

Annual Rangeland Sheep Production & Management

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California's Sheep Industry

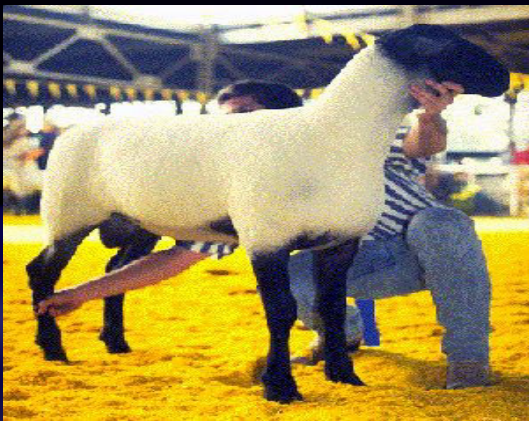


- 3rd in total head behind Wyoming & Texas
- 800K head – 2002 \$75 million
 - 370K stock sheep
 - 430K for market - >\$53 million value
- Top 7 Counties \$ value - 1997
 - Kern, Solano, Riverside, Sonoma, Fresno, Tulare, & San Joaquin

Downward Trends

- 2002 US inventory 6.69 million head
- Down 4% from 2001 and 5% below two years ago
- Inventory trended down since peaking at 56.2 million head in 1942
- Average price for lamb \$67.30/cwt (CA)
- Average price for sheep \$30.20/cwt (CA)
- Shorn wool down 7% in 2001 @ 43 million lbs from 2000
- Average price for wool - 36¢ per lb (US)
- California following similar trends

Typical Rangeland Sheep Operation



Blackface Ram X Whiteface Ewes

Sheep Production Year

- May to July marketing
- Weaned 60 to 120 days
- Gestation ~148 days: Jan. & Feb.
- Anestrous – Spring & Summer
 - Short day breeders
 - Highest fertility 10 hr day
- Breed in September/October
- Flushing 2 wks prior & 3 wks during breeding season
- Estrus 24-36 hrs; cycle ~17 days
- 70% fetal growth last 6 weeks of gestation
 - Singles vs. twins influence requirements
- First 4-8 wks lactation critical

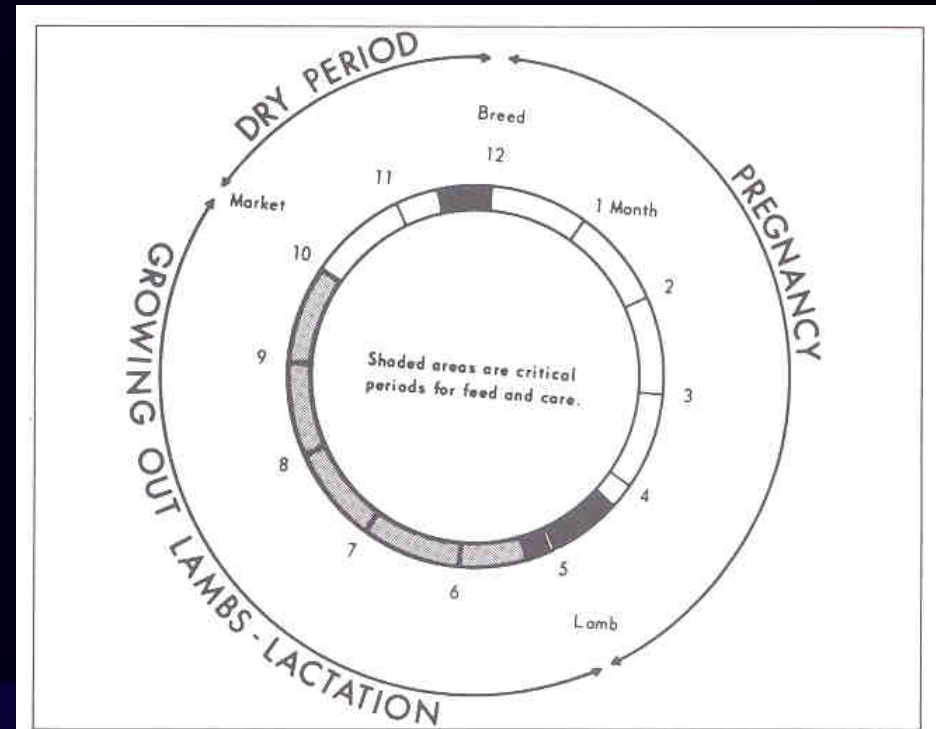


Figure 2. The Sheep Production Year. University of California Diagram

Production Year Nutrition and Forage Quantity and Quality

- Nutrition depends on:
 - Weight or condition and age of ewe
 - Heavy weight animals require more
 - Poor condition animals require more
 - Young animals require more – 20% FHP
 - Expected lambing rate of ewe
 - Ewes producing twins require more
 - Production stage of ewe
 - Maintenance, flushing, first 15 wks gestation, last 4 wks of gestation, first 6-8 wks of lactation and last 4 wks of lactation
 - Climate and exercise – 40% & 10-100%
 - Quantity and moisture content of forage
 - High moisture affects milk production and lamb growth
 - Quality of forage available



Forage Quantity

- Varies by season and year
- Depends on:
 - Precipitation & Temperature
 - Controls 4 phases
 - Break of season, winter growth, rapid spring growth and peak forage production
 - Soil characteristics
 - Soil type – Clay vs. light texture soils
 - Fertility – Nitrogen, Phosphorous & Sulfur
 - Soil pH – affects legume species 4.5 high rain to 8.5 low rain
 - Plant residue
 - RDM influences as mulch germination and soil organic matter
 - Species composition affected

Influence of normal weather variations on timing of seasonal dry matter (DM) forage productivity in California's annual grassland ecosystem (George et. al. 2001)

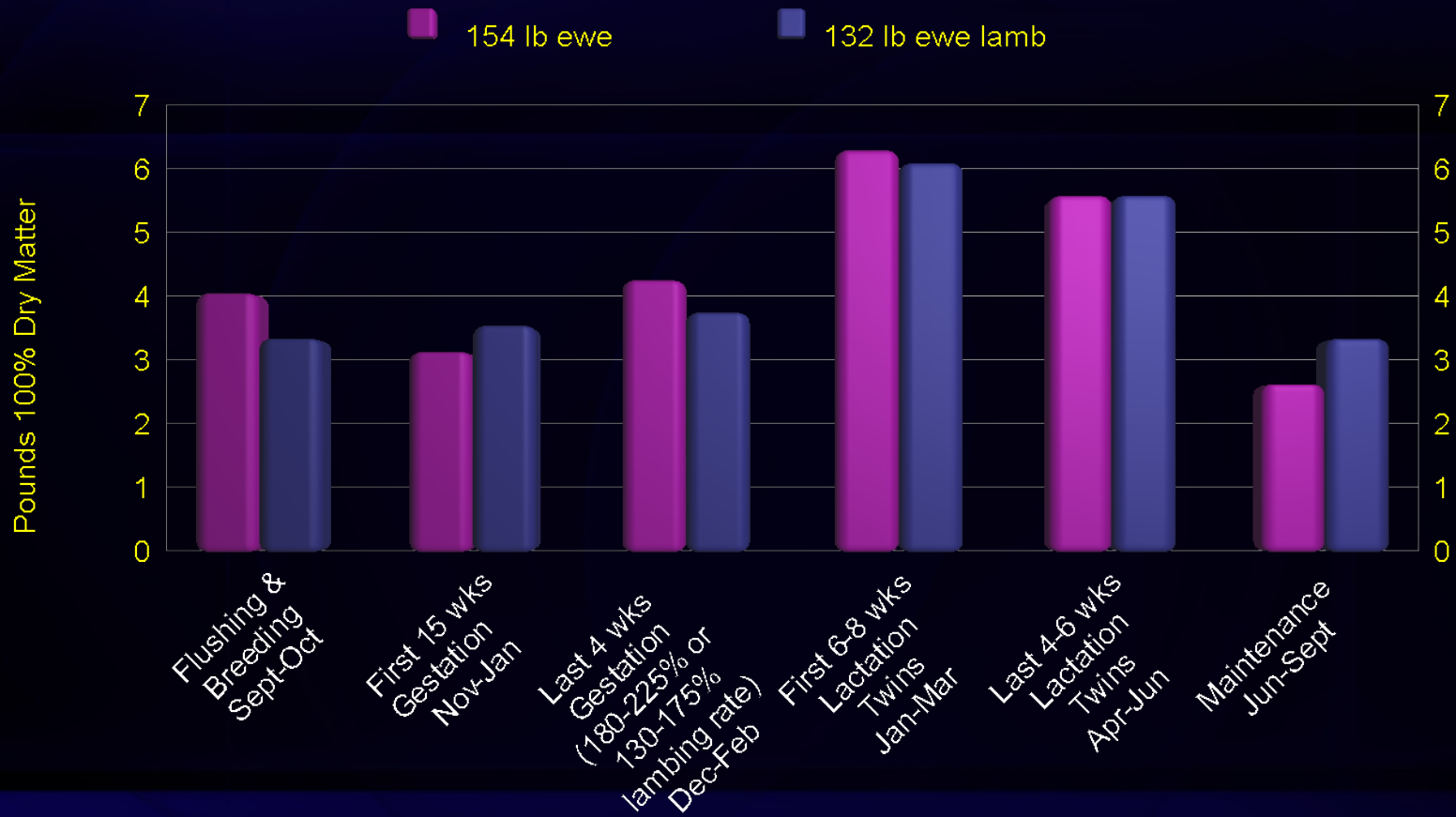
Weather pattern	Break of season date	Onset of winter growth		Onset of rapid spring growth		Peak standing crop	
		Date	DM (lb/ac)	Date	DM (lb/ac)	Date	DM (lb/ac)
Ave. fall, winter, and spring	Oct 23	Nov 7	600*	Feb 1	700†	May 1	2000‡
Warm, wet fall, average winter and spring	Oct 1	Nov 7	1000	Feb 1	1100	May 1	3000
Cold, wet fall, average winter and spring	Oct 23	Oct 23	—	Feb 1	300	May 1	1000
Dry fall, average winter and spring	Nov 15	Nov 15	—	Feb 1	300	May 1	1000
Ave. fall, cold winter, average spring	Oct 23	Nov 7	600	Feb 1	300	May 1	1500
Ave. fall, mild winter, average spring	Oct 23	Nov 7	600	Feb 1	1000	May 1	3000
Ave. fall, short winter, early spring	Oct 23	Nov 7	600	Jan 15	700	May 1	3000
Ave. fall, long winter, late spring	Oct 23	Nov 7	600	Apr 1	700	May 1	1500

*Forage production from break of season to onset of winter growth (Oct 23-Nov 7 in this example).

†Forage production from break of season to onset of rapid spring growth (Oct 23-Feb 1 in this example).

‡Forage production from break of season to peak standing crop (Oct 23-May 1 in this example).

Dry Matter/Animal (lbs) Required At Different Stages of Production

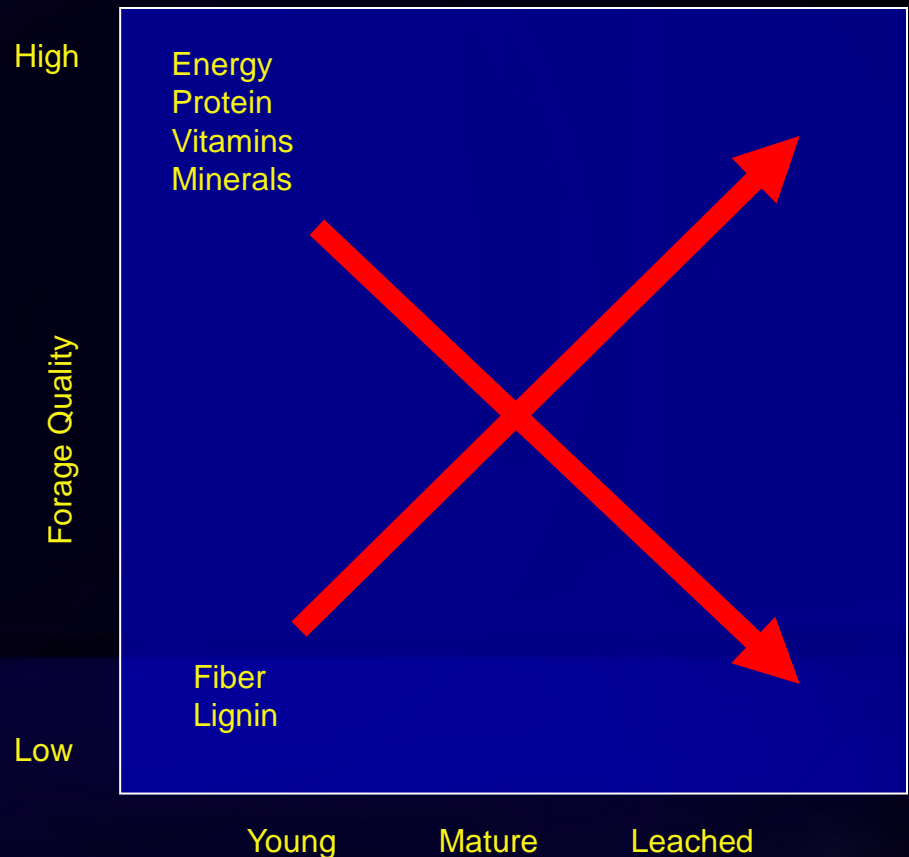


Production Stage & Time of Year

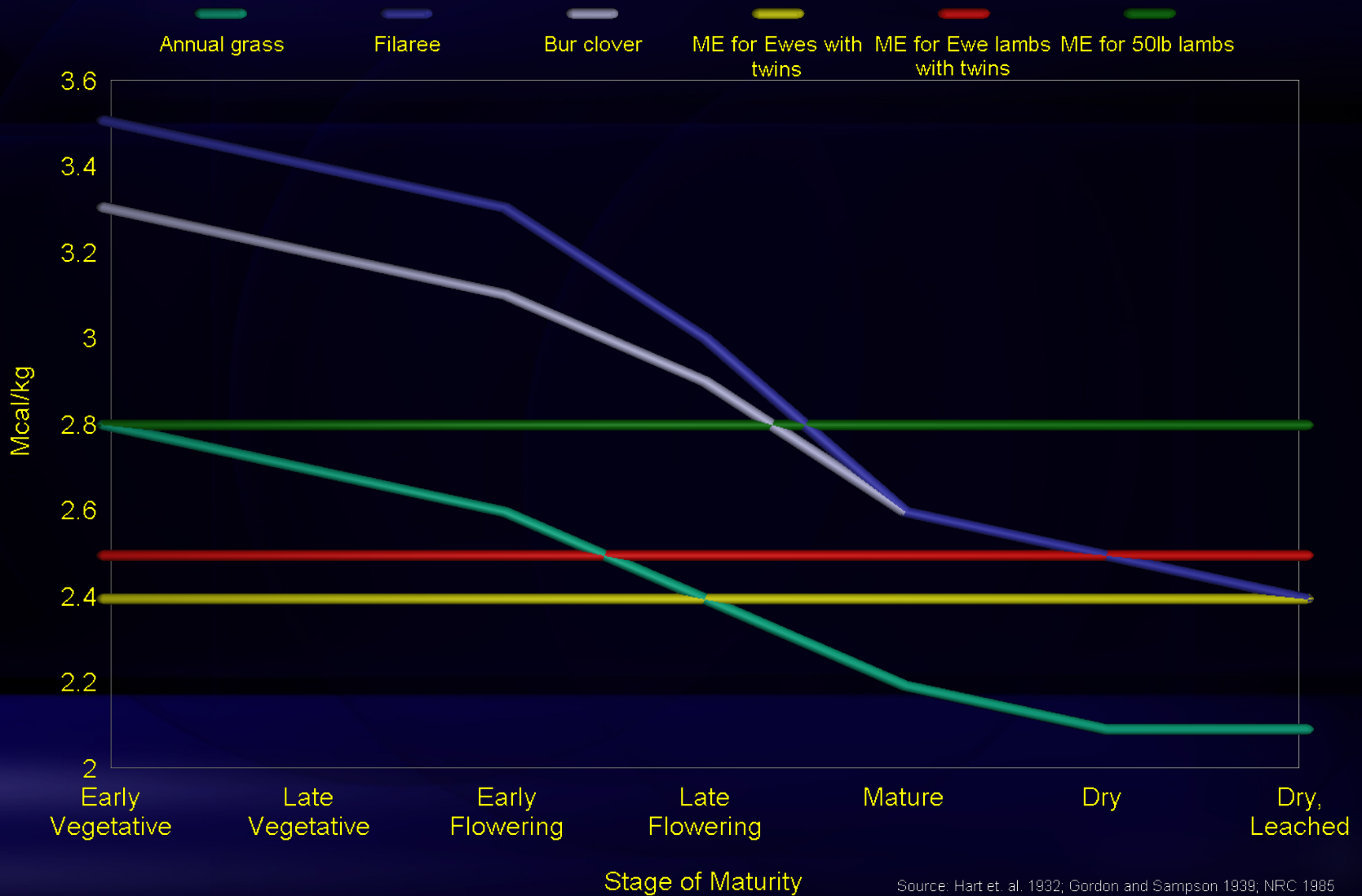
Source: NRC 1985

Forage Quality

- Depends on:
 - Plant species, season, location & range improvement practices
 - Stage of growth
- 5 nutrients of primary concern:
 - Energy, protein, calcium, phosphorous and vitamin A

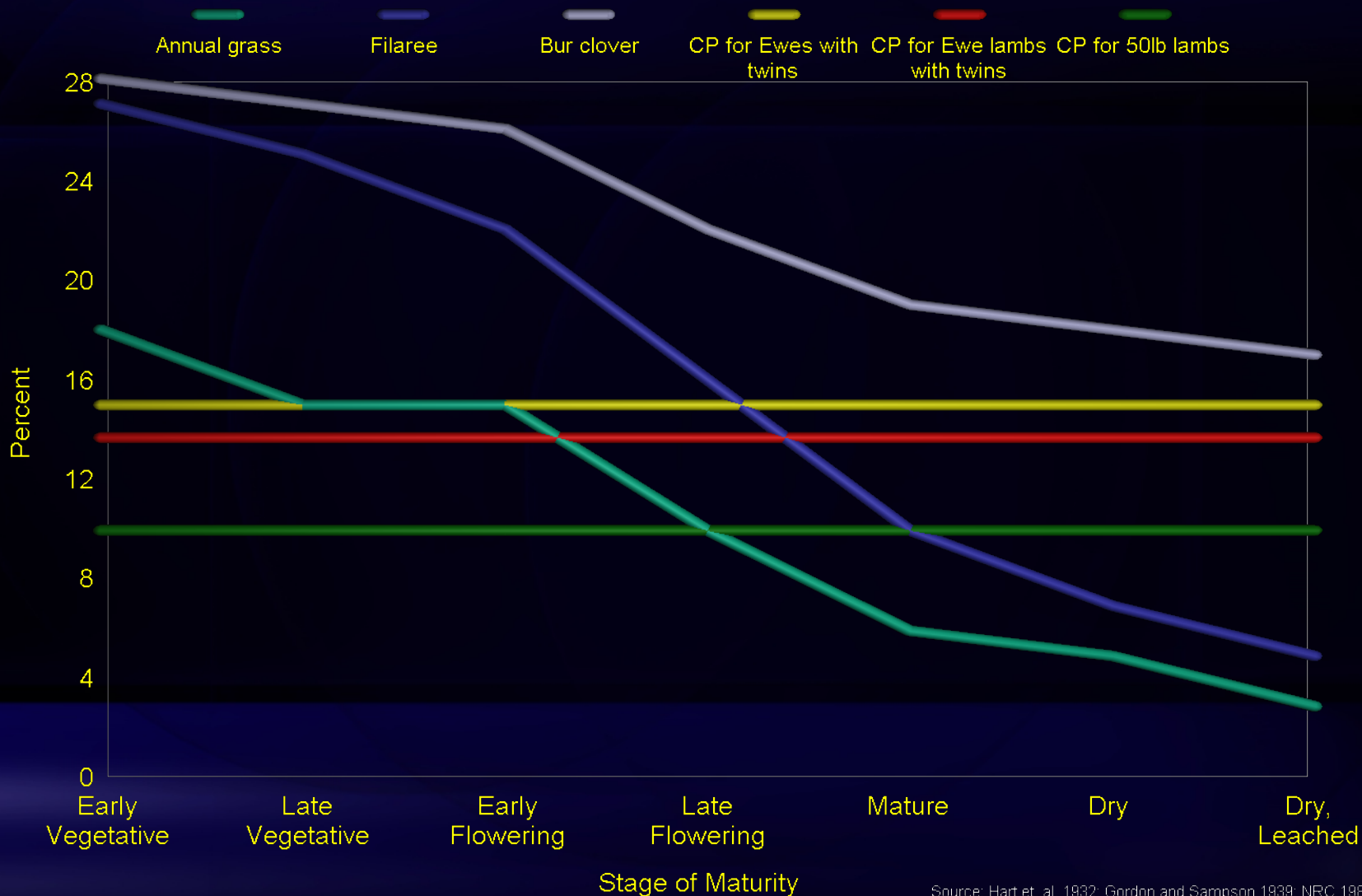


Metabolizable Energy (Mcal/kg) Content of Annual Grasses, Filaree, and Bur Clover and Requirements for Ewes and Ewe Lambs with Twins and 50 lb Lambs



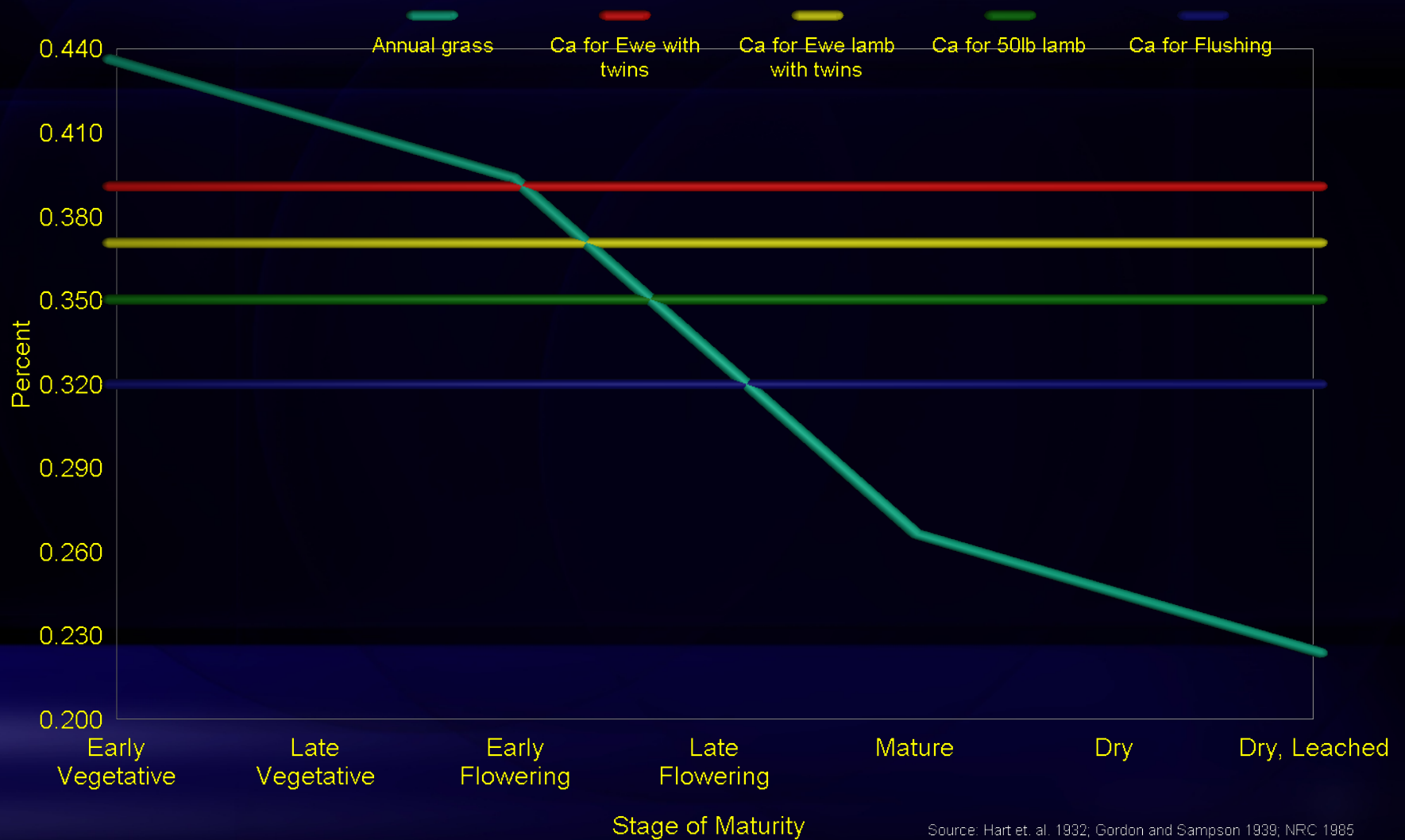
Source: Hart et. al. 1932; Gordon and Sampson 1939; NRC 1985

Crude Protein (%) Content of Annual Grasses, Filaree, and Bur Clover and Requirements for Ewes and Ewe Lambs with Twins and 50 lb Lambs



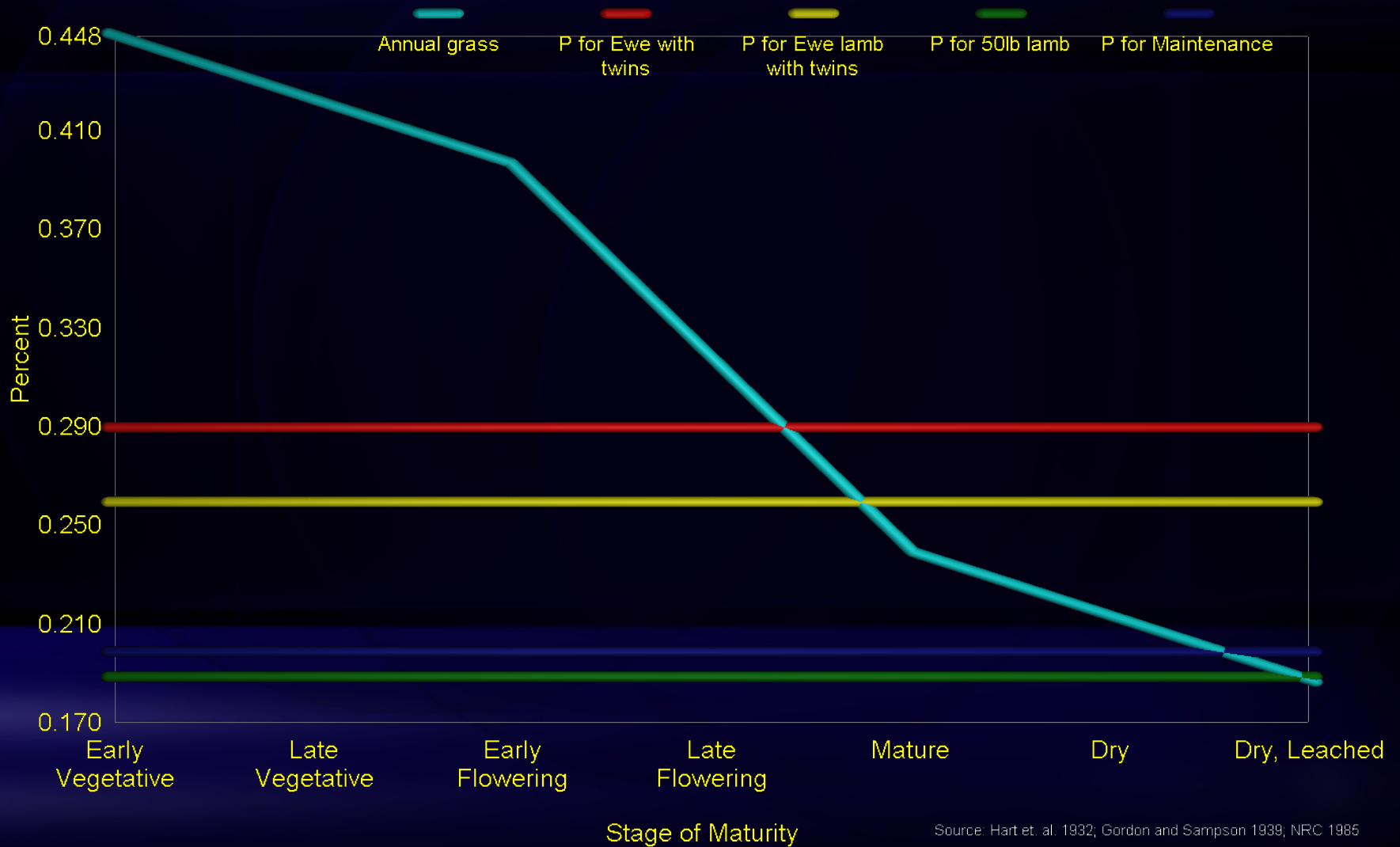
Source: Hart et. al. 1932; Gordon and Sampson 1939; NRC 1985

Calcium (%) Content of Annual Grasses, Filaree, and Bur Clover and Requirements for Ewes and Ewe Lambs with Twins and 50lb Lambs



Source: Hart et. al. 1932; Gordon and Sampson 1939; NRC 1985

Phosphorus (%) Content of Annual Grasses, Filaree, and Bur Clover and Requirements for Ewes and Ewe Lambs with Twins and 50lb Lambs



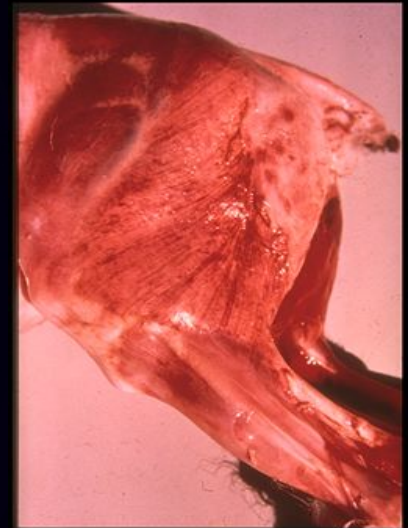
Source: Hart et. al. 1932, Gordon and Sampson 1939, NRC 1985

Sheep Health Issues On Annual Rangeland

- Magnesium Deficiency – Grass Tetany
 - Nursing ewes 4-5 weeks after lambing
 - Grass is high in N and K , low in Mg
 - Serum Mg levels < 1 mg/100 ml severe
 - Serum Mg levels > 1 but < 1.5 mg/100 ml mild
 - Plant protein supplements (0.28 to 0.62% Mg)

Sheep Health Issues On Annual Rangeland

- Selenium/vitamin E Deficiency
 - White muscle disease <0.2 mg/kg diet DM
 - One or both nutrients lacking
 - Added in feed or mineral mix not to exceed 0.7mg/head/day



Sheep Health Issues On Annual Rangeland

- Pregnancy Toxemia – ketosis or twin lamb disease
 - Pregnant ewes near term
 - Caused by diet deficient in energy
 - Reduced rumen capacity
 - Ewes over fat in early pregnancy
 - Usually fatal in 1 to 7 days
 - Treatment – intravenous glucose and oral glycerin or propylene glycol at 4 to 8 oz daily

Sheep Health Issues On Annual Rangeland

- Foot rot
- Interaction of *Bacteroides nosdosus* and *Fusobacterium necrophorum*
 - If *B. nosdosus* not present no foot rot
 - 20 serotypes present in US
- Trim, 10% zinc or copper sulfate baths, soaks, dry chemicals, topicals, dry pens



Note the maggots between the toes



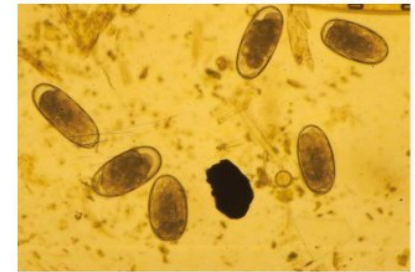
Prolonged soaks better than a quick dash through

Sheep Health Issues On Annual Rangeland

- Parasitic diseases
 - Round worms
 - Flat worms
 - Liver flukes
 - Coccidiosis
 - External parasites



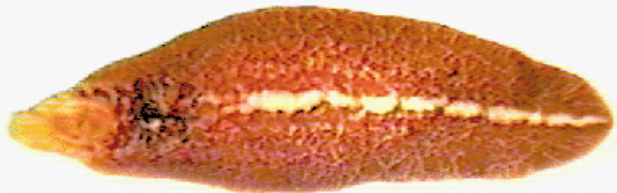
Fecal Exams for Parasites



Severe coccidiosis causes many small white foci in the intestinal wall



Fasciola hepatica



(by P.W. Pappas and S.M. Wardrop)

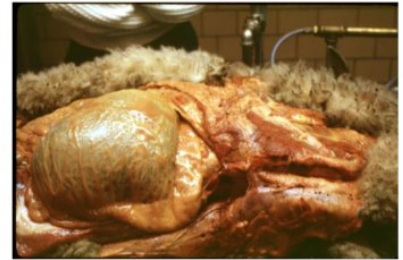
Sheep Health Issues On Annual Rangeland



- Poisonous plants – rare
- Copper poisoning
- Bluetongue < 5% loss w/ 90% infected
- Caseous Lymphadenitis – boils
- Sore mouth



Copper toxicity is usually fatal

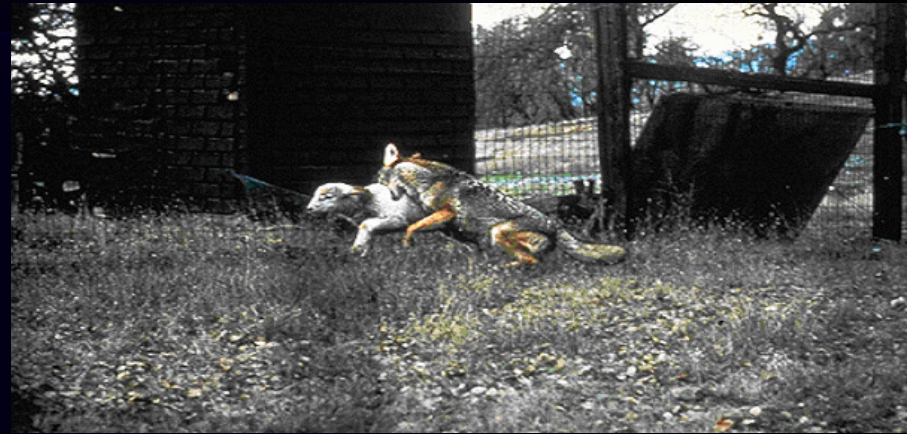


Human orf lesion

California Predation

1999 NASS, USDA

- Coyotes
 - 5000 Sheep, 6500 lambs – 75.6%
- Dogs
 - 3000 Sheep, 1000 lambs – 11.6%
- Mountain Lions
 - 600 Sheep, 700 lambs – 8.1%
- Bobcats
 - 200 lambs – 2.3%
- All other animals
 - 200 Sheep – 2.2%



California Predation

1999 NASS, USDA

- Sheep value lost - \$936,000
- Lamb value lost - \$387,000
- Total value lost - \$1,323,000
- Non-lethal methods used
 - Fencing – 69.1%
 - Guard dogs – 21.6%
 - Llamas – 12.4%
 - Donkeys – 5.2%
 - Lamb shed – 56.1%
 - Herding – 8.4%
 - Night penning – 54%
 - Fright tactics – 7.3%
 - Other – 11.5%



Questions?

