missing genotypes). The research community is commonly using 50K, 80K or 770K genomic tests for discovery of "novel" traits (i.e. feed efficiency, disease susceptibility). The American Angus Association (AAA) began including genomic predictions into EPD calculations to producer Marker-Assisted EPDs (MA-EPD) in 2009. Marker-Assisted EPD were first estimated for carcass traits and then evolved to other production traits for which EPD already existed. This is due to the need for phenotypes to train (process of developing prediction equations using all SNP) the genomic predictions. Consequently, genomic tests for "novel" traits such as different measures of efficiency or disease susceptibility require a significant effort in order to build large resource populations of animals with both phenotypes and genotypes. These two particular suites of traits (feed efficiency and Bovine Respiratory Disease) are currently the focus of two integrated USDA projects.

The benefit of the inclusion of genomic predictions into EPD estimates is proportional to the amount of genetic variation explained by the genomic predictor (Thallman et al., 2009). In beef cattle to date, multiple breeds have produced marker-assisted EPD including Angus, Hereford, Red Angus, Limousin, Gelbvieh, and Simmental with others nearing deployment.

Implementation

The underlying question commonly asked by producers is "does it work?". It is critical to understand that this is not a valid question, as the true answer is not binary (i.e. yes or no). The important question to ask is "how well does it work?", and the answer to that question is related to how much of the genetic variation the marker test explains. The magnitude of the benefits will depend on the proportion of genetic variation (%GV) explained by a given marker panel, where the %GV is equal to the square of the genetic correlation multiplied by 100. Table 1 shows the relationship between the genetic correlations (true accuracy), %GV and Beef Improvement Federation (BIF) accuracy. BIF accuracy is the standard for all U.S. beef breeds.

Table 1. The relationship between true accuracy (r), proportion of genetic variation explained (%GV), and Beef Improvement Federation (BIF) accuracy.

r (true accuracy)	%GV	BIF
0.1	1	0.005
0.2	4	0.020
0.3	9	0.046
0.4	16	0.083
0.5	25	0.132
0.6	36	0.200
0.7	49	0.286

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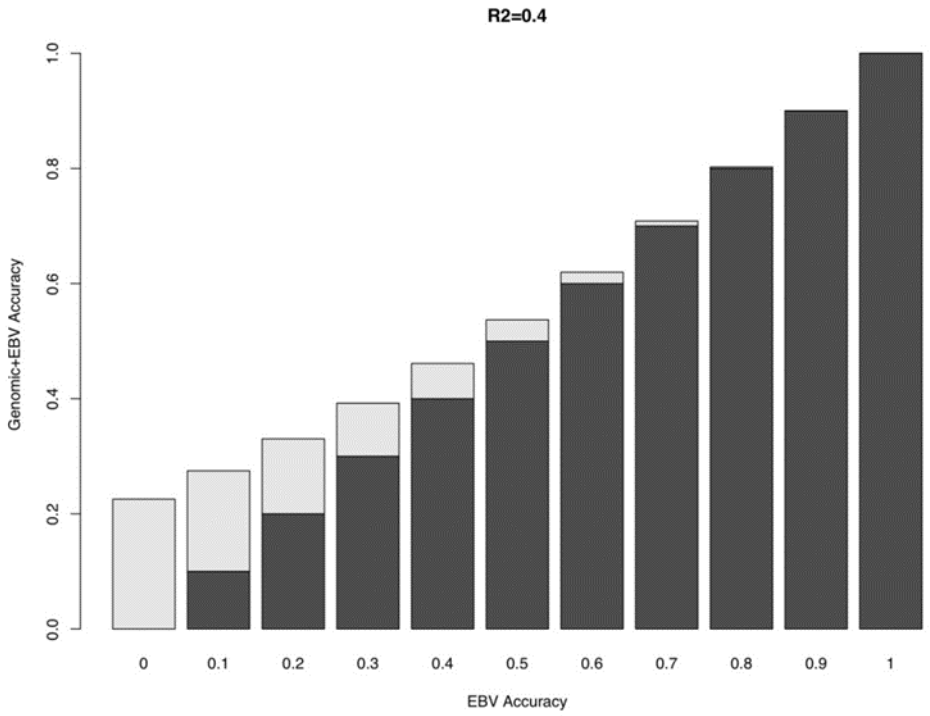
In contrast to the thought process of DNA marker panel results being a separate and disjoined piece of information, these test results should be thought of as a potentially useful indicator that is correlated to the trait of interest. As such, the MBV can be included in National Cattle Evaluations (NCE) as a correlated trait following methods of Kachman (2008). This is the approach that AAA is currently using. Other methods have been proposed including "blending" the EPD and MBV which is the equivalent to forming an index of the two where the index weights reflect the accuracy of the two components. Yet another approach is to use the actual SNP genotypes to form a genomic relationship matrix that would allow for known relationships between animals based on genotypes across SNP loci (Hayes et al., 2009; Legarra et al., 2009). The latter approach requires access to the genotypes, not just the MBV. Combining these sources of information, molecular tools and traditional EPD, has the potential to allow for the benefits of increased accuracy and increased rate of genetic change. Increased rate of genetic change can occur by increasing the accuracy of EPD, and thus the accuracy of selection, and by decreasing the generation interval. This decrease in the mean generation interval could occur particularly for sires if they are used more frequently at younger ages given the increased confidence in their genetic superiority due to added genomic information.

Figure 1 illustrates the benefit of including a MBV into EPD (or Estimated Breeding Value (EBV) which is twice the value of an EPD) on accuracy (on the BIF scale) when the MBV explains 40% of the genetic variation (GV), which is synonymous with R^2 value of 0.4. The darker portion of the bars shows the EPD accuracy before the inclusion of genomic information and the lighter colored portion shows the increase in accuracy after the inclusion of the MBV into the EPD calculation. As the %GV increases, the increase in EPD accuracy becomes larger. Additionally, lower accuracy animals benefit more from the inclusion of genomic information and the benefits decline as the EPD accuracy increases. Regardless of the %GV assumed here, the benefits of including genomic information into EPD dissipate when EPD accuracy is between 0.6 and 0.7. On the other hand, when %GV is 40, an animal with 0 (zero) accuracy could exceed 0.2 accuracy with genomic information alone. This would be comparable to having approximately 4 progeny for a highly heritable trait or 7 progeny for a moderately heritable trait (Table 2).

Table 2. Approximate number of progeny needed to reach accuracy levels (true (r) and the BIF standard) for three heritabilities (h^2).

Accuracy		Heritability Levels		
r	BIF	h^2 (0.1)	h^2 (0.3)	h^2 (0.5)
0.1	0.01	1	1	1
0.2	0.02	2	1	1
0.3	0.05	4	2	1
0.4	0.08	8	3	2
0.5	0.13	13	5	3
0.6	0.2	22	7	4
0.7	0.29	38	12	7
0.8	0.4	70	22	13
0.9	0.56	167	53	30
0.999	0.99	3800	1225	700

Figure 1. Increase in accuracy from integrating genomic information that explains 40% of the genetic variation into Estimated Breeding Values (EBV).



Although AAA was the first to augment their EPD with genomic information, several other breeds have shown interest in taking advantage of this technology. Saatchi et al., (2011 and 2012) has shown moderate to high genetic correlations between several traits of interest and MBV for Hereford and Limousin (carcass traits only). Kachman et al., (2013) used growth traits (weaning weight and yearling weight) to illustrate the efficacy of BovineSNP50 (50,000 SNP assay) based MBV when the MBV was evaluated in the same breed as training and when it was evaluated in a different breed than training. Three single-breed MBV were created for each growth trait: Angus specific, Hereford specific and Limousin specific. The authors showed that when the MBV is used in the same breed that it was trained in, typical genetic correlations were between 0.28 and 0.42. However, the same authors found that when a breed-specific MBV was used in a different breed, the genetic correlations clustered around zero. This shows the unfortunate breed specificity issues surrounding these tools. This is consistent with other results that show the predictive power of MBV begin to erode as the genetic distance between the training and target (or evaluation) populations increase (Ibanez-Escriche et al., 2009; Toosi et al., 2010).

Some breeds do not have the luxury of immediately having thousands of genotyped aniamls for use in developing a breed-specific genomic test. Consequently, the use of a robust across-breed set of genomic prediction equations would be beneficial. There are two primary methods of constructing an across-breed training data set: Pool purebred animals from multiple breeds or use crossbred animals. The first option requires the use of de-regressed EPD (Garrick et al., 2009) as "phenotypes" for training similar to the within breed scenario with the exception of correcting for breed effects in the model. The second option requires the use of adjusted phenotypes to train the genomic predictors. Weber et al., (2012) and Kachman et al., (2013) both evaluated the efficacy of across breed genomic predictors derived from two training data sets: the USMARC Germ Plasm Evaluation Project (GPE), and the USMARC 2,000 Bull Project. Both authors showed moderate genetic correlations between MBV and growth traits using the 2,000 Bull MBV in multiple purebred beef breeds. Both authors also showed lower genetic correlations when using the GPE derived MBV for growth traits across multiple purebred populations. The difference between the two across-breed MBV is that the

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2,000 Bull training population leverages more information, since the phenotypes are really de-regressed EPD that include several progeny records, while the GPE MBV relies on adjusted phenotypes. So while more genotyped animals were used to train the GPE MBV, the amount of phenotypic information used in training was less. Kachman et al., (2013) concluded that developing MBV using a training population of a pooled group of purebred animals can produce reliable MBV if the breed in which the MBV is to be used is also contained in the training population (i.e. if the MBV is to be used in Charolais, Charolais animals must be represented in the training data).

Conclusions

Genomics and the corresponding Marker-Assisted or Genomic-Enhanced EPD, have become a reality. Within-breed genomic predictions based on 50K genotypes have proven to add accuracy, particularly to young bulls, for several traits. The push going forward will be the adoption of this technology by other breed associations. Furthermore, methodology related to the use of this technology in crossbred or composite cattle is critically needed. The crux of adoption will be getting commercial bull buyers to see the value in, and thus pay, for increased EPD accuracy. There is a still a need to collect and routinely record phenotypic information by seedstock producers. **Commercial producers need to realize that EPDs, and economic index values, are the currency of the realm for beef cattle selection. Genomic technology only makes these tools stronger, it does not replace them.**

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Farm/Ranch Transition & Estate Planning Post Election

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INCOME TAX 2015

Individual Tax Rates

- The Tax Code provides for a 10 percent, 15 percent, 25 percent, 28 percent, and 33 percent income tax brackets. The 35 percent tax bracket ends at $400,000 for single filers and $450,000 married filing jointly.

Income tax Rates (Cont)

- Above the $450,000 threshold (married filing joint), there's a new 39.6 percent tax bracket.

CAPITAL GAIN 2015

Capital Gain Rates

- The there is zero percent and 15 percent tax rates on long-term capital gains, and adds a new 20 percent tax rate that would apply to taxpayers who fall within the new 39.6 percent tax bracket. Which capital gains tax rate will apply depends on what tax bracket a person is in.

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Figuring Capital Gain Rates

- Capital gains tax rates for 2015 and future years will be 0% for capital gain income if a person is in the 10% and 15% tax brackets,
- 15 % for capital gains income if a person is in the 25% , 28%, 33%, or 35% income tax bracket.

Figuring Capital Gain Rates

- 20% capital gain rate applies to capital gain income if a person is in the 39.6 percent tax bracket.

ESTATE TAX SUMMARY 2015

Current Estate Tax Law

- Based on the American Taxpayer Relief Act of 2012 which was passed by Congress and it was signed into law by President Obama Jan. 2, 2013.

Federal Estate Tax

- The legislation permanently maintains the federal exemption for gifts and estates at $5 million instead of dropping to $1 million.
- This exemption is per person so a husband and wife may transfer $10,000,000 during life or at death.

Will the Exemption go up?

- The federal estate tax will be $5.43 million in 2015, up from $5.34 million for 2014. That's another $90,000 that can be passed on tax-free. So yes, the law provided for an annual increase.

What if I fail to use my exemption?

- The new legislation includes the transfer of the unused exemption of a deceased spouse to the surviving spouse.
- Using qualified tax shelter trusts in your will or revocable living trust is still the sure way to use all your exemption and protect your ranch for the second marriage.

What is the Estate and Gift Tax Rate over the Exemption

- The rate has increased from 35 percent to 40 percent in 2015.
- Each dollar you own and gift via will or during life in excess of $5,430,000.00 will be taxed at a rate of 40%.

Will the new Estate and Gift Tax exemption stay around?

- This legislation included the word "permanent." This is significant as many fiscal agreements made by Congress since 2001 have contained a "phase out" date.
- In fact, the last bill was to "phase out January 1, 2013.
- I suspect this will be around for years!

Estate Planning 2015

- The continuation of the $5,000,000.00 estate and gift exemption (plus annual increases) are a big help to families.
- If you want to get the ranch to the next generation you still have a number of estate planning issues.
- Also, land values have headed up so fast that $5,000,000 may be to low.

What is estate planning in a nut shell?

- It is the legal means to transfer your ranch/farm to the next generation with the least tax possible and the lowest amount of family disagreement ensuring the ranch can continue in operation.

Estate Planning Questions

- What assets do you own?
- What are your assets worth?
- How much debt to you have?
- How are your assets titled?
- Who do you want to give them to?
- Do they want them?
- When do you want to give it to them?
- How long do you want to manage the ranch?

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USING A WILL &/OR TRUST

What is Probate?

- Court action to prove the validity of a will
- Inventory the property of decedent
- Value the property of decedent
- Pay debts and taxes (estate, income, real estate, etc.)
- Distribute property as the will directs

REQUIREMENTS FOR A WILL

Wills

- Competency required to make a will
  - Know the nature and extent of your estate
  - Be able to formulate a plan of distribution
  - Know the natural objects of you bounty
  - Understand the relationship of the above
- Must be witnessed by two witnesses in the presence of the testator and each other
- Must be revoked and/or amended with the same formality with which they are made

Probate Estate vs. Taxable Estate

- Assets may be part of the taxable estate and not the probate estate
- Anything a person has an interest in at the time of death goes into the taxable estate. This includes more than probate property, such as
  - Property transferred with Powers of Appointment
  - Value of an annuity
  - Joint tenancy with survivorship property
  - Life insurance proceeds if owned by the decedent
  - Interests retained from previous Life Time transfers

Avoiding Probate

- Why? Not always a good idea
- How to accomplish and still control assets:
  - Joint tenancy with right of survivorship
  - Payment on death bank accounts
  - Naming beneficiaries for retirement accounts
  - Register stock, bonds, brokerage accounts in "transfer on death" forms
  - Life estate deeds to intended grantees
  - Living trust
  - Life Insurance
  - Lifetime gifting (you lose control with this option)

Minimizing Taxes

- Big Rule – at each gift, during life or at death, there will be…..transfer taxes
- Estate tax occurs at the time-of-death gifts (Will, etc.)
- Gift tax occurs on lifetime gifts
- Estate and gift tax credits are tied together in Unified Credit, currently $5,430,000 and $10,860,000 for a couple (2015 and on)

Estate Tax Marital Deduction

- No estate or gift tax imposed on gifts between spouses but, may leave a credit unused and no stepped up basis. Now portable (2013)
- If all property owned jointly, no estate tax imposed on death of first spouse, but all assets will be taxed on death of surviving spouse
- For larger estates(over $5,430,000) you will want a gift to spouse and a gift to a trust for spouse

Unified Credit

- Offsets unified gift and estate tax liabilities
- Gift and Estate tax credit amount is $5.43 million per person and $10.86 million credit for a couple

Federal Estate Tax Rate 40%

Unified Credit

- Each person has ONE unified credit
- Where an estate is large (over $5.43 million), take advantage of both spouses' unified credits
  - Do not use joint tenancy
  - Use credit shelter trust or marital by-pass trust as part of will

Estate Planning Levels

- Estates of less than $3,000,000
  - "I love you will"-all to spouse with a disclaimer trust
- Estates between $3,000,000 and $5,430,000
  - Use each individual's credit with marital trust
  - Reduce value of taxable estate
- Estates over $5,430,000
  - Use both husband and wife credits with trusts in wills
  - Reduce taxable estate: lifetime annual gifting, special use valuations, family business entity discounts, conservation easements

Disclaimer Shelter Trust

- Used to take full advantage of credit amount or unified credit
  - During probate of first spouse, will assets are selected by spouse and transferred into trust for life-time benefit of surviving spouse
  - These assets are included in first-to-die's taxable estate and are excluded from surviving spouse's taxable estate at her death
  - Value of assets transferred into trust equal an amount necessary to avoid federal estate tax (the credit amount)
- Created as part of a will
- Risk: No way to ensure ranch is put in trust for kids

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Estates over $5,430,000

- Reduce the size of the estate
  - Irrevocable trusts
  - Use of annual gift tax exclusion ($14,000 per donee each year)
  - Use of special valuation procedures (IRC 2032A)
  - Discounting value for lack of liquidity or control
  - Insurance owned by someone else
  - ILIT (Irrevocable Life Insurance Trust)

Special Use Valuation

- Real estate used in family farm or closely held business: Section 2032A
  - Land is valued on basis of farm income products
  - Maximum reduction in value is $750,000 (indexed for inflation; now $1,100,000)
  - Heirs must farm for 10 years

2032A requirements

- 1. Decedent is US citizen
- 2. Ranch must be in US and owned by decedent of closely held business owned by decedent.
- 3. Ranch must pass to wife or family heir.
- 4. Property is being ranched by decedent or member of decedents family at time of death.
- 5. The ranching use must have occurred 5 out of the 8 years prior to death.
- 6. Value of the ranch land must be 25% of more of decedents gross estate value.
- 7. Value of the ranch land, cows and equipment must be 50% of more of decedents gross estate value.

IRC 2032 A Continued

- 8. Must use the property as a ranch for 10 years following the election.
- 9. For 8 of those 10 years the qualified heir must be actively engaged in the ranch each day.
- 10. The IRS will record a lien on the ranch if the election is made. IRC Section 6324B

Discounted Value

- Interests in closely-held family corporations, family partnerships or LLCs
  - May be discounted for lack of marketability/liquidity
  - Also discounted for lack of controlling interests
  - I have discounted up to 35% off fair market value of the assets

PROPERTY & ESTATE PLANNING

Property Basics

- Property
  - Real property.....land and structures attached
  - Personal property.....everything else
- Title of property
  - Fee simple absolute– a single owner or spouses
  - Tenants in common – multiple owners with undivided interests and does not pass at death
  - Joint tenancy – multiple owners with right of survivorship
  - Life estate – ownership for the period of the possessors life
  - Community property-husband and wife

Joint Tenancy

- With Right Of Survivorship: on death of one owner, other owner(s) automatically succeeds to entire property
  - Not community property
  - Not part of probate estate – avoids probate
  - Included in taxable estate
  - After death, not subject to decedent's creditors' claims
  - All joint tenants own property together
  - Joint tenancy can be destroyed by any owner (partition); also destroys right of survivorship.
  - If mortgage given by one tenant, joint tenancy destroyed; parties become tenants-in-common
  - Joint tenant's creditor can attach interest in joint tenancy property during life; creditor and other tenant(s) become tenants-in-common

Taxation of Joint Tenancies

- Joint tenancy between spouses
  - Because of community property one-half of value of property included in estate of first-to-die; survivor gets step-up in basis as to one-half
  - No estate tax payable because property passes under unlimited marital deduction
    - But lost credit!
- Joint tenancy between non-spouses
  - All of value of property included in decedent's estate if other tenants did not pay for their interests

Tenancy in Common

- No right of survivorship
- Right of possession is undivided
- Each owner may transfer interest, by will
- Value of interest is included in taxable and probate estates

Life Estate Deed

- Property owner (grantor) deeds property to heir but reserves a life estate
  - Owns property for rest of life and cannot transfer by will
  - No changing mind
  - Avoids probate
  - Value of property is included in taxable estate
  - Inexpensive tools for estate planning
- Heir acquires legal interest
  - Heir becomes "remainderman"
  - Remainder interest can be pledged, transferred or attached
  - Heir gets stepped-up basis on death of life tenant

Give it to them now with NO strings attached

- Gifts
  - Elements of a gift
    - Donor
    - Donee of the gift
    - Actual or constructive receipt of the gifted property
  - Gifts must be given free of any restrictions
  - Gifts in any amount are not income to the recipient
  - Gifts in excess of $14,000/year per donor and per donee will reduce the unified credit of the giver

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TAXABLE GAIN & BASIS?

Basis

- If you gift an asset, the recipient of the gift receives a tax basis in the asset equal to your own. This is what you paid for it and also put in to it.

Basis Adjustment

- Heir receives the asset with a basis equal to FMV at time of death
- Time of death transfers only occurs in
  - Wills – probate transfers
  - Living revocable trusts
  - Life estate deeds
- But only gets stepped up basis if estate or gift tax is due (credit can avoid any payment)
- Heir can then sell asset and avoid capital gain

TRUST BASICS

Parts of a Trust

- **Settlor**
  - Creator of the trust
- **Trustee**
  - Holds title to and manages trust property
- **Beneficiary**
  - Person for whose benefit trustee owns and manages the trust property
- **Corpus**
  - The property that is held in trust
- **Trust instrument**
  - Document that embodies the terms of the trust

Transferring Assets

- Trusts
  - Revocable or Irrevocable
  - Living trusts are established during the settlor's life
  - All trusts become irrevocable at the death of the settlor
  - Testamentary, credit shelter or marital by-pass trusts are established by a will
  - A living trust has no greater reduction on estate tax than a will

Uses of Trusts

- Ensure ranch assets stay in family
- Manage property or investments for kids
- Avoid probate
- May help to reduce estate tax, Irrevocable trust

Irrevocable Life Time Trust

- Can reduce value of taxable estate IF
- Settlor does not retain interest in income or corpus of trust
  - Trust must benefit others
  - No retention of life income
  - Enjoyment by beneficiaries cannot be contingent on death of settlor – must be present interest (some room to plan for minors)
  - Cannot retain power to change the transfer of property
- Transfers still subject to Gift Tax: over $14,000 per person reduces unified credit but appreciation occurs outside of estate (good thing)

Living Revocable Trusts

- Will substitute – avoids probate of trust assets
  - Costs more to create than a will, but avoids probate costs
  - Particularly useful to avoid probate in another state where property is held
- Property remains part of taxable estate
  - Not useful for reducing value of estate for estate tax planning
  - Heirs do receive step-up in basis
  - Spouses can use to double unified credit with certain special IRS words

OTHER DOCUMENTS YOU NEED

Living Will

- Living Will
  - Permanent vegetative state – what are your wishes with respect to life support
  - May ease difficult decisions for survivors
  - Should be part of estate planning documents
- Durable Power of Attorney for health care
  - Person to make the decision

Durable Power of Attorney

- Grant of power to another to manage affairs
- Anticipates possibility of incompetence: avoids need for incompetency hearing or approval of guardian
- Statute defines powers
  - Should also include express powers for tax returns, life insurance matters, making gifts, transferring property into trust, accessing safe deposit box, dealing with retirement plans and Social Security
- May be *contingent* or *present*
  - Contingent – effective only upon incompetence
  - Present – effective when executed and continues in spite of incompetence

Farm/Ranch Transition & Estate Planning Post Election

Credits

- Volk Law PLLC
- Pete Volk
  Attorney at Law
  Moscow, Idaho
  Licensed in Idaho and Washington for over 20 years.
  208-882-5982 (Office)
  208-301-1265 (Cell)
  petevolklaw@gmail.com (e-mail)
  Web site: Petevolklaw.com

Need For Personal Legal Advice

The information in this presentation and accompanying material is provided for educational purposes only. It is not a substitute for competent legal advice. Farmers and ranchers need professional legal and financial counsel in evaluating alternatives for legally structuring the farm business. This information is provided to help you better communicate with your professional advisors in analyzing your specific situation.

Form 4110-2
(April 2013)

UNITED STATES
DEPARMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

Functional Area: Rangeland Management

OFFICE CODE: _____

PREFERENCE TRANSFER AND GRAZING PERMIT/LEASE APPLICATION PROCESSING CHECKLIST

From (Transferor): RAS Authorization Number: _____

To (Transferee): RAS Authorization Number: _____

Assigned to: Assigned by: Date Assigned:

This internal checklist helps BLM track processing of an application to transfer grazing preference and the associated application for a grazing permit or lease. Offices can include some of these steps in other land management work processes such as the development and implementation of an activity level management decision. Some of the steps are completed concurrently, such as records development, while others are completed in sequence. All cited regulation references are in Title 43 Code of Federal Regulations, Part 4100.

TASK	Date	Staff Initials
1. Collect Application Processing Service Charge and Provide Receipt for Payment to Applicant		
2. Confirm Receipt of All Forms/Documentation Required to Process Preference Transfer and Permit Issuance		
(a1) ***If the application is to apply for preference and permitted use that, at time of application, is attached to base property owned or controlled by transferee:*** Transferee has completed page 1 of "Preference Transfer Application" (Form 4130-1a). *(In this circumstance, applicant does not need to complete page 2 of Form 4130-1a)*		
(a2) ***If the application is to transfer all or a part of a Transferor's current preference and permitted use from their base property to Transferee owned or controlled property:*** Transferee has completed page 1 of Form 4130-1a and Transferor has completed page 2 of Form 4130-1a. *When Transferor does not own the base property from which preference is being transferred and/or it is encumbered by a lien, then:* Application has been signed by: ❒ Base Property owner *and/or* ❒ Base Property Lien holder(s)		
(b) Transferee has submitted documentary evidence that shows they control the property that they are offering as base property (e.g., deed or lease).		
(c) Transferee has completed "Grazing Application - Supplemental Information" (Form 4130-1b). *(Under situation (a2), above, Transferor also completes/updates Form 4130-1b if action will result in Transferor retaining a permit or lease.)*		
(d) Transferee and Transferor have completed "Assignment of Range Improvements" (Form 4120-8).		
(e) Transferee (and Transferor, if applicable) has completed "Grazing Schedule - Grazing Application" (Form 4130-1). *(If the transfer action will result in the Transferor retaining a permit or lease, Transferor also must complete Form 4130-1.)*		
(f) All other documentation that BLM requires has been submitted. *(This may include: documents proving business relationships/affiliations (e.g., articles of incorporation, partnership agreements); documentation of control of livestock per 43 CFR 4130.7(d); brand registration issued by State; statement regarding livestock use by sons and daughters of permittees/lessees; and/or other documents pertaining to Transferee qualifications.)*		
(g) Exchange-of-Use Agreement (Form 4130-4), if appropriate and desired by Transferee and BLM, has been completed and submitted.		
3. Application Information Verification, Analysis, Correction and Approval *(If errors/omissions are identified, inform Transferee and/or Transferor of information they must correct or additional documentation that BLM must have before we can proceed with application processing).*		
(a) Term of current transfer is for at least 3 years, and subject preference has not been transferred for at least 3 years, or BLM has determined and documented their determination that a shorter term is consistent with management and resource condition objectives under §4110.2-3(f).		
Information and signatures on all forms and records submitted in support of application have been reviewed. The information is accurate and complete and demonstrates that:		
(b) Transferee qualifies for grazing use on public lands under §4110.1(a) and has a satisfactory record of performance under §4110.1(b).		

(Continued on page 2)

(c1) *For situation described at 2 (a1), above:* Transferee's offered property matches existing BLM base property record for the requested preference. Also, for land base property, the requested attachment of permitted use shown on page 1, Form 4130-1a matches current BLM records for that base property.		
(c2) *For situation described at 2 (a2), above:* Transferee has certified that offered property meets applicable base property requirement (see §4110.2-1(a) and (b)). Also, for land base property, the description of the property from which preference is being transferred (page 2, Form 4130-1a) matches BLM's existing records for that base property. Owner and lien holder signatures are verified.		
(d) Transferor has assigned, and Transferee has accepted assignment, of interest and obligation in range improvements. The application (s) for permit(s)/lease(s) (Form 4130-1) shows desired grazing terms and conditions and includes at a minimum the kind and number of livestock and their grazing use period(s) by allotment(s). Information on EOU form, if submitted, is accurate.		
(e) Staff completes memorandum to Field Manager that summarizes the transfer action, indicates the resulting attachment(s) of permitted use by status (active and suspended AUM's) to the affected base property(ies), includes any other pertinent information that will assist in future administration of the preference and permit/lease, and that recommends approval or rejection of the application. ***If staff recommendation is to reject the application, then prepare a proposed grazing decision to reject the application - otherwise continue with items on this checklist.***		
(f) Application package has been forwarded to District or Field Manager with cover memorandum and highlights for approval (signature and date): ❒ "Grazing Preference Application and Preference Transfer Application" (Form 4130-1a); ❒ "Assignment of Right, Title and Interest in Range Improvements" (Form 4120-8). ❒ EOU agreement, as applicable. Documentation that preference transfer is categorically excluded from NEPA is completed.		
(g) District or Field Manager has approved preference transfer application via signature on Forms 4130-1a and 4120-8.		
4. Preference Transfer Records Transmittal to Signatory Parties		
(a) A copy of each executed document to each party who signed that document has been mailed to them for their records. Indicate documents mailed: ❒ Transferee _____ ❒ Transferor _____ ❒ Base property owner _____ ❒ Base property lien holder(s) _____		
5. Action on Application(s) for Permit(s) / Lease(s) Filed With Application for Preference and/or Preference Transfer (see §4110.2-3(a)(4))		
(a) Transferee (permit/lease applicant) has been informed of the need for NEPA-required documentation concerning environmental analysis of grazing as applied for and informed of the estimated date as to when application processing will be completed.		
(b) Consultation and data analysis and evaluation sufficient to support proposed permit or lease terms and conditions completed. Transferee requested permit/lease terms and conditions have been considered in the analysis, as wells as terms and conditions specified by BLM to achieve allotment's(s') management and resource condition objectives, including conformance with 43 CFR 4180 and LUP objectives.		
(c) Proposed permit/lease terms and conditions have been reviewed with Transferee including, as applicable, a term and condition that requires compliance with the applicable AMP, another activity plan, previous grazing decisions, pertinent LUP decisions, etc. Transferee questions have been addressed.		
(d) NEPA-required analysis of the affects of grazing that is proposed to be authorized by the permit/lease is documented. ***Note: If BLM will not fully process permit or lease before it is issued, then indicate the legal authority that allows BLM to issue a permit or lease to authorize grazing until it completes full processing of the permit or lease application, and the year that the permit or lease is scheduled to be fully processed.*** **LEGAL AUTHORITY: ☐ Interior Appropriations Act ☐ §4160.3(d)** YEAR THAT PERMIT OR LEASE IS SCHEDULED TO BE FULLY PROCESSED _____		
(e) Grazing decision has been issued under Subpart 4160 that indicates BLM's action on application and that offers new Permit/Lease to Transferee has been issued.		

(Continued on page 3)

(f) As applicable, new permit/lease has been issued to transferor that reflects authorized grazing use after their preference change.		
(g1) Offered Permit(s)/Lease(s) has (have) been accepted [signed, dated, returned] by the ❒ Transferee ❒ Transferor (if applicable);		
(g2) If decision offering Permit/Lease (step 5(d)) has been protested/appealed, indicate appellant: ❒ Transferee ❒ Other Party *(Note – If terms and conditions of newly-offered permit or lease have been appealed* ***and stayed****, see §4160.3(d).)*		
(h) Grazing decision(s) is (are) no longer subject to administrative or civil appeal, has not been stayed, and is in effect. Transferee has signed permit. *(Note - If decision is in effect, but transferee has not signed permit or lease, the transferee is* ***not*** *authorized to make grazing use.)*		
(i) Grazing permit(s) or lease(s) has (have) been signed by District or Field Manager. One copy of the approved grazing permit or lease has been mailed to Transferee, Transferor (if applicable) and one has been placed in the respective case record(s).		
6. Records Development and Management - See Manual Handbook H-4010-1: ***Range Management Records***		
(a) Base property plat(s) have been created/updated for ❒ Transferee and ❒ Transferor (Only if applicable)		
(b) Allotment map(s) for permitted/leased allotments have been updated and placed in case record(s) of ❒ Transferee ❒ Transferor		
(c) Rangeland Administration System (RAS) records have been created, updated or deleted, as applicable, for: ❒ Transferee ❒ Transferor.		
(d) Case history summary has been created or updated for: ❒ Transferee ❒ Transferor.		
(e) Pertinent historical records from Transferor's case records have been placed in Transferee's case records.		
(f) Transferor case records have been closed or updated. (Note - Consult your administrative staff regarding procedure to archive closed records.)		
(g) New case record for Transferee is complete.		
(h) Land use plan records and GIS records (as applicable) have been created or updated.		
(i) All applicable units of work have been reported in accordance with office progress tracking requirements.		

7. Reviewed and Approved by:

NAME: SIGNATURE:

TITLE: DATE:

REMARKS: ❒ **Are included in transfer memorandum (step 3(e) of this checklist); or** ❒ **Are included below.**

(Form 4110-2, page 3)

Economic Outlook for the Beef Cattle Industry

Jessica Sampson, Agricultural Economist, Livestock Marketing Information Center

A near perfect set of both demand and supply circumstances came together during 2014 creating record high cattle prices. Beef supplies were tight as expected -- U.S. commercial cattle slaughter in 2014 declined just over 7% from 2013's. Even with heavier average carcass weights, beef production dropped 5.7% year-over-year. Beef demand, both domestically and internationally, for U.S. products was the positive surprise. Beginning in the second quarter of the calendar year, domestic consumer demand exceeded all expectations. On the international side, export tonnage of beef was rather strong and the value of all exported products (meat, variety meats, etc.) set a new high.

Compared to expectations in 2013, output of the pork and chicken sectors during 2014 was not nearly as large as anticipated. Hog slaughter was constrained by Porcine Epidemic Diarrhea virus (PEDv). PEDv raised wholesale pork prices dramatically in early 2014. Chicken production increased, but at a slower pace than normal as the growth in breeding bird supply flocks was limited by genetic problems and production constraints.

Cattle feeders made money in 2014. In fact, estimates put their returns at the highest since 2003. Feedstuff costs ratcheted down during most of the year as a record large U.S. corn crop was produced. Those lower costs combined with strengthening fed cattle prices turned cattle feeders into aggressive buyers of the cyclically small feeder cattle supply.

Two factors provided some mitigation of tight U.S. feeder cattle supplies and by late 2014 pulled the number of cattle on-feed in U.S. feedlots, with 1000 head and larger capacity, slightly above a year earlier. In order of importance, those factors were: 1) increased imports of feeder cattle from Canada and Mexico; and 2) movement of dairy steer calves from the veal industry into the beef production system.

Year-over-year gains in cattle prices were dramatic. For the year, fed cattle prices averaged 23% over 2013's, reaching over $150.00 per cwt. for the first time ever. The 5-market annual average (average of monthly prices for all live slaughter steers) was $154.56. In the Southern Plains, year-over-year increases in calf and yearling prices were even more dramatic – calves were up 43% and yearling steers 38%. In terms of dollars per cwt., that was an annual increase of about $74.00 for calves (500- to 600-pound steer) and $57.00 for yearlings (700-to 800-pound steer).

Annual average cattle prices for all classes of animals (feds, calves, yearlings, culls, and breeding stock) will probably still increase in 2015 compared to 2014, but in the fourth quarter of 2015 prices are forecast to post year-on-year declines. Those fourth quarter (fall weaning) calf price declines will not be huge and cow-calf operations should remain very profitable. Of course, there are still several unknowns for late 2015 such as corn prices. Also, there will be more competition at the meat case from pork and chicken. Going ahead to 2016, on a quarterly basis, cattle prices may erode throughout the year compared to 2015's.

Over the next several years, a slow ramp-up in cattle numbers is forecast, suggesting that beef and cattle prices will tend to gradually erode rather than collapse, barring any outside market shocks like drought or a U.S. economic recession. All signs point to this past summer being the transition point toward U.S. beef cowherd growth. Those signs include relationships of heifer and cow slaughter compared to inventory levels and record high cow-calf returns on a per cow basis in 2014. Those returns supported rather aggressive cowherd restocking in states that were devastated by drought in recent years and modest herd growth nationwide.

The U.S. beef cow herd grew by 2.1% in 2014 to 29.7 million head according to the January, 2015 USDA, National Agricultural Statistics Service (USDA-NASS) Cattle report. The inventory of beef replacement heifers was up 4% year-over-year indicating that further expansion is planned on the part of cow-calf producers. January 1 beef replacement heifers, as a percent of the beef cow herd was a record 19.5%, indicating intensive heifer retention. Herd expansion is expected to continue until late in the decade baring setbacks from drought. However, even with the foundation set for breeding herd growth, biological lags prevent immediate year-over-year increases in cattle slaughter.

Forecasts put the 2015 annual average fed cattle live price in the $159.00 to $161.00 range, a year-over-year increase of 3% to 4%. During the first half of 2015, prices are forecast to be above a year earlier, but that may change during the second half. By the fourth quarter, fed cattle prices could average a little below 2014's. Year-over-year increases in fed cattle prices may not occur in 2016.

Calf and yearling prices in calendar year 2015 are expected to average above 2014's – forecasts call for calves to increase about 10% and yearlings up around 5%. Those are much smaller percentage increases than recorded in 2014. As with fed cattle, calf and yearling prices could be below a year earlier by the fourth quarter of 2015. Looking further ahead, calf and yearling prices may be unchanged to down slightly in 2016. Within the year, LMIC currently forecasts a rather normal sea-

sonal price pattern for calves. Barring an abnormal market shock, calf prices in 2015 could return to their normal seasonal pattern, and be lowest late in the year when most U.S. calves are weaned and sold. Importantly, corn prices are not expected to post further large year-on-year declines, so decreased feedstuff costs is not expected and this will not help raise calf prices late in the year. Still, tight cattle supplies are expected to keep bidding for calves rather aggressive as cattle feeders look to lock-up head for future placement into feedlots.

LMIC forecasts that cattle slaughter in 2015 will drop by 1% to 4% compared to 2014's. Average dressed carcass weights should continue their long-term upward trend, resulting in a beef production decline of about 1%. Preliminary forecasts indicate that year-on-year drops in U.S. cattle slaughter may essentially end by 2016; by then beef tonnage could easily post a small year-over-year increase. Still, 2016's annual U.S. beef output is forecast to be about 24.3 billion pounds, nearly 1 billion pounds below 2013's.

Several of the economic forces that pulled beef into the U.S. during 2014 will likely continue for the next few years; specifically stronger U.S. economic growth compared to most other countries, a tight U.S. cattle supply, and a strong U.S. dollar. Exports and imports are major unknowns for calendar year 2015 across all agricultural commodities and trade flows could change quickly given the specter of global recession, geopolitical uncertainty, and abrupt changes regarding exchange rates.

Additionally, the general trend of a shrinking veal industry and the U.S. dairy herd providing more calves to the beef industry is not likely to reverse. In the fourth quarter of 2014, the U.S. dairy cowherd was 86,000 head above that same quarter in 2013 and those animals should mostly provide calves that enter feedlots during the first few months of 2015. Still, overall in 2015 the year-on-year changes are forecast to moderate. Milk prices are forecast to erode to levels that truncate herd growth and by the second half of 2015, the number of dairy cows in the U.S. could decline slightly (less than 1%). Preliminary LMIC forecasts are for an additional 125 to 135 thousand head of dairy calves to enter feedlots in calendar year 2015 and the year-on-year change in 2016 could be another 50,000 head.

LMIC currently forecasts that U.S. pork production will rise 4% to 6% in 2015 compared to 2014 and eclipse the record level set in 2008. Most of the year-over-year gains are forecast to be in the second half of the calendar year. Slightly more production is forecast for 2016 (preliminary forecasts are for an annual gain of about 1%). LMIC forecasts chicken output in 2015 will increase faster than pork. The broiler industry appears to be positioned to increase production fully 4% in 2015 and keep growing in 2016. The increased production for both meats will create headwinds for prices in the wholesale beef market. However, substitutability of pork or chicken for beef should not be overestimated.

The general outlook in the corn world is that most of the decline in corn prices happened in 2014 and feedstuff costs may be stable to slightly higher going into the future, around $3.50 to $4.50 per bushel during 2015. The bottom line is, cattle feeders are not likely to face lower corn costs (e.g. the drop of $2.50 per bushel between early 2013 and 12 months later), supporting their ability to bid-up feeder cattle prices. Of course, if significantly higher feedstuff costs do materialize, that will tend to put downward pressure on calf and yearling prices.

In summary, there are many factors affecting the economic environment of the cattle and beef industry. Domestic consumer meat demand has shown surprising strength in the face of high prices. During 2014 international demand also remained strong however it will be more of a question now due to the rising value of the dollar and international economic health. Chicken and pork out-put continue to ramp up, causing price competition at the meat case. On the cattle side, herd expansion has begun across the U.S. but is expected to be slow, creating an erosion of prices across the industry not a collapse. Looking at profitability in the cattle industry, cow-calf producers are coming off of a record year for profits during 2014 and those are expected to continue into 2015 with only slight slippage. Cattle feeders will likely not experience the same high returns during 2015 as they did in 2014. Currently, they are experiencing some significant red ink and best expectations put returns at breakeven for them over the course of 2015. Generally though, more normal price seasonality can be expected in 2015 compared to 2014. Of course all of these expectations and forecasts are barring any severe market event such as drought in cattle and corn country, or an economic recession across the U.S. With normal conditions however, cow-calf producers should be in position for another good year in terms of prices. ■

Ranch-Level Economic Impacts of Changing Management to Protect Greater Sage-Grouse

Neil Rimbey, L. Allen Torell, John A. Tanaka, David "Tex" Taylor, John Ritten, and **Thomas Foulke**

The greater sage-grouse (Centrocercus urophasianus) is a candidate for listing as an endangered species. Proposed proactive policies and conservation measures to protect the species could potentially alter grazing practices on federal lands including reductions in allowed grazing levels and adjustments in seasonal grazing use of federal permits - particularly during spring and fall. We use profit-maximizing models developed for Idaho, Nevada, Oregon, and Wyoming to estimate the economic value of public land forage to ranches that are highly dependent on public lands for seasonal grazing capacity. Optimal (profit maximizing) adjustments to reductions in allowed grazing uses of Bureau of Land Management (BLM) permits were to substitute alternative sources of forage when possible and to reduce herd sizes. As expected, the less substitute forage sources available in the models and the higher the dependency on public land grazing in the current situation, the higher the estimated economic impact of changing BLM grazing capacities and seasonal forage uses. Spring BLM forage was found to have the highest annual economic value, ranging from about $15/AUM in the Wyoming ranch model to $50/AUM in the Oregon ranch model. Capitalized into a grazing permit value that reflects the contributions of the grazing permit to profit over a 40-year production period, the economic value of the BLM grazing permit ranged from about $140/AUM to over $600/AUM. Cash flow restrictions could not be met if all grazing on the BLM permit were eliminated. The highly dependent public land ranches considered in the analysis would then be forced to reduce herd sizes to levels that would no longer be economically viable. ■

Current Public Perceptions of Rangelands in Idaho

J.D. Wulfhorst, University of Idaho Social Science Research Unit

This presentation will highlight results from a recent social survey commissioned by the Idaho Rangelands Resource Commission (IRRC) and administered by the Social Science Research Unit (SSRU) at the University of Idaho (UI). We used a dual-sample frame with landlines and cell lines to administer a telephone survey that took respondents an average of fifteen minutes. The data collection took about seven weeks from mid-September to early November in the fall of 2014. A total of 587 surveys were completed for a cooperation rate of about 37%. Survey highlights will focus on a demographic profile of respondents, various uses of rangelands in Idaho, approval ratings of different public lands uses, perceived condition of Idaho's rangelands, perceptions of producers' management, perceived importance of ranches and farms to wildlife habitat, and the reliability of various information sources about rangelands issues. ■

Hagenbarth Livestock - Clark County, Idaho and Dillon, Montana

Hagenbarth Livestock was put together by my father, Dave Hagenbarth in the late 1930's. Most of the grazing lands were remnants of Wood Livestock Company holdings in southeastern Idaho and southwestern Montana. In the 1940's and 50's Dave worked hard with the Conservation Service to enhance the grazing resource with brush and water management from Spencer, Idaho to the Grubb Ranch on Ice House Creek west of Island Park. The Montana ranches were the hay base and winter range.

My brother Dave, son John, and I manage this operation which has changed significantly over the years and will continue to change based on the economics of the livestock business and the politics of federal land management in the west. We are public land ranchers who attempt to manage all the intermingled land ownerships we control in a holistic manner to enhance the economic, social and ecological sustainability of the land base we manage and the rural communities in which we live. This is becoming more difficult as the years pass.

Currently we have a cow/calf/yearling outfit that sells a significant amount of summer pasture. The cows calve in June in Idaho, are shipped to irrigated pasture in Montana in early October with the calves weaned in mid-December and dry lotted till spring. The mature cows are wintered out on desert land north of Dillon and then shipped down to Idaho in the spring. The yearlings usually take the early growth off the irrigated pasture and are shipped to Kilgore, Idaho in June. This spring grazing of the irrigated pasture in Montana keeps the forage from becoming too rank for fall and winter use. Yearling pasture cattle use spring forage in Montana, around Dubois, and then are summered at Kilgore and east of Kilgore around Sheridan Creek. Very little hay is raised and what we need is purchased and usually used as a supplement for younger replacement cattle. Some strategic supplementation is done depending upon class of cattle, gestation period, weather and range conditions.

This operation has changed significantly over the years and will continue to change based on the economics of the livestock business and the politics of federal land management in the west.

We are developing a more moderate sized range cow that will work in our system with optimal production. She must breed back every year, wean an average calf and have longevity with few udder problems. We have put the cow back to work, but must give her the genetic tools that enables to do her job. Her failure is directly related to my failure in making reasonable and prudent decisions.

We use a time controlled grazing system and limit spring use to shorter periods. We double crop our winter range. Most of the infrastructure is in place so we are concentrating on producing more forage on our managed pasture systems through vegetative manipulation using better species with limited tillage. We attempt to manage our deeded and leased native ranges to achieve sustainable production of forage based on site specific conditions. There is a lot of work to do if allowed and is economically reasonable. Land ownership is very expensive and it has to produce.

Our ability to sustain this operation depends upon fate and successful planning strategies that keep this operation economically rewarding and personally gratifying to those who wish to continue this endeavor. ■

Pickett Ranch & Sheep Co. - Cassia County

Family business adapts to survive over 132 years of change and trial.

Sheep grazing with Cache Peak in the distant background

On a clear but cold morning in late February, 1881, 33 year old Moroni Pickett rolled his wagon across the Albion valley up to the ridge displaying to him for the first time the great Snake River valley. To the distant north lie the majestic Sawtooth mountains. To the south, the Goose Creek valley--the objective of his arduous ten day journey from Tooele, Utah. Pausing briefly to record the moment, Moroni noted in his journal "an immense amount of good land awaiting the hand of industry". Thus began the story of Pickett Ranch, a multi-generational family owned agri-business, producing a variety of commodities including potatoes, natural lamb, Black Angus beef, alfalfa, and small grains.

Adapting to the changing times, the company has also entered into contracts producing the world renowned "Oakley" stone from natural deposits on its Utah grazing lands, wind generated power from wind turbines located on the Milner Butte, and world class elk and mule deer hunting opportunities from ranches located in Lynn, Utah, northeastern Nevada, and Oakley, Idaho.

The company's success has not been without challenge however. Economic turbulence, family succession, natural disaster, and political uncertainty have all presented unique challenges to its growth and future. ■

A view of the Grande Ranch in northeastern Nevada's Goose Creek watershed.

Tony & Brenda Richards - Owyhee County

Tony and Brenda Richards ranch in Owyhee County in Southwestern Idaho.

NOTES...

9:00 a.m.	Tour National Interagency Fire Center in Boise, featuring smoke-jumper program
11:00 a.m.	Depart Boise for driving tour to visit BLM fire breaks along Simco Road; ISDA range monitoring demonstration
12:30 p.m.	Lunch at Simplot Livestock in Grand View, followed by presentation and facility tour
3:00 p.m.	Arrive back at starting point

TOUR

University of Idaho Extension

Special thanks to Mary Blackstock, Ken Miracle, Debbie Titus, Scott Jensen and Joel Packham for sharing their photos.

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