

# Managing nutrition and supplementation on annual rangeland

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Tehama, Glenn, and Colusa Counties

# Assumptions

- Protein – Must meet requirements, but don't need more...CP
  - Energy – Must meet requirements, additional leaves room for added growth...TDN
- 
- Annual grasses – ryegrass, soft chess, etc. – not weeds
  - Filaree – All varieties combined
  - Bur clover – Similar to sub clover and rose

# Lets break it down to seasons

<b>Maturity Stage</b>	<b>Approx. Months</b>
Early Vegetative	Nov to Feb
Late Vegetative	Feb/March
Early Flowering	Late March
Late Flowering	April
Mature	May
Dry	June to Sept
Dry, Leached	Sept to Dec

# What is the quality? Protein

Stage of maturity	Crude protein (%)		
	Annual grass	Filaree	Bur clover
Early vegetative	18	27	28
Late vegetative	15	25	27
Early flowering	15	22	26
Late flowering	10	16	22
Mature	6	10	19
Dry	5	7	18
Dry, leached	3	5	17

Source: Hart et al. 1932; Gordon and Sampson 1939

# What is the quality? Protein

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## Crude protein (%)

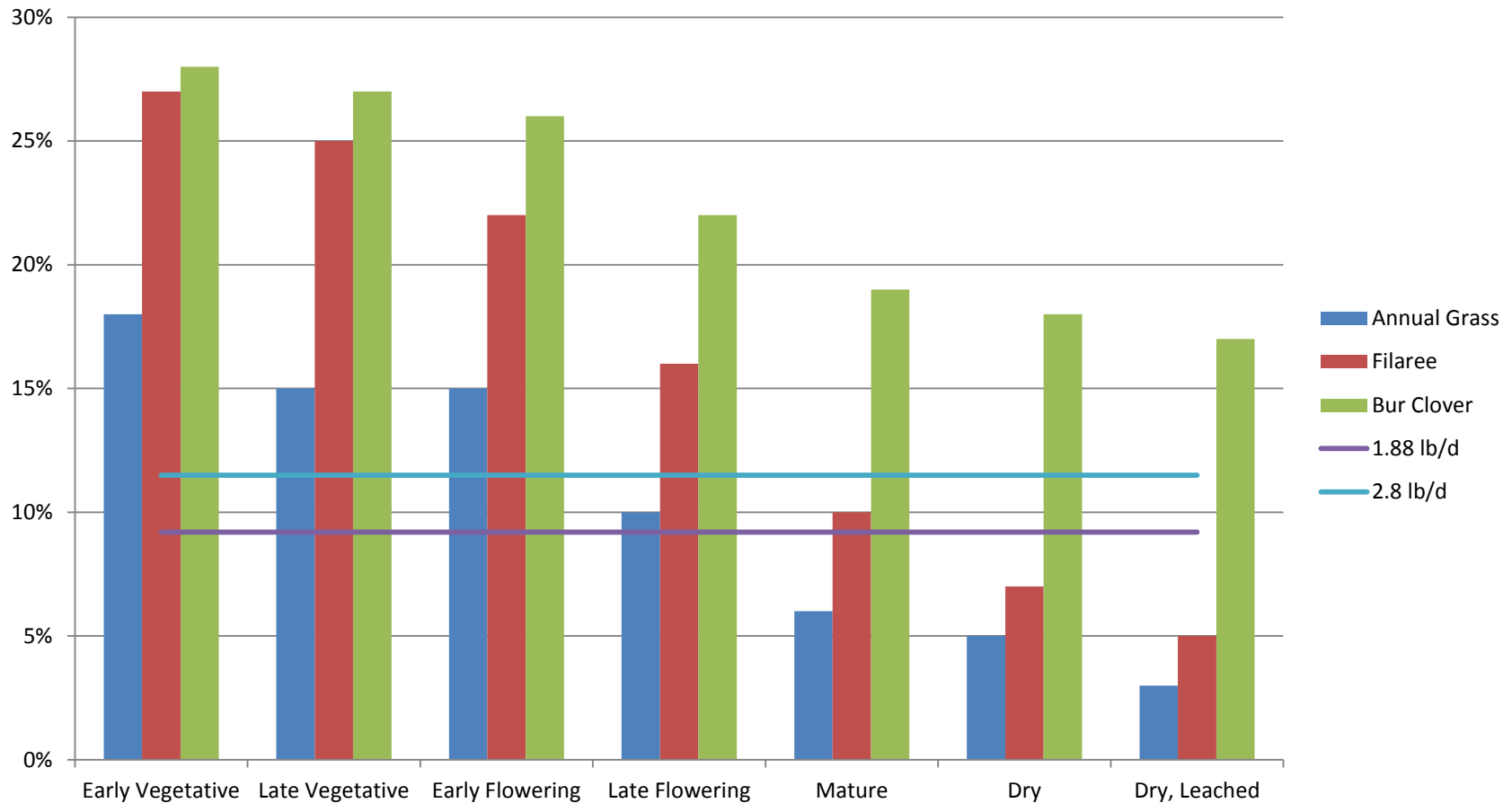
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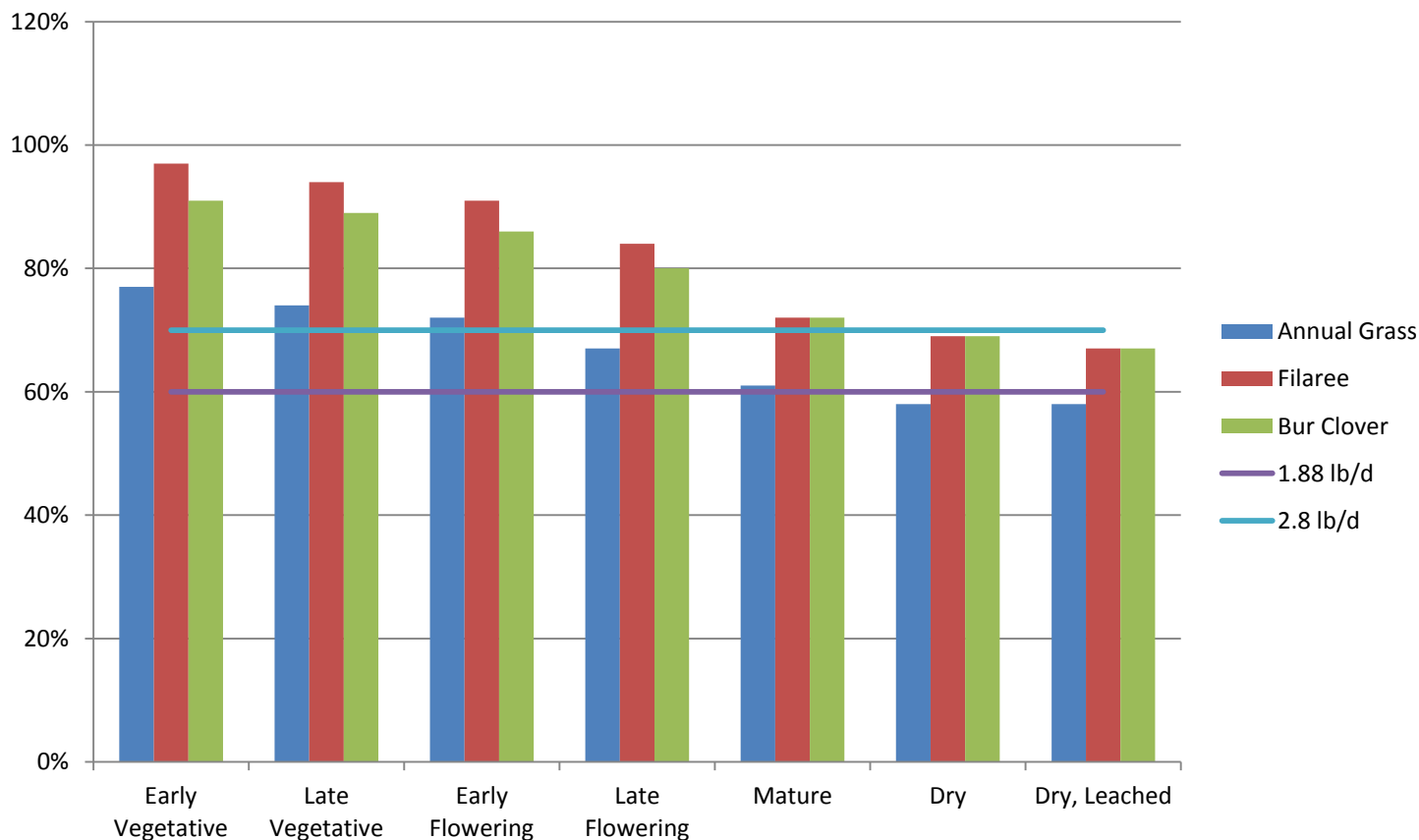
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Source: Hart et al. 1932; Gordon and Sampson 1939

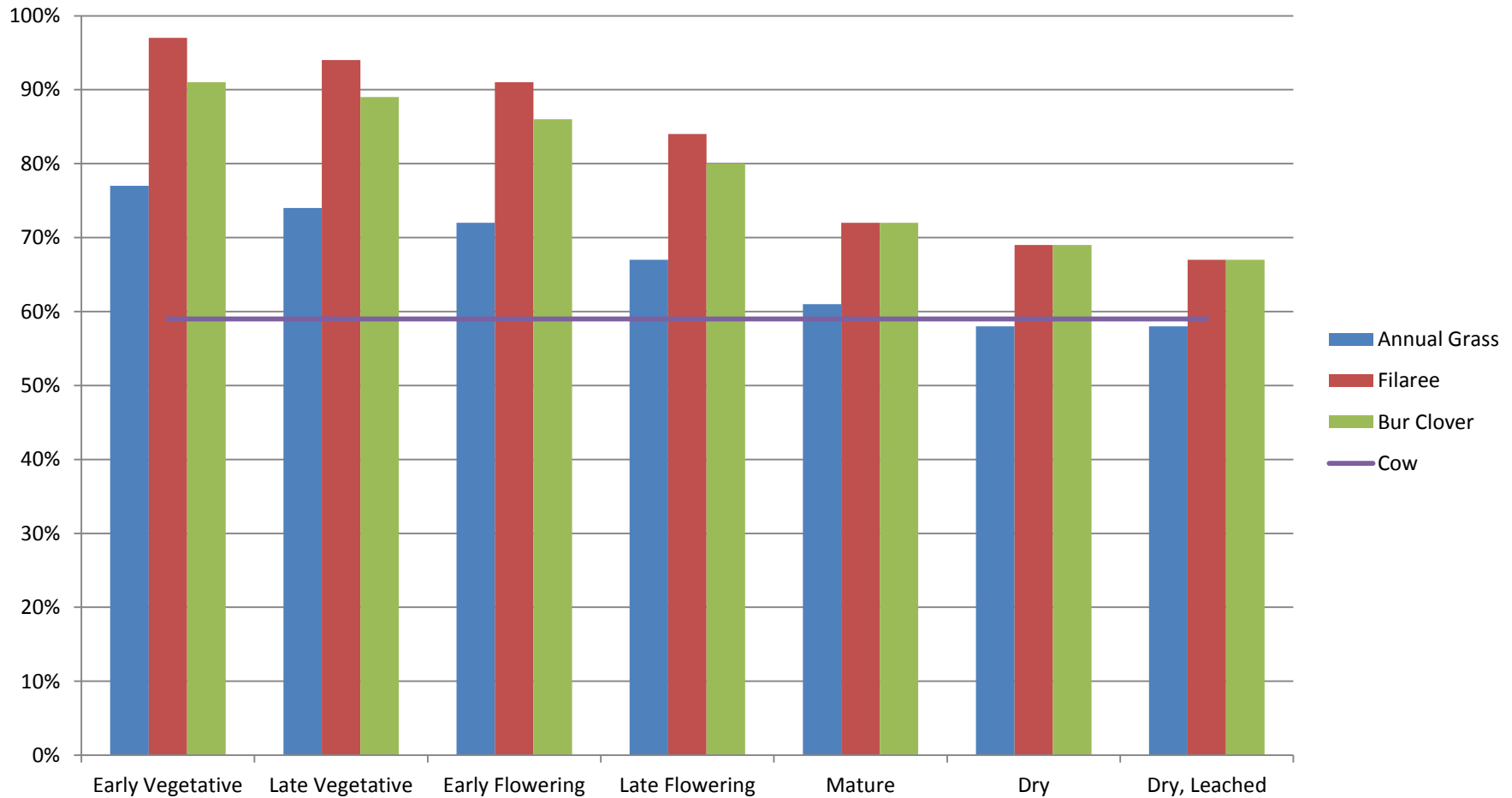
# 700 lb steer calves protein requirements to gain 1.8 or 2.8 lb/d



# 700 lb steer calves energy requirements to gain 1.8 or 2.8 lb/d

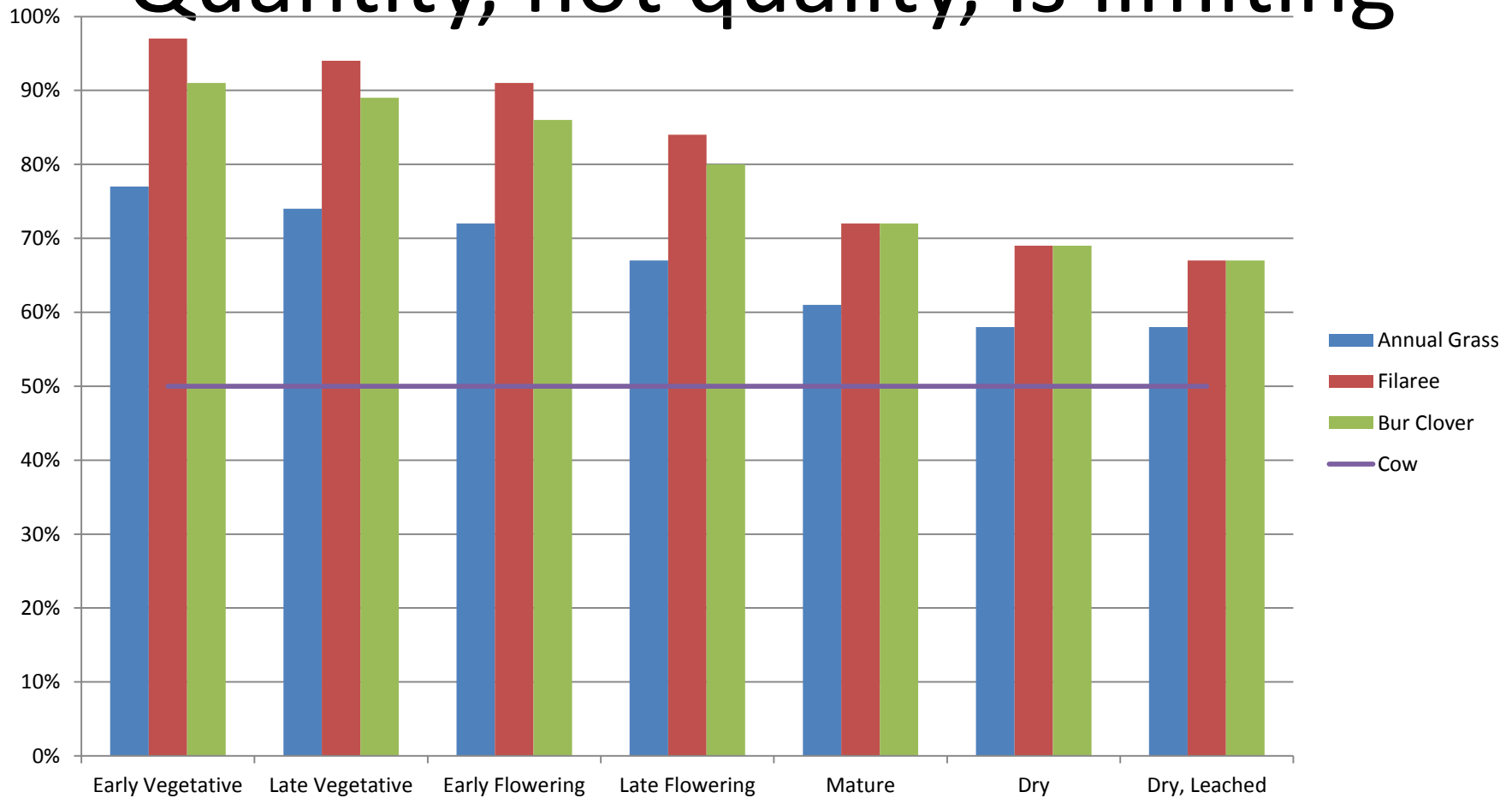


# Cow Lactating 1st 90 days – TDN%



# Dry cow – TDN%

## Quantity, not quality, is limiting



# Don't forget to adjust intake

intake % calculations		
Forage Type and Maturity	Stage of Production	Forage Dry Matter Intake Capacity, % of Body Weight
<i>Low quality forage (&lt; 52% total digestible nutrients)</i>	Dry	1.8
Dry winter forage, mature legume and grass hay, straw	Lactating	2.2
<i>Average quality forage (52 – 59% total digestible nutrients)</i>		
Dry summer pasture, dry pasture during fall, late-bloom	Dry	2.2
legume hay, boot stage and early-bloom grass hay	Lactating	2.5
<i>High quality forage (&gt; 59% total digestible nutrients)</i>		
Mid-bloom, early-bloom, and pre-bloom legume hay,	Dry	2.5
pre-boot stage grass hay	Lactating	2.7
Lush, growing pasture	Dry	2.5

## Consider adding rose clover

- Cattle don't find it palatable when green which preserves it for dry feed
- Quality preserves very well in dry feed
- Highly sought after when dry
- One of few clovers that does well without large additions of phosphorus
- Only need one or two lbs/acre
- Seed is inexpensive and available
- Inoculate for nitrogen fixation! Size of plant = amount of N produced



# Just for consideration

## Shells with Hulls



## Hulls



# Options to supplement

Feed	\$/ton
<b>Roughages</b>	
Alfalfa	\$230
Oat hay	\$230
Rice straw	\$70
Wheat straw	\$100

Feed	\$/ton truckload
<b>Concentrates</b>	
Rolled corn	\$230
Cottonseed	\$545
Oat grain	\$350
Soybean meal	\$593
Canola	\$455
Rice bran	\$250
Almond hulls	\$155
Rolled barley	\$290
Corn gluten	\$340
Distillers grains	\$342
Canola	\$455

# Cost per lb of nutrient

- Think of supplements in terms of \$/lb of protein (CP) or energy (TDN)
- i.e.
  - Corn at \$230 per ton – 89% TDN
  - Alfalfa at \$230 per ton – 60% TDN, but CP and Ca
  - See handout for specifics on feeds i.e. feed ramp-up etc.
  - Taurus ration program can help calculate for you

# Calving cow examples

- 1,200 lb cow at calving
- A maximum of 20% DM of diet from fall type feed
- Just maintaining, no added gain
- Your situation may vary, contact us if you want to input your specifics
- In this case range is put in as a cost of \$0

# Example least cost ration

ALL FEEDS in the ration	AS FED BASIS:		DRY MATTER BASIS:	
	lb/day	%	lb/day	%
-----	-----	-----	-----	-----
RICE straw	12.046	43.671	10.962	51.065
RANGE Wld lat fall g	8.580	31.106	4.290	19.985
CORN grain flaked	5.293	19.189	4.711	21.945
RICE bran sol-extd	0.929	3.369	0.836	3.896
ALFALFA early bloom	0.552	2.002	0.497	2.316
COTTON sd w/o hulls	0.183	0.664	0.170	0.793
-----	-----	-----	-----	-----
Total Ration.....	27.583		21.466	
Cost, \$/day.....	1.27			
Cost, \$/ton.....	91.75		117.89	

With a >2 ton order grain would be premixed

# What if grain is not an option

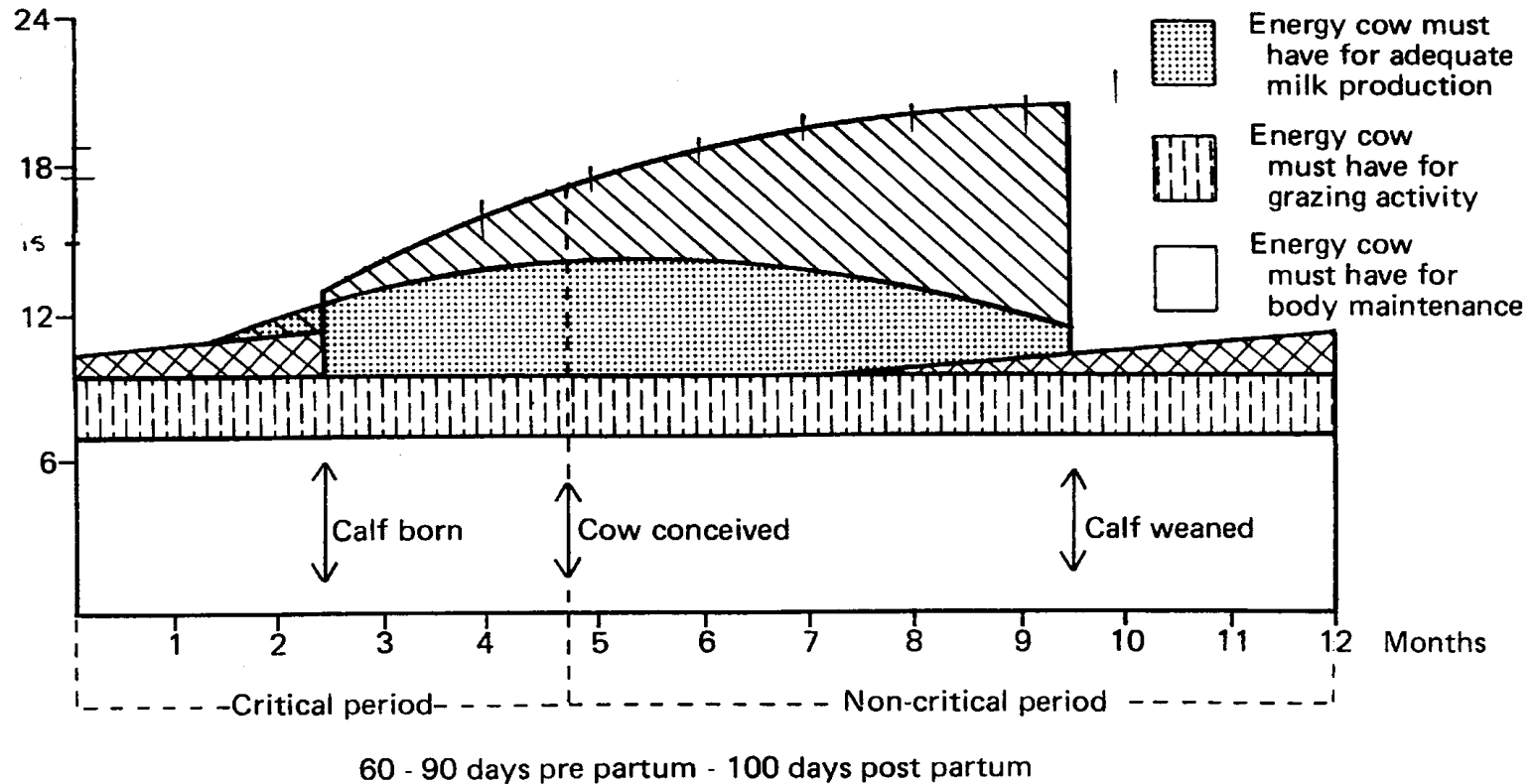
- Again, 20% of diet DM can be range
- Options included – Remember just an ex.
  - Oat hay \$230
  - Alfalfa \$230
  - Rice straw \$70
  - Wheat straw \$100

# Roughage only ration

ALL FEEDS in the ration	AS FED BASIS:		DRY MATTER BASIS:	
	lb/day	%	lb/day	%
-----	-----	-----	-----	-----
ALFALFA early bloom	15.565	56.344	14.009	65.260
RANGE Wld lat fall g	8.580	31.058	4.290	19.985
RICE straw	3.475	12.580	3.162	14.732
Taurus Phosphorus	0.005	0.018	0.005	0.023
-----	-----	-----	-----	-----
Total Ration.....	27.625		21.466	
Cost, \$/day.....	2.56			
Cost, \$/ton.....	185.24		238.39	

**Total daily energy requirement**

Total digestible nutrients (TDN) lb.



**Fig. 1. Estimated energy requirements of a mature, 1,000-pound beef cow during her 12-month reproductive cycle, based on a 90-day calving season and 500-pound calf at 7 months of age (Ensminger).**

# What about a weaned calf

- Same as before 20% of diet from range
- ADG calculated by the cheapest cost per lb of gain
- Starting at a weight of 400 lbs

# Weaned calf ration

ALL FEEDS in the ration	AS FED BASIS:		DRY MATTER BASIS:	
	lb/day	%	lb/day	%
-----	-----	-----	-----	-----
CORN grain flaked	5.569	38.248	4.957	43.902
RANGE Wld lat fall g	4.400	30.217	2.200	19.486
ALFALFA early bloom	4.112	28.237	3.701	32.776
RICE bran sol-extd	0.391	2.682	0.352	3.113
RICE straw	0.090	0.616	0.082	0.722
	-----		-----	
Total Ration.....	14.561		11.290	

# Costs of gain with grain included

LEAST COST GAIN			
Starting Weight, lb .....	400.00		
Ending Weight, lb .....	500.00		
Average Weight, lb .....	450.00	(DM Intake 2.51% of Body Wt)	
Days on Feeding Phase .....	46.29		
		Whole Phase	Per Day
Gain, lb .....	100.00		<u>2.16</u>
Feed Intake, DRY MATTER, lb .....	522.58		11.29
Feed Intake, AS FED, lb .....	673.98		14.56
			Per lb of Gain
Feed Cost, \$.....	55.84		0.56
Overhead Cost, \$.....	9.26		0.09
Feed & Overhead cost, \$.....	65.10		0.65
Feed Cost:	165.70 \$/English ton AS FED		

# Cost of gain without grain

ALL FEEDS in the ration	AS FED BASIS:		DRY MATTER BASIS:	
	lb/day	%	lb/day	%
-----	-----	-----	-----	-----
ALFALFA early bloom	9.177	64.970	8.259	75.373
RANGE Wld lat fall g	4.400	31.150	2.200	20.076
RICE straw	0.548	3.880	0.499	4.551
-----	-----	-----	-----	-----
Total Ration.....	14.125		10.958	
Cost, \$/day.....	1.17			
Cost, \$/ton.....	165.14		212.87	

# Cost of gain without grain

Starting Weight, lb .....	400.00		
Ending Weight, lb .....	500.00		
Average Weight, lb .....	450.00		(DM Intake 2.44% of Body Wt)
Days on Feeding Phase .....	125.00		
		Whole Phase	Per Day
Gain, lb .....	100.00		<u>0.80</u>
Feed Intake, DRY MATTER, lb .....	1369.76		10.96
Feed Intake, AS FED, lb .....	1765.64		14.13
Feed Cost, \$.....	145.79		1.17
Overhead Cost, \$.....	25.00		0.20
Feed & Overhead cost, \$.....	170.79		1.37
			Per lb of Gain
			-----
			13.70
			17.66
			1.46
			0.25
			1.71

<b>February 7, 2014</b>			
<b>RECEIPTS:</b>	This Week: <b>1657</b>	Last Week: <b>3275</b>	
<b>COMPARED TO LAST WEEK:</b> Slaughter cows and bulls \$2 higher. Steers under 550 lbs mostly steady; 550-650 \$10 lower on light supply; over 650 mostly steady. Heifers mostly \$8-\$12 lower except 3-weights and few 8-weights steady to \$3 higher. Off lots \$10-\$40 below top.			
<b>SLAUGHTER COWS:</b>		<b>High Dress</b>	<b>Low Dress</b>
Breakers:	<b>78.00-86.00</b>	<b>87.00-99.00</b>	
Boneing:	<b>68.00-77.00</b>		
Cutters:	<b>57.00-67.00</b>		
<b>BULLS 1 &amp; 2:</b>	<b>75.00-94.00</b>	<b>95.00-105.00</b>	
<b>FEEDER STEERS:</b>	<b>300-400</b>	<b>210.00</b>	to <b>260.00</b>
Top Offerings/Pen Lots	<b>400-450</b>	<b>200.00</b>	to <b>232.00</b> (few)
	<b>450-500</b>	<b>195.00</b>	to <b>217.00</b>
	<b>500-550</b>	<b>190.00</b>	to <b>214.00</b>
	<b>550-600</b>	<b>170.00</b>	to <b>195.00</b> (few)
	<b>600-650</b>	<b>165.00</b>	to <b>180.00</b>
	<b>650-700</b>	<b>165.00</b>	to <b>183.00</b>
	<b>700-750</b>	<b>150.00</b>	to <b>166.50</b>
	<b>750-800</b>	<b>156.00</b>	to <b>165.00</b> (few)
	<b>800-900</b>	<b>146.00</b>	to <b>160.00</b>
<b>FEEDER HEIFERS:</b>	<b>300-400</b>	<b>190.00</b>	to <b>247.00</b>
Top Offerings/Pen Lots	<b>400-450</b>	<b>xxxx</b>	to <b>xxxx</b>
	<b>450-500</b>	<b>170.00</b>	to <b>191.00</b>
	<b>500-550</b>	<b>160.00</b>	to <b>181.00</b>
	<b>550-600</b>	<b>155.00</b>	to <b>173.00</b>
	<b>600-650</b>	<b>155.00</b>	to <b>172.50</b>
	<b>650-700</b>	<b>155.00</b>	to <b>172.00</b>
	<b>700-750</b>	<b>147.00</b>	to <b>152.50</b>
	<b>750-800</b>	<b>xxxx</b>	to <b>xxxx</b>
	<b>800-900</b>	<b>140.00</b>	to <b>146.50</b> (few)
<b>PAIRS:</b>	Few running age & older pairs \$1450-\$1575		
<b>CALVY COWS:</b>	Few cows ranging from very thin to running-age in good flesh \$725-\$1310		
<b>NEXT WEEK (Feb. 14):</b> Expecting 1500 head including 2 loads of pairs			
Feb. 12: Consignment deadline for special added Western Video Market sale			

# Growing Cattle-GRAIN RATION

What are they worth?	Wt Each (cwt)	Unit	Total Hd or Units	Price or Cost/Unit	Total Value
Steer Calves	4.00	head	1	\$ 235.00	\$ 940.00
Steer Calves	5.00	head	1	\$ 202.00	\$ 1,010.00
<b>Change in Value</b>					<b>\$ 70.00</b>

Feed Cost

Grain Ration- 2.15 adg, \$1.41/day	days	46	\$ 1.41	\$ 64.86
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**Return over cost**

**\$ 5.14**

# Growing Cattle-NO GRAIN RATION

What are they worth?	Weight Each (cwt)	Unit	Total Hd or Price or Units Cost/Unit	Total Value
Steer Calves	4.00	head	1 \$ 235.00	\$ 940.00
Steer Calves	5.00	head	1 \$ 202.00	\$ 1,010.00
<b>Change in Value</b>				\$ 70.00
Feed Cost				
No Grain Ration- 0.80 adg, \$1.17/day		days	125 \$ 1.17	\$ 146.25
<b>Return over cost</b>				\$ (76.25)

# Looking at Maintaining Dry Cows

<b>Feed Type</b>	<b>Size Cow</b>	<b>Days</b>	<b>Cost/Day</b>	<b>Cost/Period</b>
Dry Cows-No Grain	1250	<b>30</b>	\$ 2.56	\$ 76.80
Dry Cows-Grain	1250	<b>30</b>	\$ 1.27	\$ 38.10

<b>Feed Type</b>	<b>Size Cow</b>	<b>Days</b>	<b>Cost/Day</b>	<b>Cost/Period</b>
Dry Cows-No Grain	1250	<b>60</b>	\$ 2.56	\$ 153.60
Dry Cows-Grain	1250	<b>60</b>	\$ 1.27	\$ 76.20

# Consider

- Talk to your marketing rep about price assumptions
  - They know the market better than us
- This is just a computer program
  - It is as good as the assumptions entered
  - Consider time to acclimate cattle to ration!
  - Consider the infrastructure to feed grain rations
  - Consider the range intake variable
    - Maybe you are none or you are more
      - Everyone is different here

# Supplementing Se

Funded by the Rustici Cattle Research  
Endowment



Josh Davy – Farm Advisor  
Larry Forero – Farm Advisor  
Jim Oltjen – UC Specialist  
Dan Drake – Farm Advisor  
John Maas – UCCE Veterinarian  
Rick Tucker – UC Vet Med  
Christie Mayo – UC Vet Med



# Where are you currently?

## \$15 a sample

- Whole blood for Se
- Serum...liver biopsy for trace element screen



# Proper tubes – do you want zinc?



# What can we use?

- 100 steers weaned off the truck at pasture delivery in Cottonwood

- Five treatments

  - Muse – label rate

  - Multimin – label rate

  - Se bolus

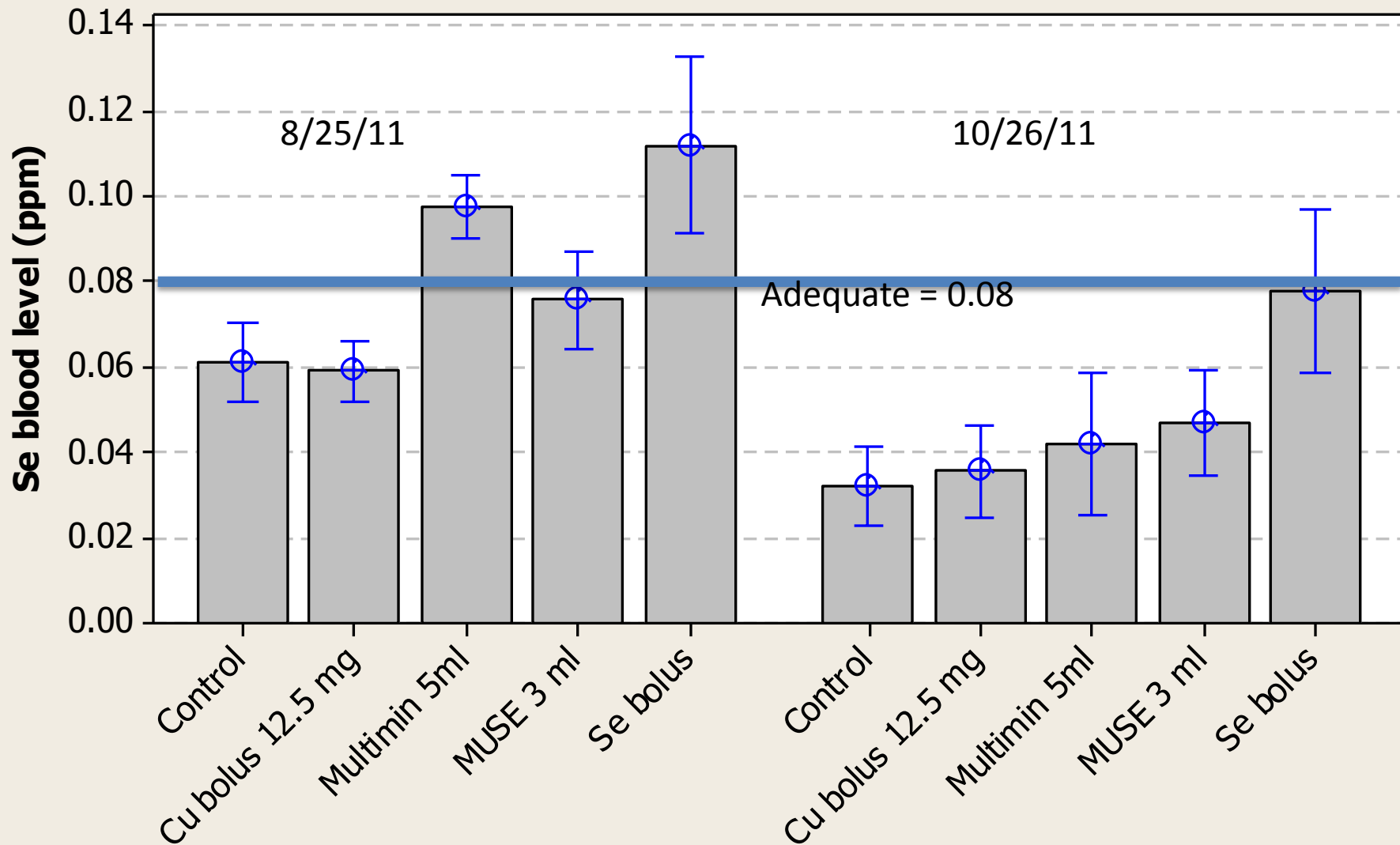
  - Cu bolus

  - Control – all had 3 ppm liquid supplement ( $\frac{3}{4}$  lbs/day)



- Monthly weights plus blood work at 30 and 90 days

## Se blood status 8/25/11 and then 10/26/11



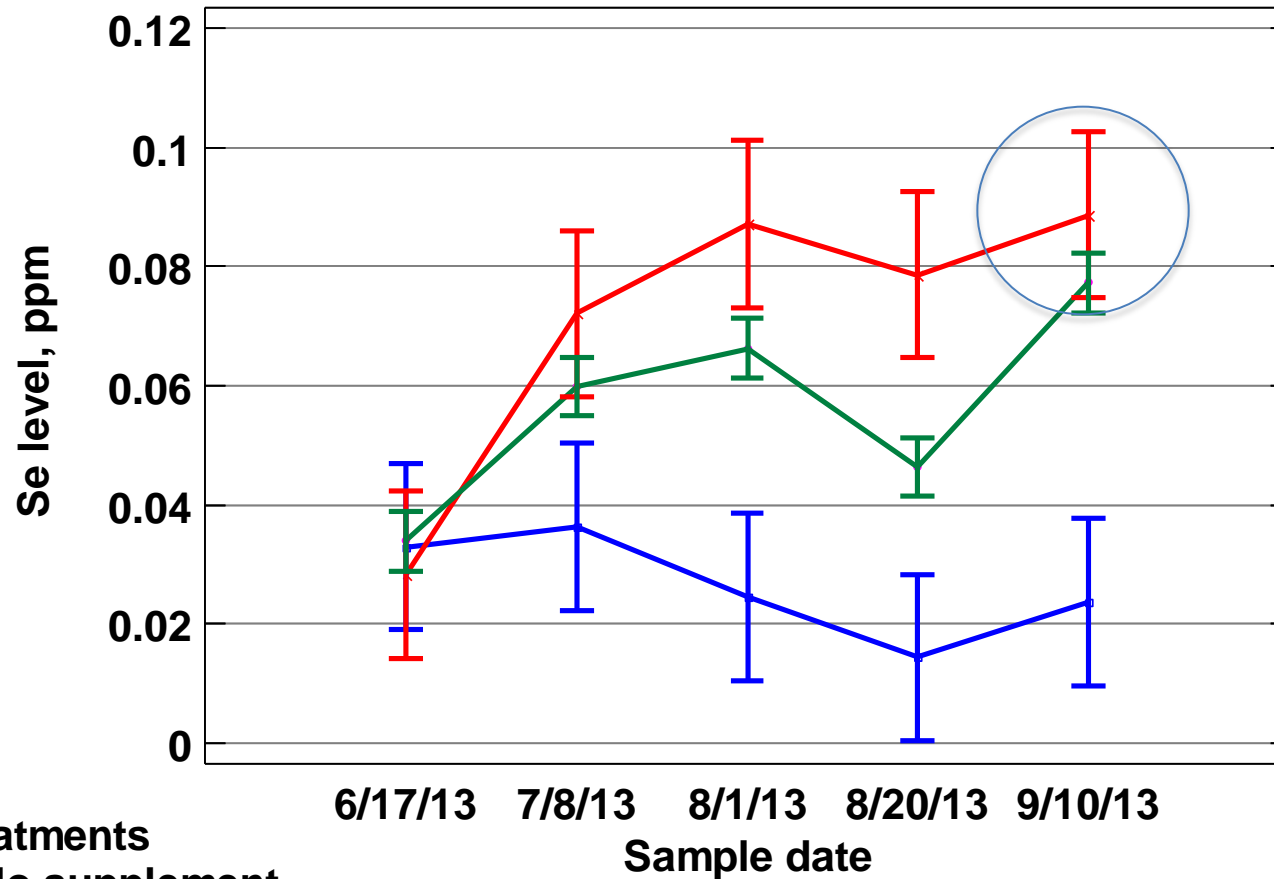
# What about salt?

60 steers total

- 6 positive control
  - Bolus
- 6 negative control
  - No supplement
- 48 treatment group
  - Loose salt at 120 ppm



## Whole blood Se level by treatment and date



- Treatments
- No supplement
  - Se bolus
  - Salt supplement