Supplementation – Some protein, a lil energy, and minerals

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First proviso

- This is not intended to be a product bashing session
  - Different products work for different scenarios

Supplementing

- Protein
  - Can supplement 1X per week and not reduce performance
  - Must supplement more to maintain intake of low quality forage
- Energy
  - Requires every other day
- Calcium is not covered but it's important

One thing to consider when supplementing heifers

FEEDING IN THE EVENING ENCOURAGES DAY CALVING

- As much as 85% of calves can be born between 6 AM and 6 PM when fed at dusk
- Starting early makes no difference. It is only important when they are calving.

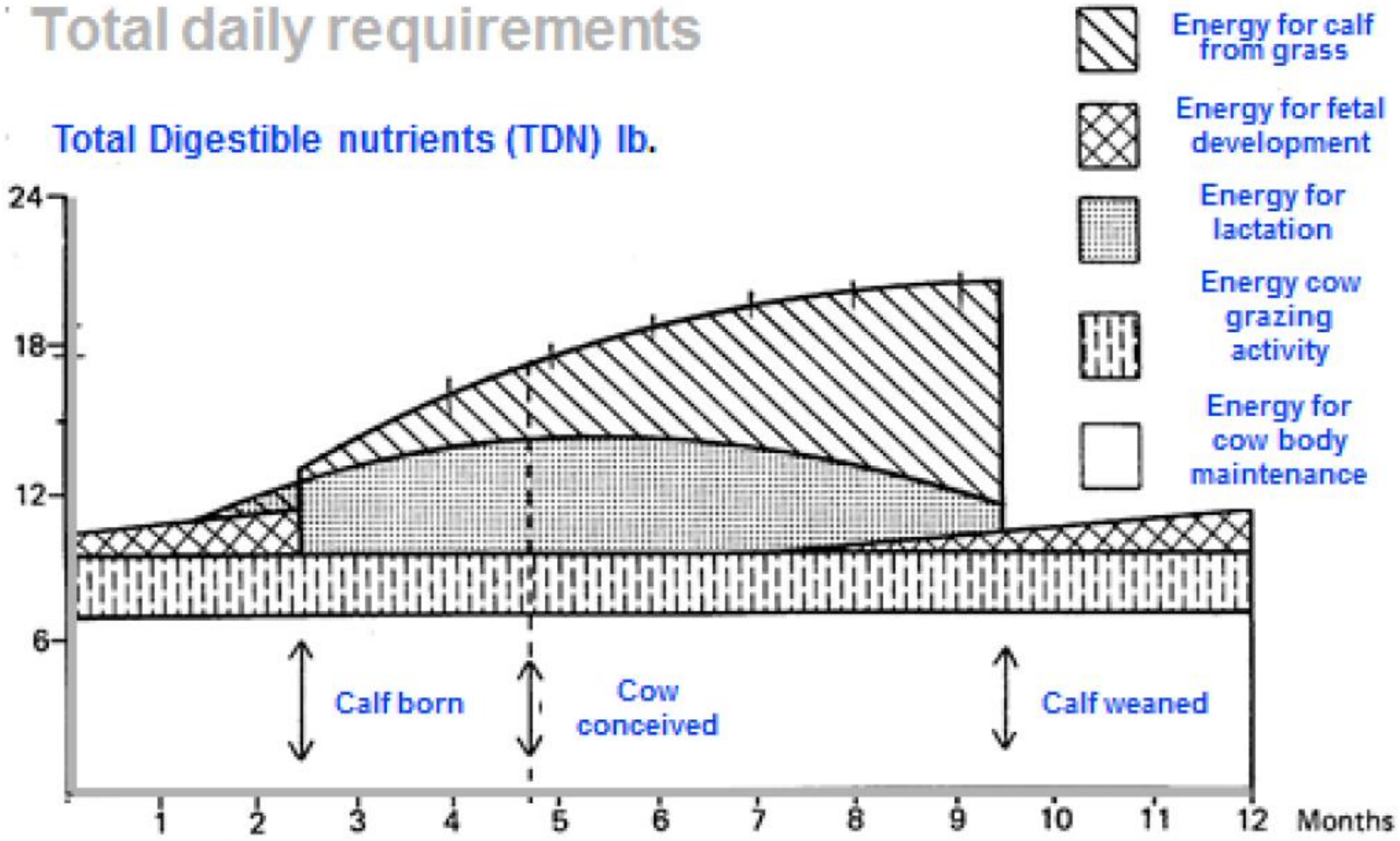
What's the scenario

- Protein
  - How much do they need – average milking
    - Lactating cow
      - 1,000 lbs – 2 lbs/day ~9.6% CP of dry matter required (20.2)
      - 1,400 lbs – 2.3 lbs/day ~9% CP of dry matter required (25.6)

Protein

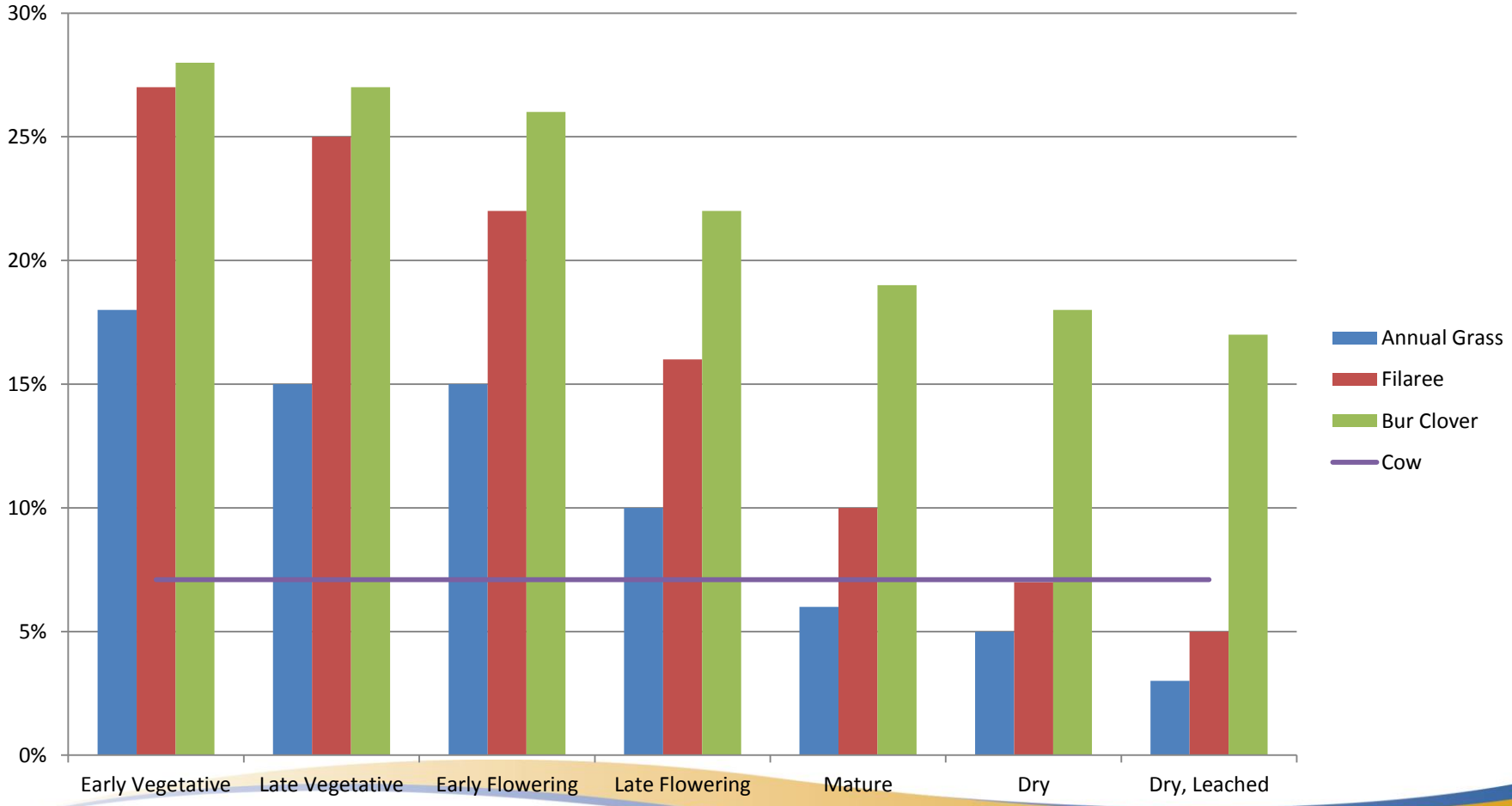
- How much do they need
  - Dry cow
    - Middle trimester
      - » 1,000 lbs – 1.3 lbs/day 7% CP (18.1)
      - » 1,400 lbs – 1.6 lbs/day 6.9% CP (23.3)
    - Third trimester
      - » 1,000 lbs – 1.6 lbs/day 7.9% CP (19.6)
      - » 1,400 lbs – 1.9 lbs/day 7.6% CP (24.9)

Total daily requirements

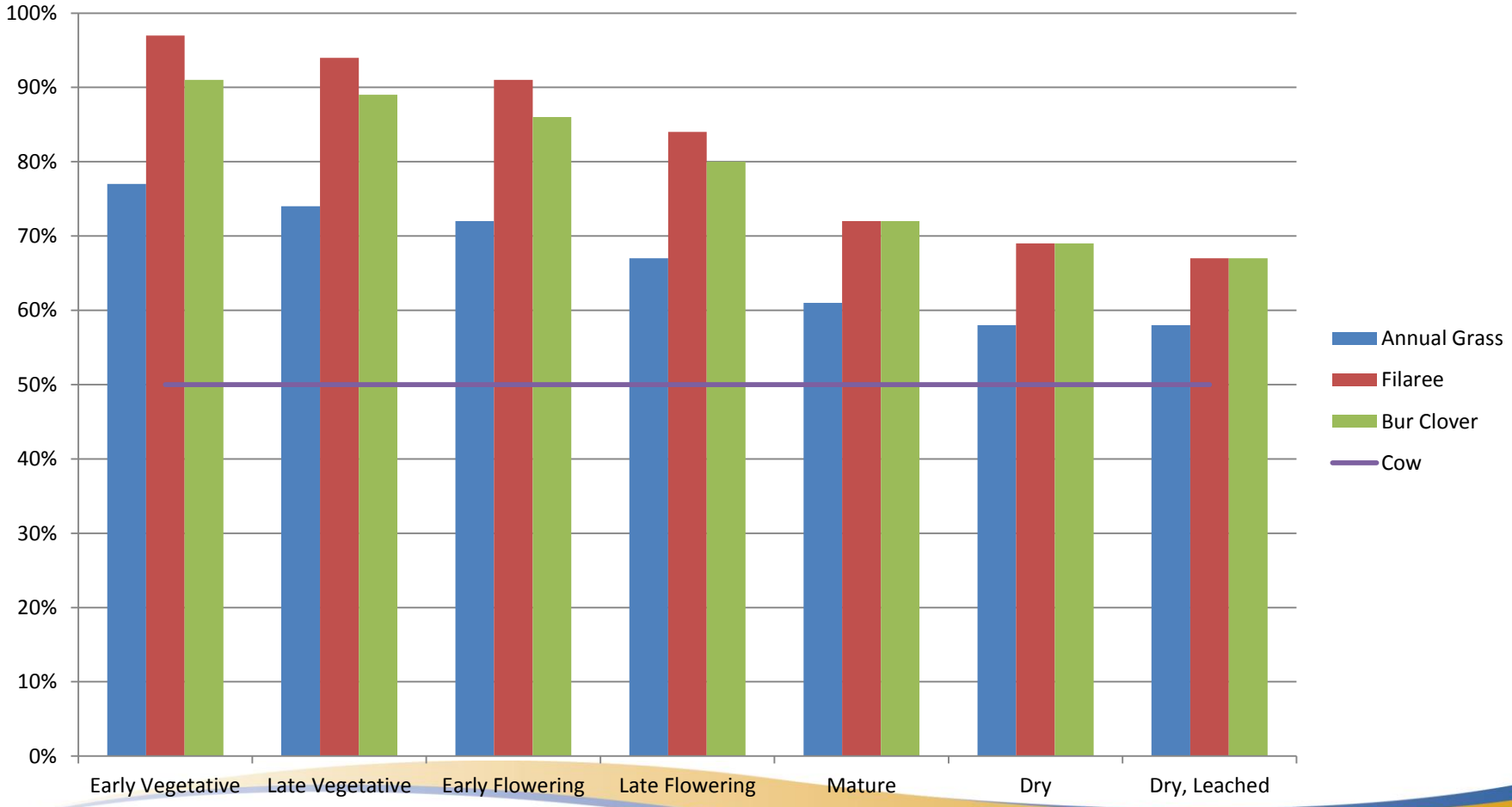


Last third of pregnancy - First 84 days after calving are the most critical production phases

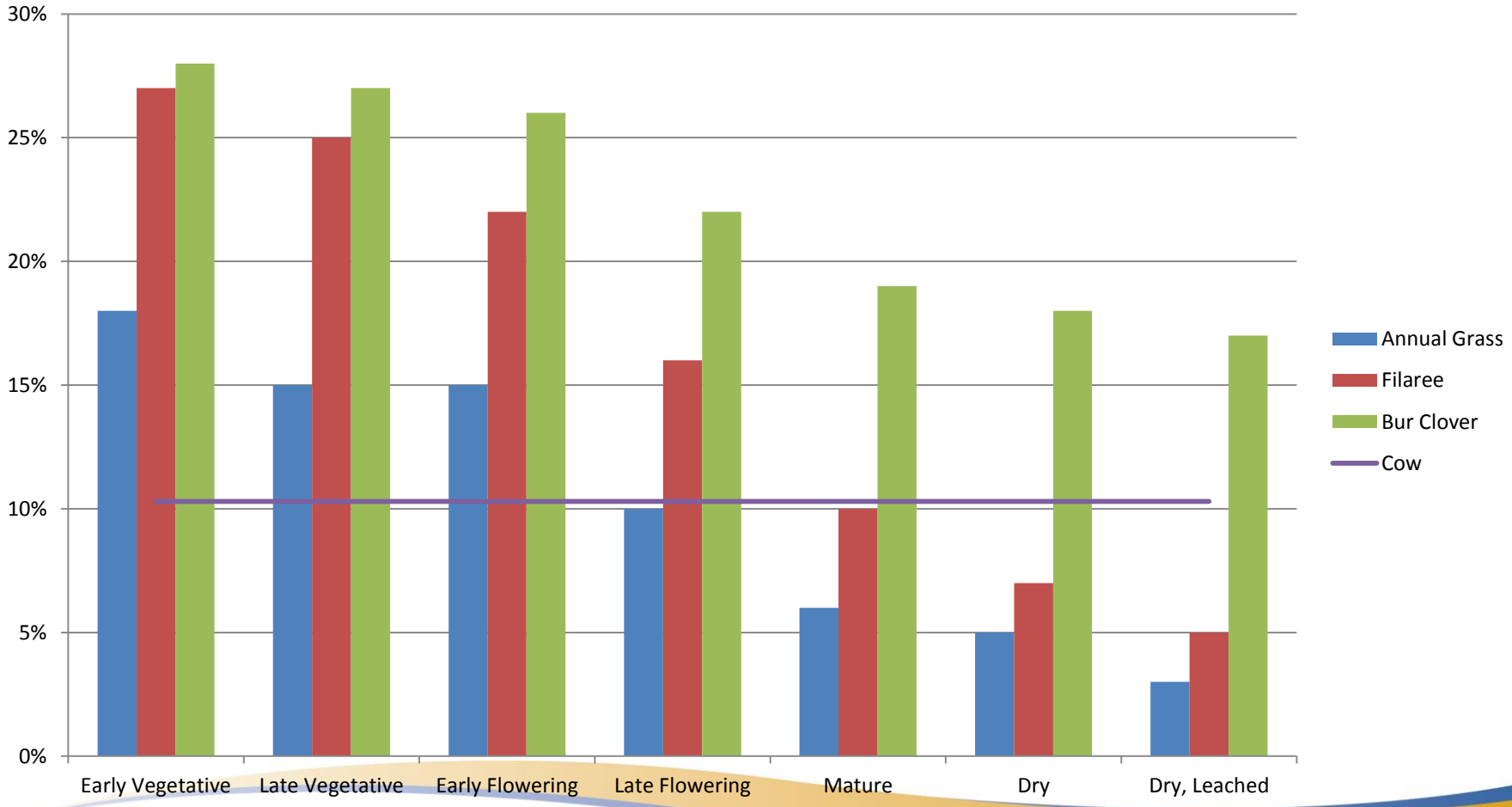
Cow middle 1/3 Gestation – CP%



Cow middle 1/3 Gestation – TDN%



Cow Lactating 1st 90 days – CP%



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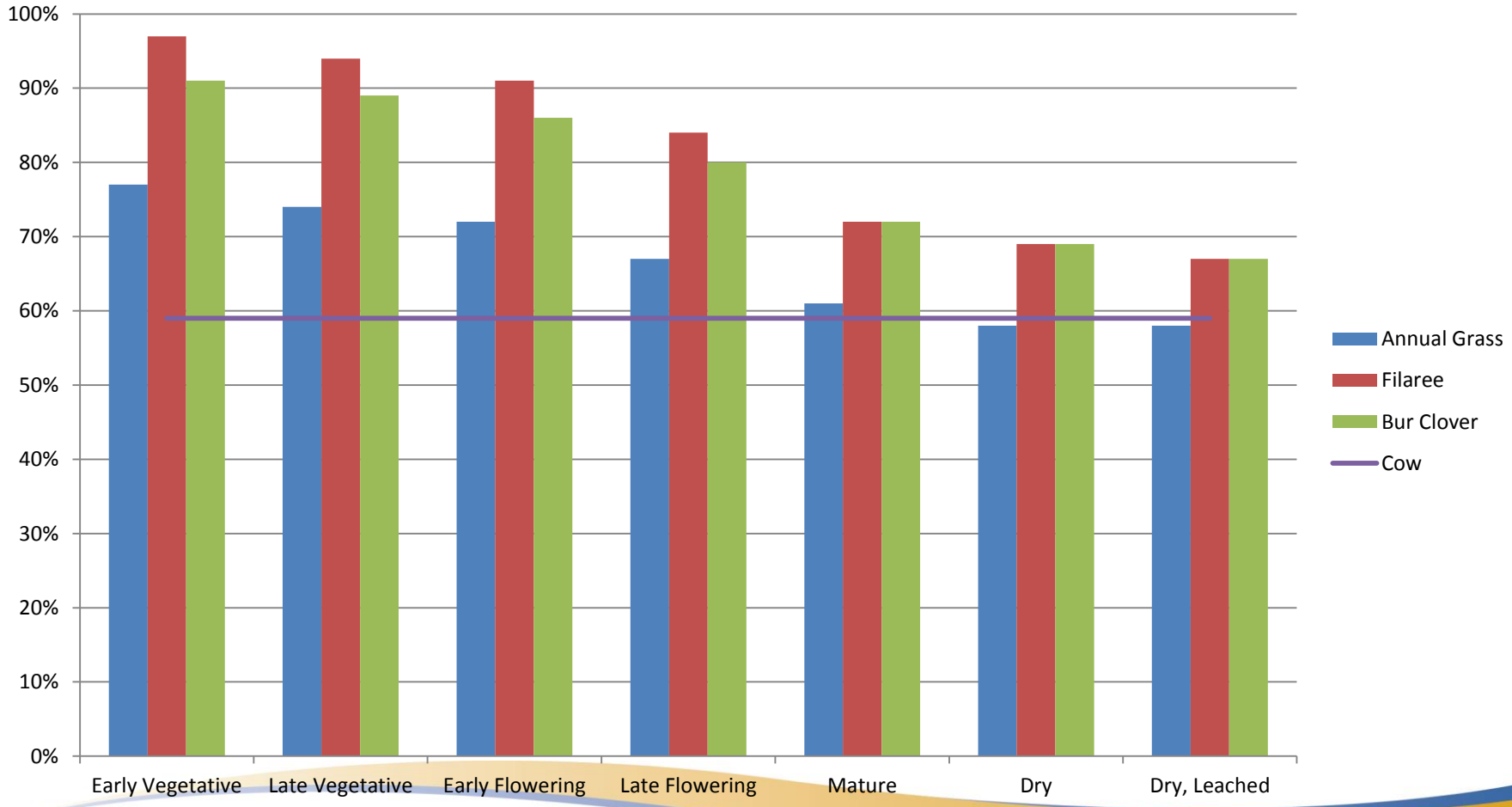
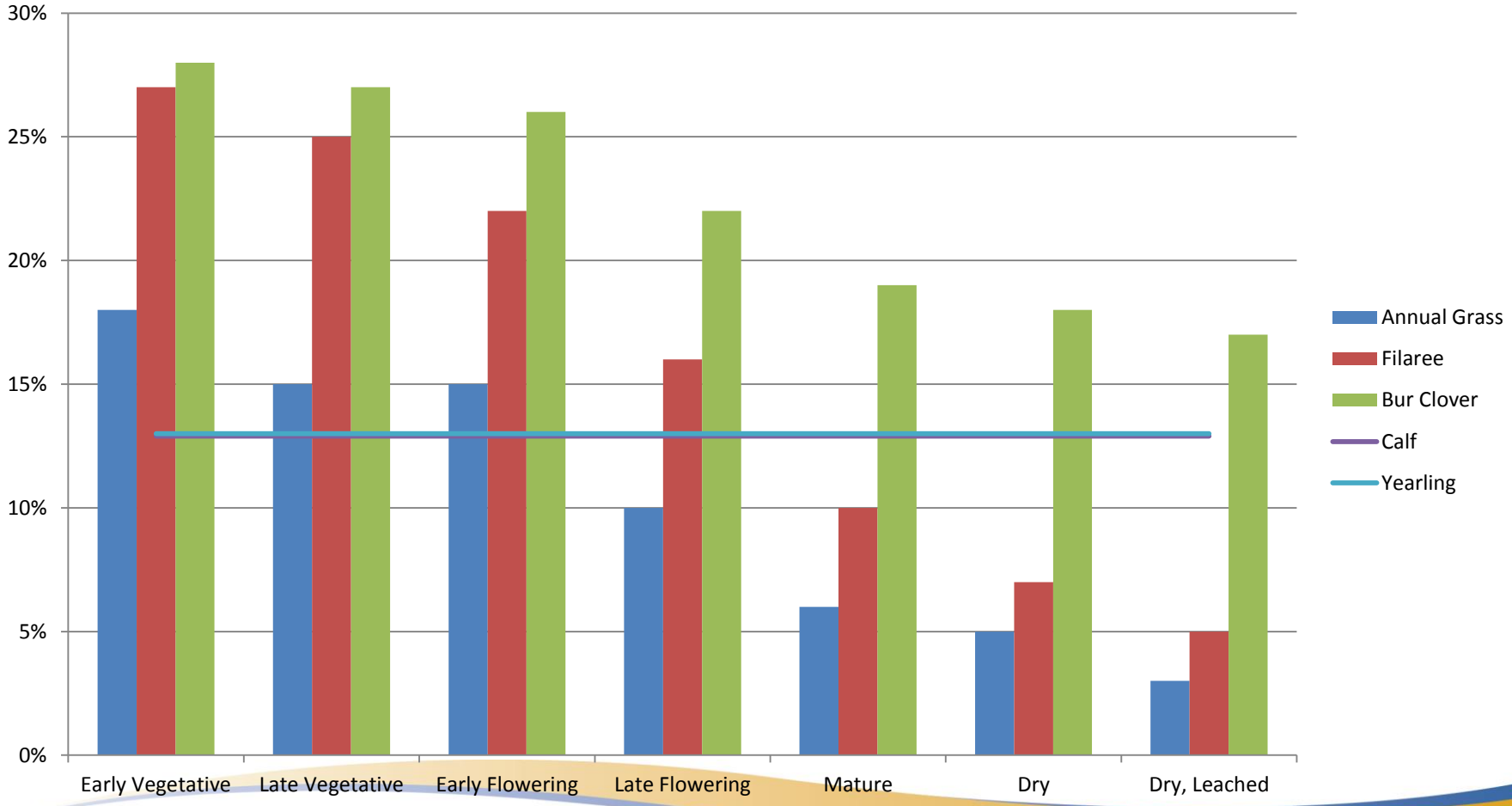


500 lb steer calves (2 lbs/d)
700 lb yearlings (3.3 lbs/d) – CP%



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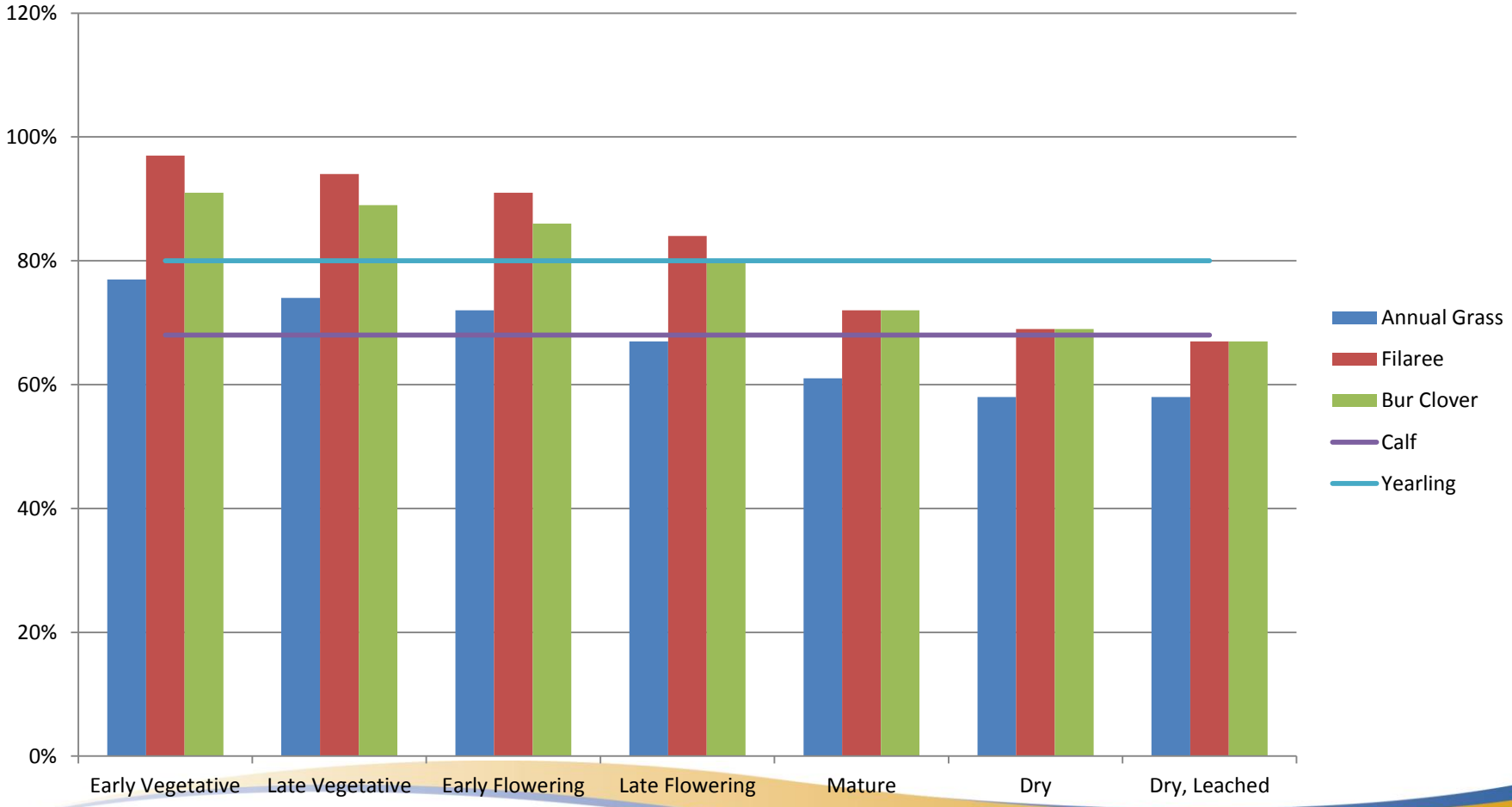


The general views

- The dry cow is generally adequate in maintenance for energy throughout, but is short on protein during the dry season – if she eats enough
- The lactating cow runs the border line, but is more limited with quantity than quality during the green season
- The first calf heifer can run short on protein and energy quickly without adequate sufficient quantity
- Calves and yearlings may require better pasture for optimal gains

The general views
The 1,400 lb. cow - winter

- Protein –
  - Dry – 1.9 lbs CP required
    - Grasses – 12.67 lbs DM
    - Filaree – 7.6 lbs DM
    - Bur clover – 7 lbs DM
  - Lactating – 2.3 lbs CP DM required
    - Grasses – 15 lbs DM
    - Filaree – 9.2 lbs DM
    - Bur clover – 8.5 lbs DM
- Energy
  - Dry – 13.1 lbs TDN
    - Grasses – 17.7 lbs DM
    - Filaree – 14 lbs DM
    - Bur clover – 14.7 lbs DM
  - Lactating – 14 lbs TDN
    - Grasses – 19 lbs DM
    - Filaree – 14.9 lbs DM
    - Bur clover – 15.7 lbs DM

But…that was DM

- Dry cow grasses
  - TDN
  - 15 lbs DM = 75 ASFED winter feed (20% DM)
- Lactating cow grasses
  - TDN
  - 19 lbs DM = 95 ASFED winter feed (20% DM)

They simply can't eat enough

Protein tubs

- Vary from 15-25% CP
- Higher amounts use urea so check if your natural
- Consumption varies
  - ½ - 2.0 lbs.
  - No limitation
- Mineral can be mixed in
  - Make sure there is salt

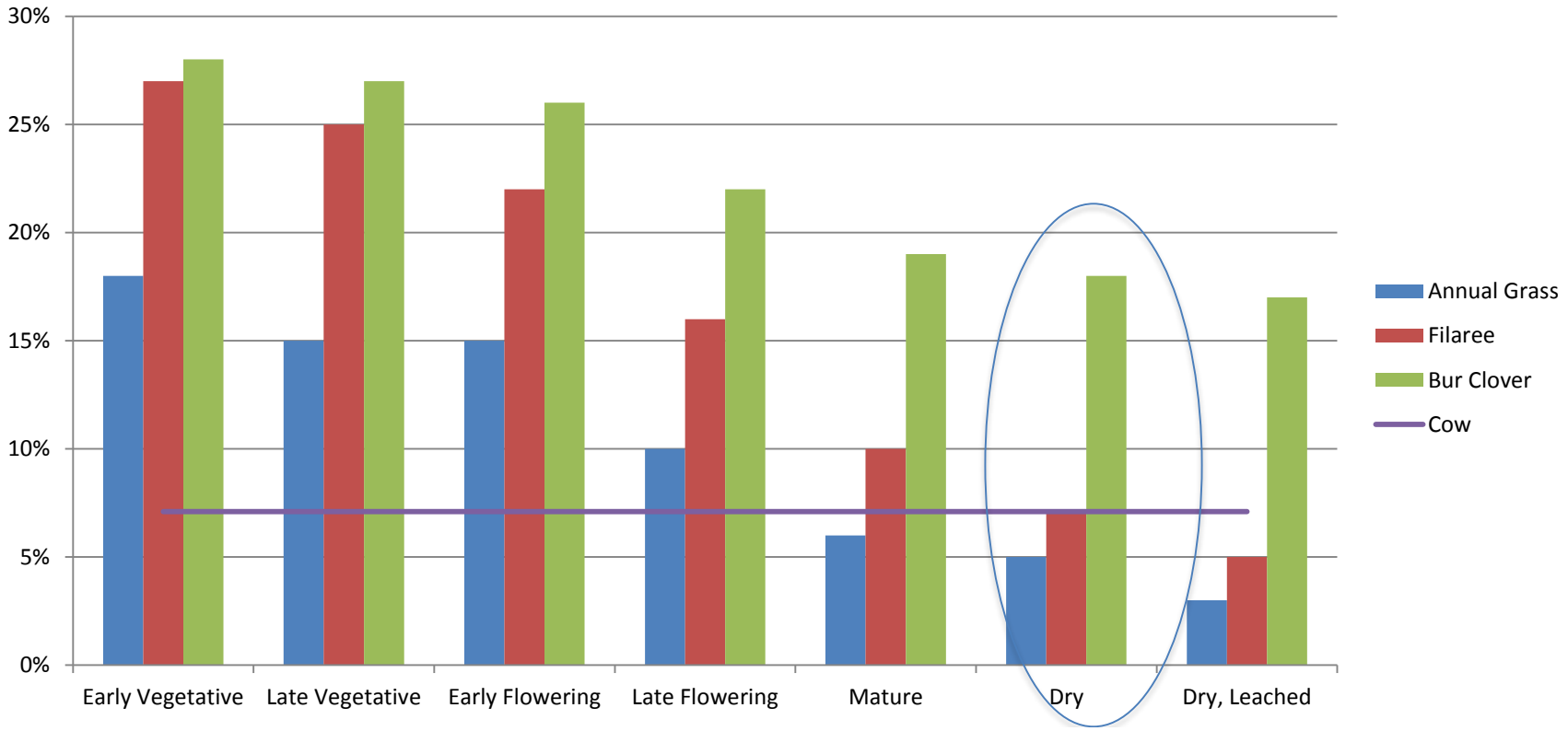
Let's compare

- Tubs
  - 25% CP, 1.0 lbs/d consumed
    - 0.25 lbs protein

- Alfalfa is always enough protein for all stages, grain hay is likely good for a dry cow. Grain hay will likely have enough energy for a dry cow, but not a lactating cow.
- Oat hay is generally considered higher protein and lower energy than wheat, but the difference is small

- Alfalfa
  - 16% CP, 23 lbs/d consumed
    - 3.68 lbs protein
      - All she needs for 1.6 days! + 58% TDN
- Grain hay – (10% CP, 53% TDN)
    - 2.3 lbs protein
      - All she needs for one day! + 53% TDN which will be shy for a single day unless its better hay and she is dry

Where is the tub valuable?
CP <7% will limit intake



Quick note on urea

- Urea cheapens the cost of protein considerably
  - Normal protein sources vary from 50-70% rumen degradable protein
  - Urea is 100%
    - Urea in excess of 20% of a supplement can cause fertility problems
    - However, if frequently fed in low doses up to 25% may be ok

Shells with Hulls

Hulls

Generally cheaper than almost all sources of supplement per ton but….Much lower in nutrient value

CP = 4.2, TDN = 54 – Close energy to hay

Legal Definitions

- **Almond hulls** shall not contain more than 13.0 percent moisture, not more than 15.0 percent crude fiber, and not more than 9.0 percent ash.
- If they contain more than 15.0 percent but less than 29.0 percent crude fiber, they shall be labeled "**Almond Hull and Shell**", and the maximum percent of crude fiber shall be stated.
- If the crude fiber exceeds 29.0 percent, the product shall be labeled "**Almond Shell**".
- If the ash exceeds 9.0 percent, the term "**and dirt**" shall be included in the product name.

Authority: Sections 407 and 14902 of the Food and Agricultural Code

Rice Bran

- CP 14%, TDN 76%
- More than 20% hurts fiber digestion
- Rancid in warm weather

Supplement considerations

  - Salt to control intake
  - 50% to start
  - Salt increases water consumption

Corn

- CP 9.8%
- TDN 89%
- Corn can depress fiber intake by 10-30%

The result

1 lb of corn can spare 2 lbs of alfalfa or 3 lbs of grass

Caution!

1. 2-week step-up period
2. Use whole corn
3. A minimum of 30 inches of linear bunk space per cow
4. Consider an ionophore
5. **How do you meter it?**

Cottonseed and Canola meal

- Great supplements for both protein and energy
- Consider including a small amount if rice straw or really low quality hay is provided
  - Canola - CP = 39%, TDN = 75%
  - Cottonseed – CP = 24%, TDN = 96%
  - Distillers – CP = 25%, TDN = 82%

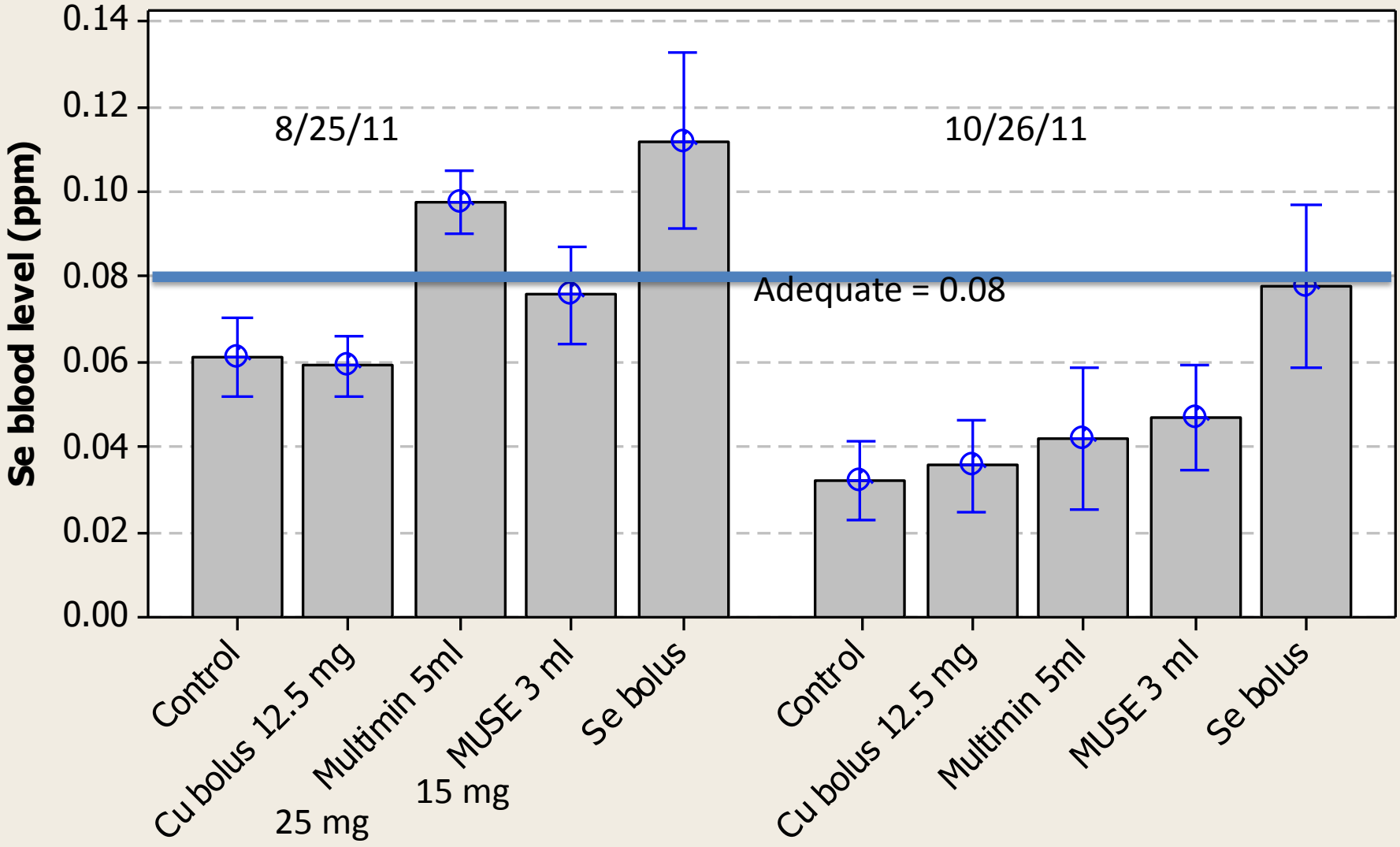
By-Products and Unusual Feedstuffs in Livestock Rations

Western Regional Extension Publication No. 39, October 1980. 22 pages

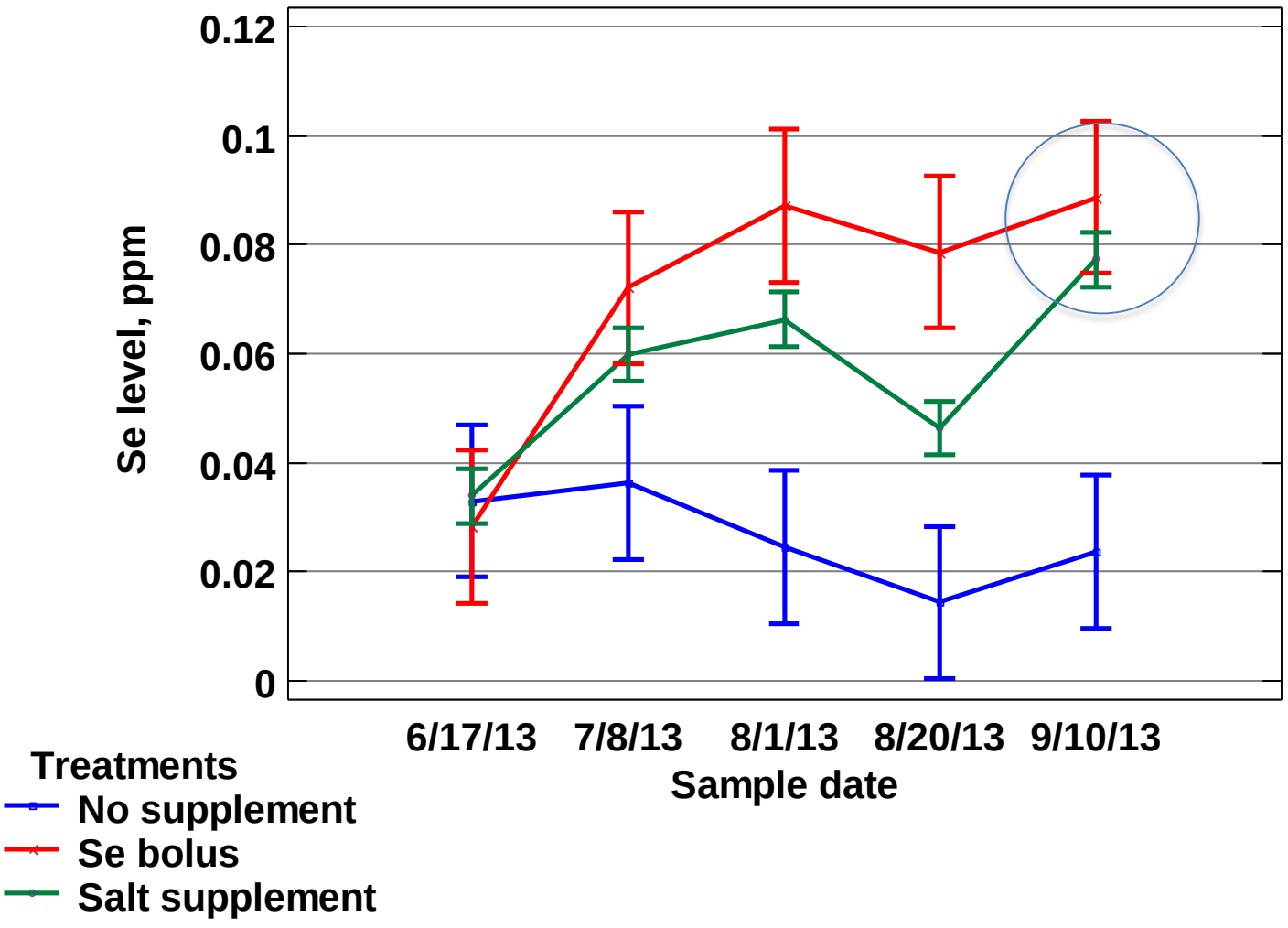
Use a ration balancing program

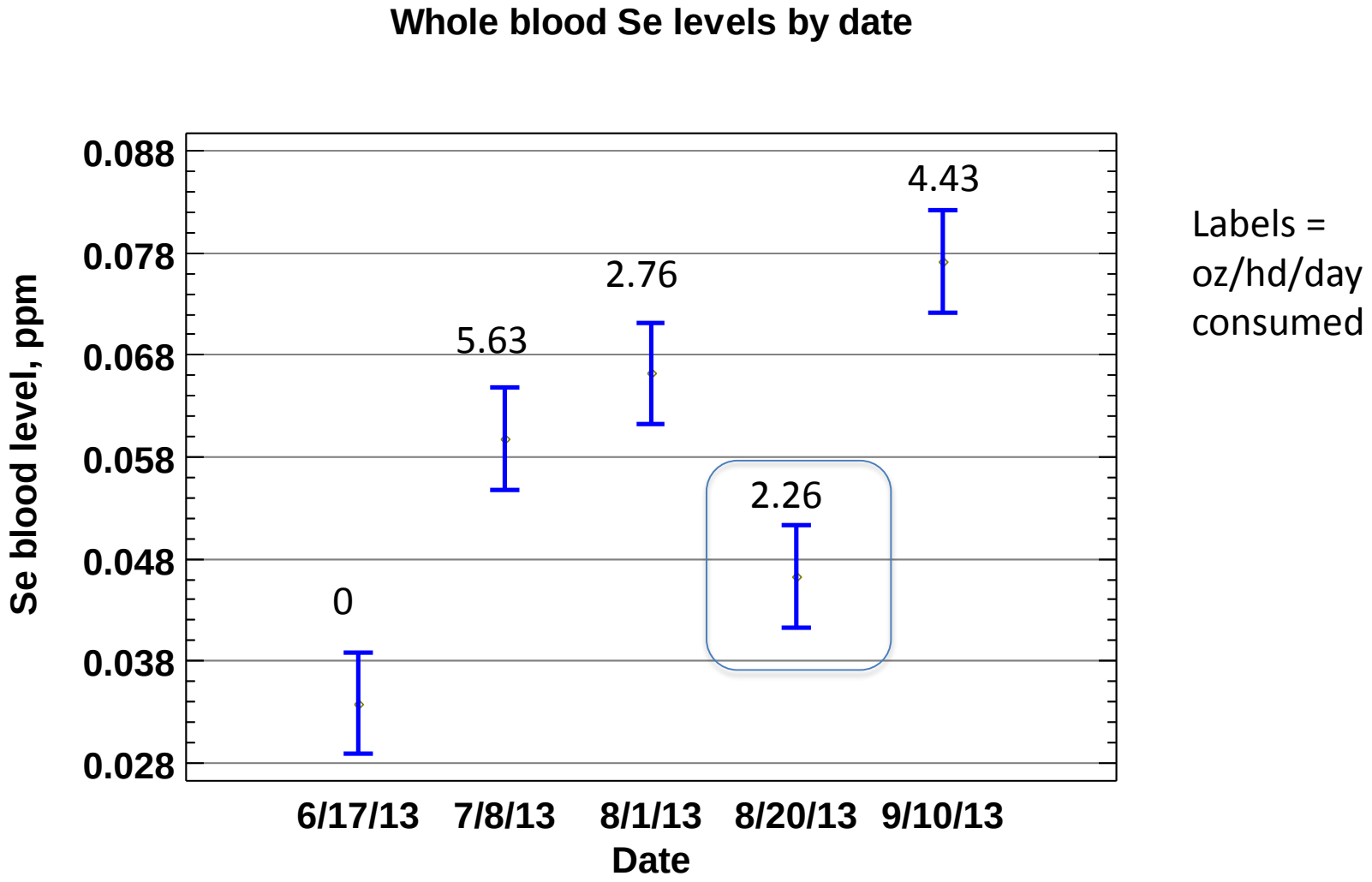
ALL FEEDS in the ration	AS FED BASIS: lb/day	%	DRY MATTER BASIS: lb/day	%
RICE straw	12.046	43.671	10.962	51.065
RANGE Wld lat fall g	8.580	31.106	4.290	19.985
CORN grain flaked	5.293	19.189	4.711	21.945
RICE bran sol-extd	0.929	3.369	0.836	3.896
ALFALFA early bloom	0.552	2.002	0.497	2.316
COTTON sd 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


Se blood status 8/25/11 and then 10/26/11
Se blood level (ppm)
0.14
0.12
0.10
0.08
0.06
0.04
0.02
0.00
8/25/11
10/26/11
Adequate = 0.08
Control
Cu bolus 12.5 mg
25 mg
Multimin 5ml
MUSE 3 ml
15 mg
Se bolus
Control
Cu bolus 12.5 mg
Multimin 5ml
MUSE 3 ml
Se bolus

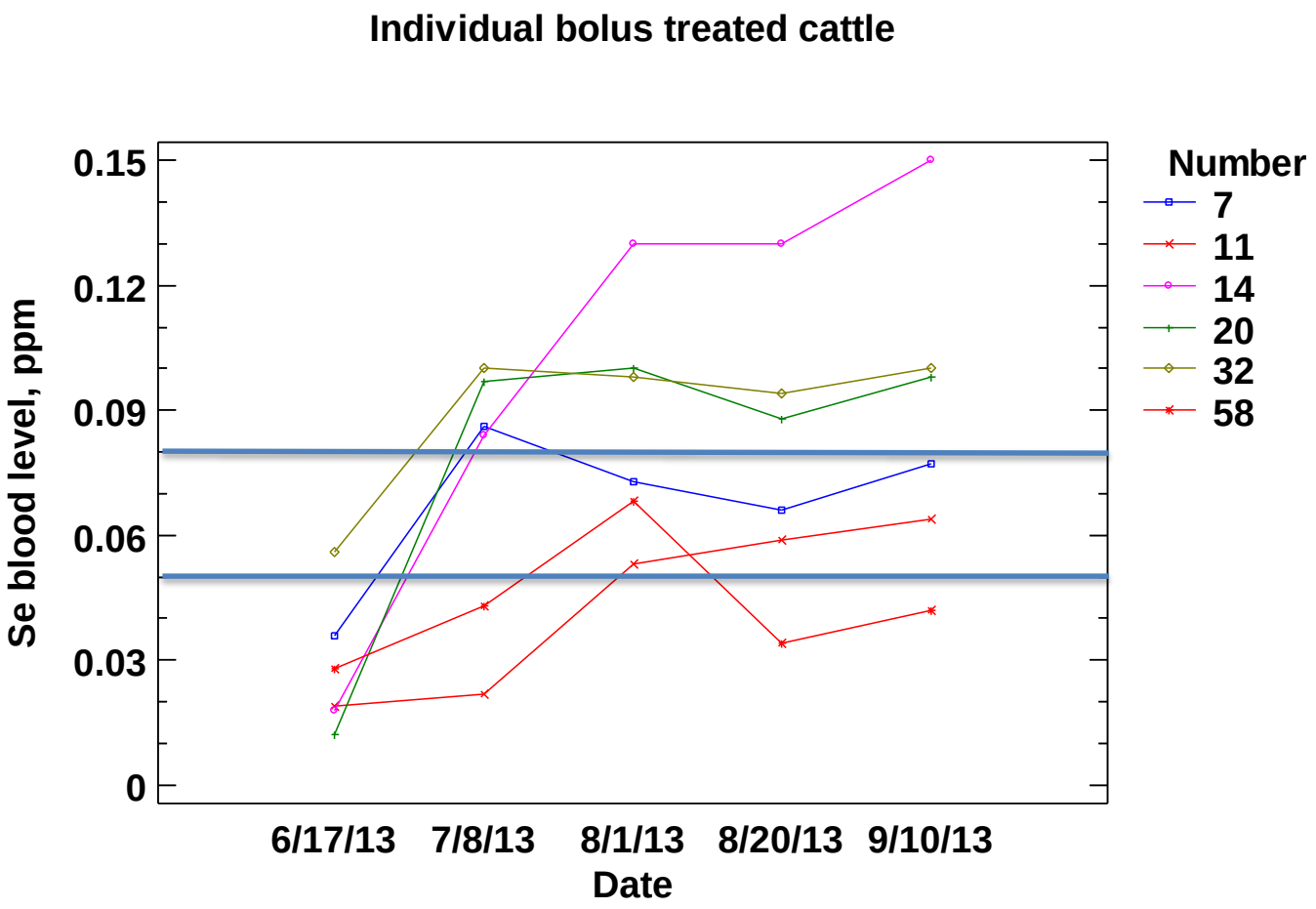
Whole blood Se level by treatment and date



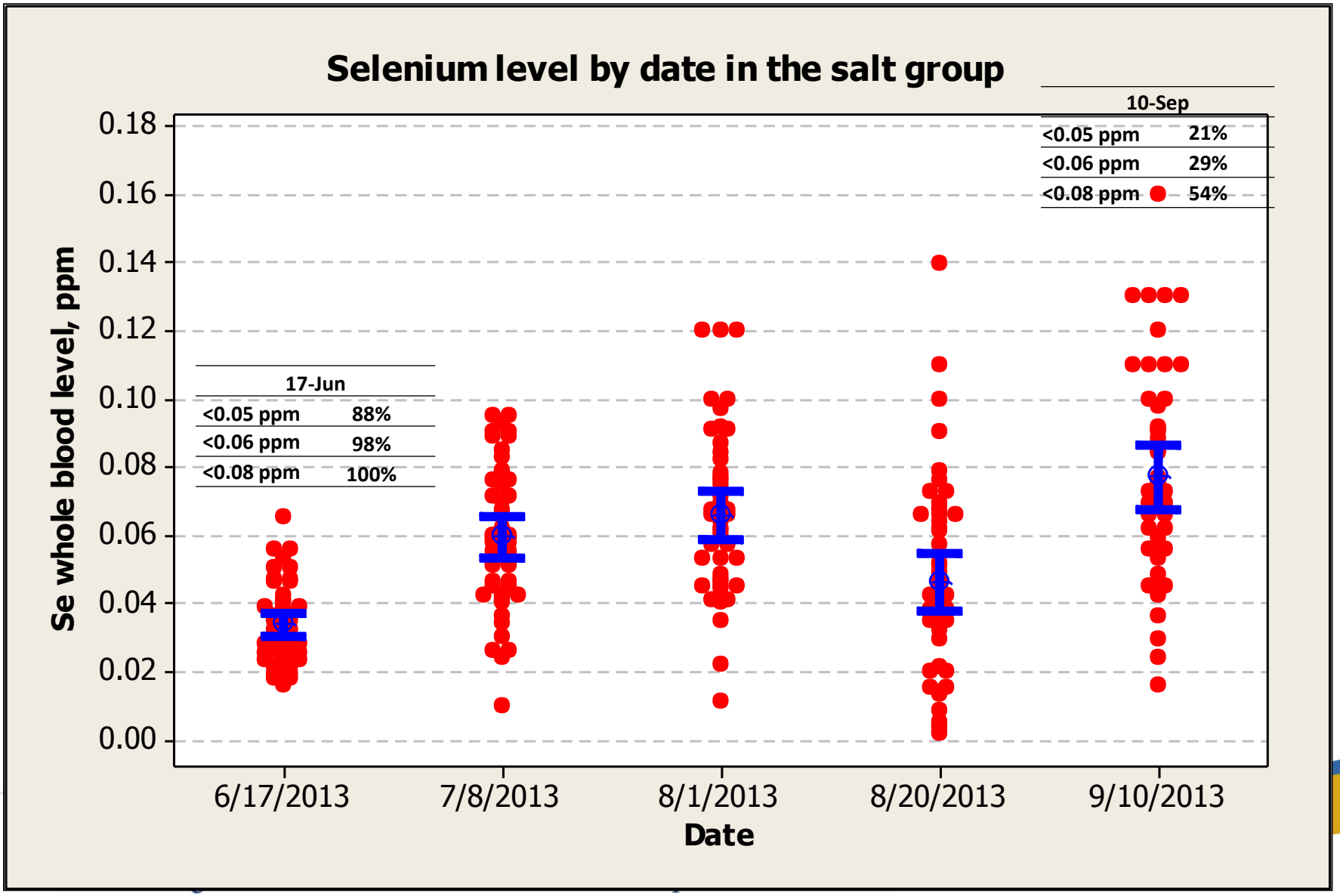


Labels = oz/hd/day consumed

Some still low - Diet? bolus = 3mg/d
Assume all bolus are working the same



How many were still deficient?
So yes, the salt made a difference



What is an Se supplement?

ACTIVE DRUG INGREDIENT

Monensin (as Monensin Sodium) ... 800 g/ton

Guaranteed Analysis

Crude Protein	(Min)	2.8	%
Crude Fat	(Min)	3.7	%
Crude Fiber	(Min)	1.9	%
Ash	(Max)	74.9	%
Calcium	(Min)	6	%
Calcium	(Max)	10	%
Phosphorus	(Min)	0.3	%
Sodium	(Min)	14	%
Sodium	(Max)	25	%
Magnesium	(Min)	1	%
Copper	(Min)	2,083	PPM
Manganese	(Min)	70	PPM
Zinc	(Min)	4,053	PPM
Iodine	(Min)	330	PPM
Selenium	(Min)	42	PPM
Selenium	(Max)	57	PPM

Low

List of Ingredients

Salt, Rice Bran, Calcium Carbonate, Magnesium Oxide, Zinc Sulfate, Copper sulfate, Sodium Selenate, Ethylenediamine Dihydriodide, Rumensin 90.

N1303 PPR5I

NOTICE: Expiration Date: 30 days after date of manufacture.

WARNING: A withdrawal time has not been established for pre-ruminating calves. Do not use in calves to be processed for veal.

CAUTION: Do not allow horses or other equines access to

[redacted]

Guaranteed Analysis

Ash	(Max)	94.6	%
Sodium	(Min)	26	%
Sodium	(Max)	49	%
Copper	(Min)	2,016	PPM
Zinc	(Min)	3,820	PPM
Iodine	(Min)	159	PPM
Selenium	(Min)	82	PPM
Selenium	(Max)	137	PPM

Higher

List of Ingredients

Salt, Zinc Sulfate, Sodium Selenate, Copper sulfate, Ethylenediamine Dihydriodide.

L1302 POWER

CAUTION:
THIS FEED CONTAINS MORE 110.1 PPM OF SELENIUM, FEED AT A RATE WHERE THE TOTAL SELENIUM DOES NOT EXCEED .3 PPM (PARTS PER MILLION) IN THE TOTAL DIET.

DO NOT FEED MORE THAN .27 PERCENT OF DIET AS THE ONLY SOURCE OF SELENIUM.

WARNING: DO NOT FEED TO SHEEP. THIS FEED CONTAINS ADDED COPPER AT 2376.46 MG/KG. COPPER LEVELS IN THIS FEED ARE UNSAFE FOR SHEEP.

Liquid supplement

Yes, with a lot of consumption

145/91

Liquid Feed Supplement #731-0145

(For Ruminants Only)

Protein, energy, vitamin and trace mineral supplement for all classes of beef cattle and dairy heifers.

Guaranteed Analysis

Crude Protein			Min.	20.0 %
(This includes not more than 13.0% equivalent crude protein from non-protein nitrogen.)				
Calcium (Ca)	Min.	0.25 %	Max.	0.75 %
Phosphorus (P)			Min.	0.5 %
Salt (NaCl)	Min.	1.5 %	Max.	2.5 %
Sodium (Na)			Max.	1.9 %
Magnesium (Mg)			Min.	0.2 %
Cobalt (Co)			Min.	7.0 ppm
Copper (Cu)			Min.	200 ppm
Manganese (Mn)			Min.	350 ppm
Zinc (Zn)			Min.	400 ppm
Iodine (I)			Min.	2.8 ppm
Selenium (Se)	Min.	2.5 ppm	Max.	3.0 ppm
TSI (Total Sugars as Invert)			Min.	14.0 %
Moisture			Max.	42.0 %
Ash			Max.	15.0 %

Ingredients

Condensed Molasses Fermentation Solubles, Cane Molasses, Condensed Fermented Corn Extractives, Condensed Whey Solubles, Corn Syrup, Glycerin, Salt, Phosphoric Acid, Ammonium Polyphosphate Solution, Manganese Amino Acid Chelate, Zinc Amino Acid Chelate, Sodium Selenite, Copper Amino Acid Chelate, Manganese Sulfate, Zinc Sulfate, Copper Sulfate, Vitamin A Supplement, Vitamin D_3 Supplement, Vitamin E Supplement, Cobalt Sulfate, Calcium Iodate.

731-0145/91

DIRECTIONS FOR USE

1. THIS SUPPLEMENT IS FOR RUMINANT ANIMALS ONLY.
2. THIS SUPPLEMENT MAY BE FED FREE CHOICE IN A LICK WHEEL FEEDER, MIXED AS A PART OF A COMPLETE RATION, OR TOP DRESSED.
3. THIS PRODUCT IS A SUPPLEMENT! ADEQUATE ROUGHAGE AND OR GRAINS MUST BE AVAILABLE AT ALL TIMES. INTAKE OF THIS PRODUCT SHOULD NOT EXCEED 2.2 LBS. PER HEAD PER DAY BASED UPON A 1000 LB ANIMAL.
4. IF FED FREE CHOICE, FEEDERS DESIGNED FOR LIMITING THE INTAKE ARE RECOMMENDED. INTAKE CAN BE AFFECTED BY A NUMBER OF FACTORS SUCH AS FEEDER PLACEMENT RELATIVE TO WATER, SHADE OR LOAFING AREA AND NUMBER OF ANIMALS PER FEEDER OR LICK WHEEL. THESE FACTORS CAN BE USED TO MANAGE LEVEL OF CONSUMPTION.

OBSERVE THE FOLLOWING PRECAUTIONS:

- *PROVIDE UNLIMITED DRINKING WATER*
- *PROVIDE ADEQUATE ROUGHAGE IN TERMS OF BOTH QUANTITY AND QUALITY*
- *PROVIDE ADEQUATE MINERAL SUPPLEMENT FREE-CHOICE*
- *DO NOT EXCEED THE DAILY MAXIMUM INTAKE SPECIFIED ABOVE*
- *DO NOT OFFER FREE-CHOICE TO OVERLY HUNGRY OR DEPRIVED ANIMALS AS OVER CONSUMPTION MAY RESULT*

Mix this product with grain and roughage to provide 1.0 to 2.2 lbs. per head per day (Basis a 1000 pound animal) in the complete feed. This product can be fed up to a maximum inclusion of 10.0% in the complete feed on an air dry basis (90% dry matter). At this level it provides 0.3 ppm supplemental selenium on an air dry basis (90% dry matter) in the complete feed, the maximum permitted by Federal Regulation Title 21 CFR 573.920. Inclusion of this product in the complete feed should be reduced if other sources of supplemental selenium are utilized.

Is consumption adequate?

Compare apples to apples

I prefer to bring them all to salt terms

- loose salt
  - 1 oz/hd/day = >100 ppm Se
- liquid supplement with 3 ppm Se
  - 0.75 lbs/hd/day
    - 3 ppm * 12 oz (0.75) = 36 ppm at 1 oz/hd/day….low
  - 2.2 lbs/hd/day
    - 3 ppm * 35 oz (2.2 lbs) = 105 ppm at 1 oz/hd/day …acceptable

Follow up thoughts

- Why even use a salt mix
  - Other minerals in the mix
- Shots work quickly, but how long do they last
- There will be variance even with a bolus
  - In general the bolus is pretty reliable
- The salt can work, but will vary in consumption, and possibly Se levels

Follow up thoughts

- Calculate your consumption
  - 1 50lb bag = 800 ounces
  - How many days and how many head
  - Follow up with blood monitoring
    - Its cheap compared to problems and can help figure out if what your doing works
  - The diet looks to play a difference, but quantify?
  - Manganese