“Things to Consider Before Adding Another Livestock Enterprise”

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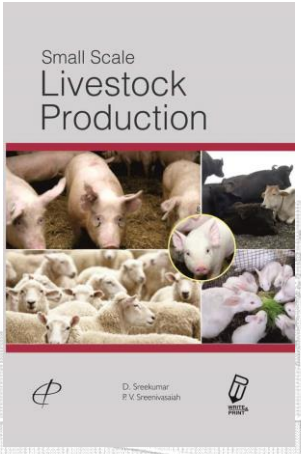

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THE OHIO STATE UNIVERSITY
COLLEGE OF FOOD, AGRICULTURAL, AND ENVIRONMENTAL SCIENCES

Understanding Animal and Livestock Production

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Matching Your Farm with the Animal

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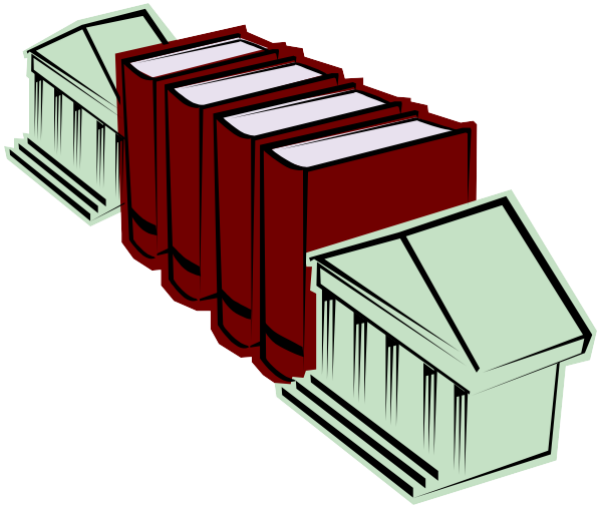
Legal considerations

- Zoning
- Special use permits
- Covenants, conditions and restrictions (CC&Rs)
- Local ordinances



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Zoning

- Imposed by local government
- Agricultural, urban, rural, commercial
- Each zone has regulations on animals
- Some may require a permit

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Covenants, conditions, and restrictions (CC&Rs)

- Some neighborhoods restrict animals through CC&Rs

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Why have animals?
www.farmphoto.com

Animal ownership

PROS	CONS
Relaxing	Time-consuming
Close to nature	Hard to get away
Teaches children skills	Costly
Fun family activity	Middle of night work
Supplemental income	May be dangerous

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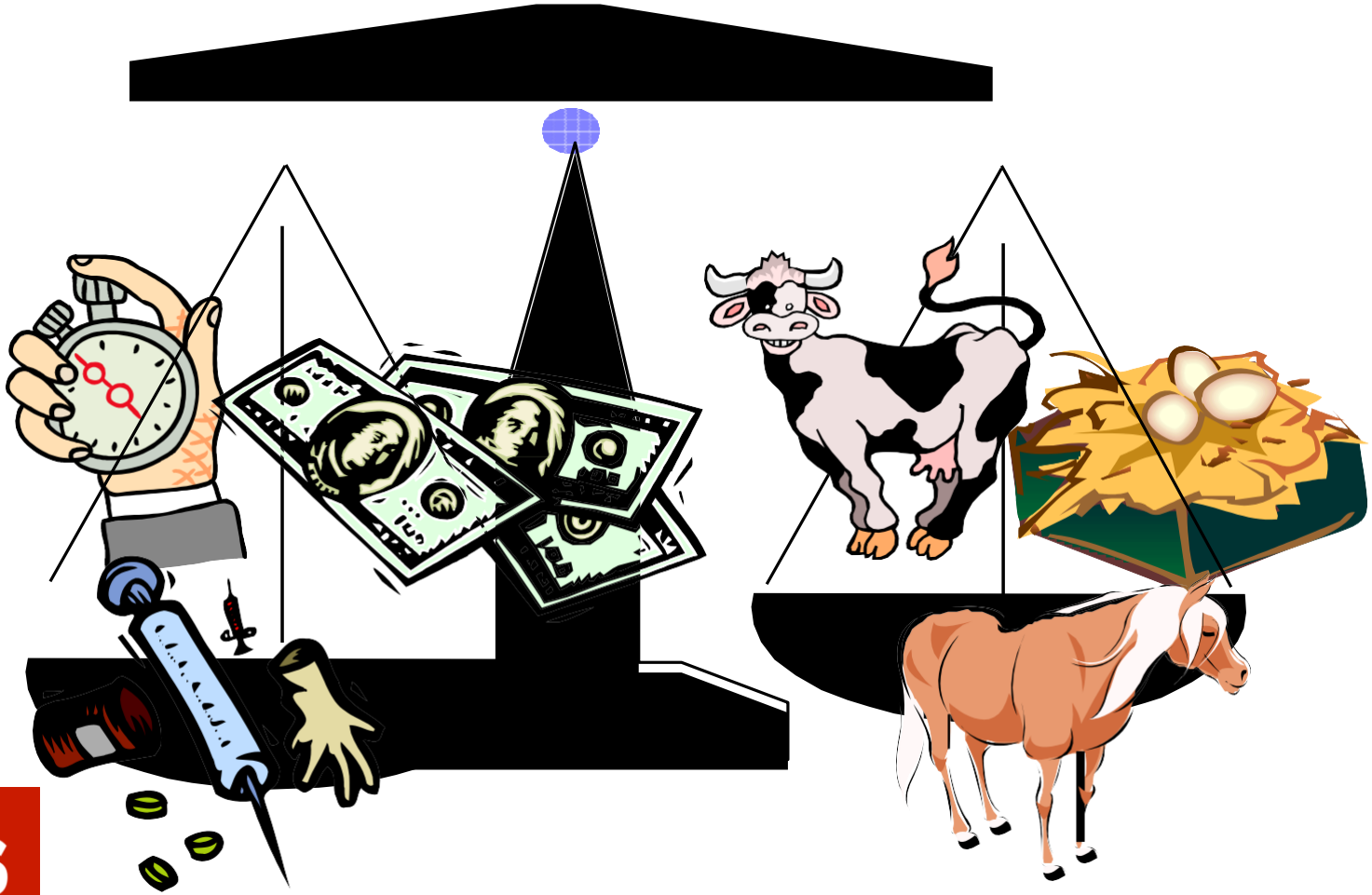
Balancing pros and cons



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Is it worth it?

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What does it cost to keep an animal?

- Initial costs
- Operational costs

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Nutrient Needs

- Fiber (Forages)
- Protein
- Energy- can come from Fiber, Grains and Protein
- Vitamin
- Mineral
- Water

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Forage production per acre

- Kentucky Bluegrass 2 ton
- Orchard grass 4 ton
- Alfalfa/Orchardgrass 6 ton

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Digestive tract capacities

Animal	Gallons
Cattle	94
Sheep or goat	12
Horse	56
Pig	7.2
Humans	1.6

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Digestive Systems

Cattle, Sheep and Goats—Ruminants

Prefer high forage diets of grass or legumes

Goats are browsers and not good grass eaters

Cattle and Sheep will eat grass and legumes

All diet changes must be gradual.

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Feed Needs- Beef Cattle

- A Beef cow will consume about 5 ton of forages per year. Over one half a square bale per day.
- This cow would be expected to produce a 550 pound weaned calf.
- 550 – 1300 market animal would consume around 4500 pounds of feed. (most of it generally as grain)

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Beef cattle

Water	1.5 gallons per each 100 pounds of body weight
Protein	8 to 16% of their diet
Energy	22 to 28 pounds of dry matter per day (or equivalent fresh material) with a fiber level of 30 to 70%
Vitamins	Generally must supplement A and E
Minerals	Ca to P ratios of 1.5:1 to 2:1; salt with trace minerals
Fats	Less than 5%; fats interfere with rumen function

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Grass Fed Beef

- Lower in fat
- Higher in conjugated linoleic acid
- Environmentally friendly?
- E-coli?

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Dairy

- Raising Bottle Calves—Need one 50 pound bag of milk replacer per calf. Wean after 6 weeks or longer.
- Replacement heifers
- Avoid Underfeeding and Overfeeding

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Dairy cattle

Water	**1.5 gallons per each 100 pounds of body weight**
Protein	**8 to 16% of their diet**
Energy	**1.4% to 2.4% of body weight, dry matter forage**
Vitamins	**Generally must supplement A and E**
Minerals	**Ca to P ratios of 1.5:1 to 2:1; salt with trace minerals; monitor copper, zinc, selenium, cobalt and iodine levels**
Fats	**Less than 5%; fats interfere with rumen function**

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Feed Needs--- Goats

- A 150 pound Dairy goat will consume around 3200 pounds of feed per year. Most as forages.
- Meat goats will consume less

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Meat goats

Water	1 to 1.5 gallons per day average, double for lactating females
Protein	10 to 14% of their diet
Energy	2 to 4% of body weight. Need a minimum of 0.5 to 1.0 pound of roughage per day to keep rumen functioning. Can add grain as supplement.
Vitamins	May need to supplement A and E
Minerals	Ca to P ratios of 2:1; copper, zinc, and selenium are likely to be low
Fats	Less than 5%; fats interfere with rumen function

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Sheep

- Prefer grass pastures with some forages mixed in.
- Lambs are usually finished on mostly grain diets
- Look out for a condition called Urinary calculi

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Sheep

Water	1 to 1.5 gallons per day average, double for lactating females
Protein	10 to 14% of their diet
Energy	2 to 4% of body weight. Need a minimum of 0.5 to 1.0 pound of roughage per day to keep rumen functioning. Can add grain as supplement.
Vitamins	May need to supplement A and E
Minerals	Ca to P ratios of 2:1; zinc and selenium are likely to be low. Copper levels must be monitored as sheep are susceptible to copper toxicity.
Fats	Less than 5%; fats interfere with rumen function

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Swine and Poultry

- Prefer high energy low fiber diets
- Diets will be high in protein
- Manure will be higher in Nitrogen

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Feed Needs- Swine

- It takes about 10 **bushels of corn** and 90 pounds of Soybean meal to raise and finish a hog to market.
- Pasture pork---One acre of good pasture can accommodate up to 8 sows for a season.
- Under 100 pounds --- 15–30 pigs per acre
- Over 100 pounds----10-20 pigs per acre

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Swine

Water	1 to 5 gallons per day
Protein	12 to 18% of their diet
Energy	3 to 6% of body weight per day
Vitamins	Make vitamin C and some of the B vitamins; will need to supplement A, D, E, K, B-series, and other water soluble vitamins
Minerals	Sodium & chloride (salt), calcium, phosphorus, copper, iron, zinc, iodine, selenium

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Feed Needs- Poultry

- **Layers (Brown Egg Type)**

Age	Total Amount of Feed (lbs)	Ration Type
Day old to 6 weeks	4	Starter
7-18 weeks	46	Grower
19-70 weeks	104	Layer

Broilers (Meat Type)

Day old to 3 weeks	2	Starter
4-7 weeks	7	Finisher

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Pasture Poultry

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Pasture poultry

- Meat type poultry raised on pasture during warm weather.
- Chicks brooded and move to pasture at 3 weeks.
- Harvested at 8 weeks.

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Free Range Eggs

- Yokes are darker and more flavorful.
- Many different types of housing-chicken tractors
- Predators

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Turkeys

Age (weeks)	Weight	Cumulative Feed
4	1.65	2.3
8	6.2	11
12	11.6	24
16	16.5	41
20	21	63
24	25	86

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Poultry

Water	**1 gallon per 10 chickens per day**
Protein	**16 to 22% of their diet**
Energy	**Needs vary with age; layer hens require 1/4 pound of complete ration per day. Chickens can not digest cellulose.**
Vitamins	**Need A, E, K, B series, C, choline, folic acid, biotin, pantothenic acid; most are included in balanced ration. Vitamin D is produced in the skin if the birds have access to sunlight.**
Minerals	**Ca:P ratios of 2:1 for meat birds and 8:1 for laying hens; also require salt and trace amounts of iodine, iron, manganese and zinc**

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Poultry: for meat or eggs?

- A laying ration provides two times more vitamin A, 2½ times more vitamin D and at least 3 times more calcium
- A mature, lightweight bird will eat about 1/4 pound of feed daily, or 90 lbs/year, while producing about 240+ eggs each year
- Broilers can gain 2 pounds for each pound of feed eaten

L. Allen, Nev.

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Horse and Rabbit

- Eat high fiber diets
- Have a unique fiber digesting unit called the Cecum
- Make feed changes slowly

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Reproduction Replacement Rate

Animal	Yearly Repro Rate	Time to Next Gen.
Swine	20	10 months
Cattle	1	2 years
Sheep and Goats	1-3	1 year
Horse	< 1	3 years
Poultry	Many	7 months

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Reproduction terminology

SPECIES	MATURE FEMALE	YOUNG FEMALE
Cattle	COW	HEIFER
Sheep	EWE	EWE LAMB
Swine	SOW	GILT
Horse	MARE	FILLY
Birds	HEN	PULLET; POULT;CHICK

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Reproduction terminology

SPECIES	MATURE MALE	CASTRATE MALE
Cattle	BULL	STEER
Sheep	RAM	WETHER
Swine	BOAR	BARROW
Horse	STALLION	GELDING
Birds	Rooster/cock/ Tom	CAPON

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Age at Breeding

- Heifer 15 months
- Gilt 7 months
- Horse 15 months
- Ewe 7 months
- Goat 7 months

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Gestation Length

- Cow 283 days
- Sow 114 days (3 months 3 weeks 3 days)
- Horse 336 days
- Ewe 148 days
- Goat 150 days

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Number of Females per Male

- Cattle 25
- Swine 35
- Horse 15
- Sheep 30
- Goat 30

Numbers are age related. Younger animals should be with less females.

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Water

- Water needs will vary by animal size, reproductive status and weather
- Average animal needs:
  - Beef cow or horse – 12 to 15 gallons/day
  - Pig – 1 to 5 gallons/day
  - Llama – 2 to 5 gallons/day
  - Sheep or goat – 1 to 3 gallons/day
- These needs may double on hot days

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Animal watering considerations

- Type and location of available water source(s)
- Site location and condition
- Type of grazing system
- Number of livestock
- Access to power source
- Pumping system
- Flexibility and portability
- Reliability and maintenance needs
- Temporary or seasonal water storage
- Cost, including maintenance
- Personal preference

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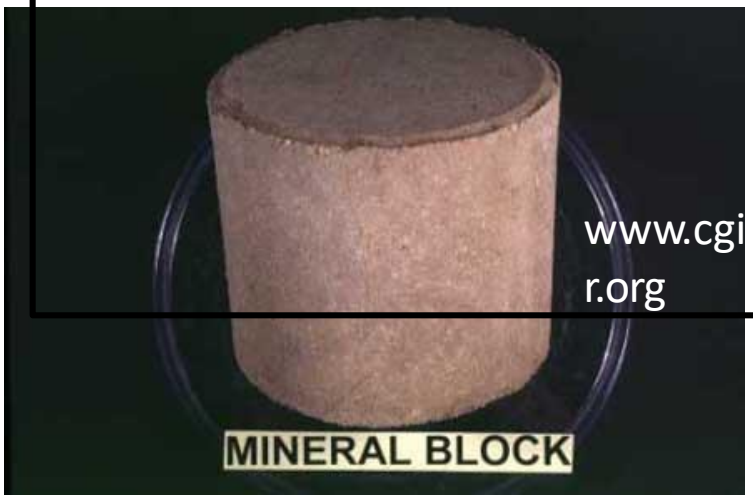
Minerals

Supplement choices:

- Mineral block, tub
- Feed additive
- Loose or liquid



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Fencing considerations

- Balance looks, functionality and economics
- Safety of animals and people
- Installed or do-it-yourself
- Life expectancy
- Annual maintenance costs

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Woven wire

- Cost
  - $2-$3/ft
- Pros
  - Readily available
  - Good for sheep
  - Add 1 to 2 strands of barbed wire at top for cattle
- Cons
  - Expensive
  - Requires routine maintenance

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4- to 10-strand smooth wire

- Cost
  - $1–$2/ ft, depending on number of wires
- Pros
  - 4- to 5-strand good for horses
  - 10-strand will contain all large livestock and exclude large wildlife
  - Durable
  - Can be electrified
- Cons
  - Expensive
  - Requires routine maintenance

www.kiwifence.com

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4-strand barbed wire

- Cost
  - Varies
- Pros
  - Low cost
  - Easy to install
  - Fairly low maintenance
- Cons
  - Dangerous to people, livestock and wildlife
  - Not suitable for horses
  - Not useful for small animals
  - Can be damaged by large wildlife

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www.agry.purdue.edu/ext

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Electric ribbon

- Cost
  - 1½ inch ribbon $.15/ft
  - Wood post $8-$12
  - T-posts 6’ $7-$8
  - Insulators $.25-$.50 each
- Pros
  - Versatile
  - Easy to install and modify
  - Can be used to make existing fence more effective
  - Easier to see than other types of electric fencing
- Cons
  - Cost and availability of electricity or solar source
  - Maintenance
  - Not a good choice for a permanent fence

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What kind of shelter do my animals need?

What kind of shelter do I want for my animals?

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Considerations for shelter

- Needs to provide adequate shelter for local weather conditions
  - summer
  - winter
- Durable
- Reasonable maintenance costs
- Visually appealing
- COSTS

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Shelter

- Can be simple or elaborate
- Costs vary widely

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Predators

- Cattle- Coyote on claves
- Swine –Coyote on newborn
- Horse- Coyote on newborn
- Goats- Coyote on newborn
- Sheep- Dogs, Coyote
- Poultry- Raccoon, skunk, owl, opossum
  - NEW PEST – Black Vulture

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Providing nutrition year-round

- Purchase feed
- Improve pasture production
- Rotational grazing
- Grow feed instead of, or in addition to, forage

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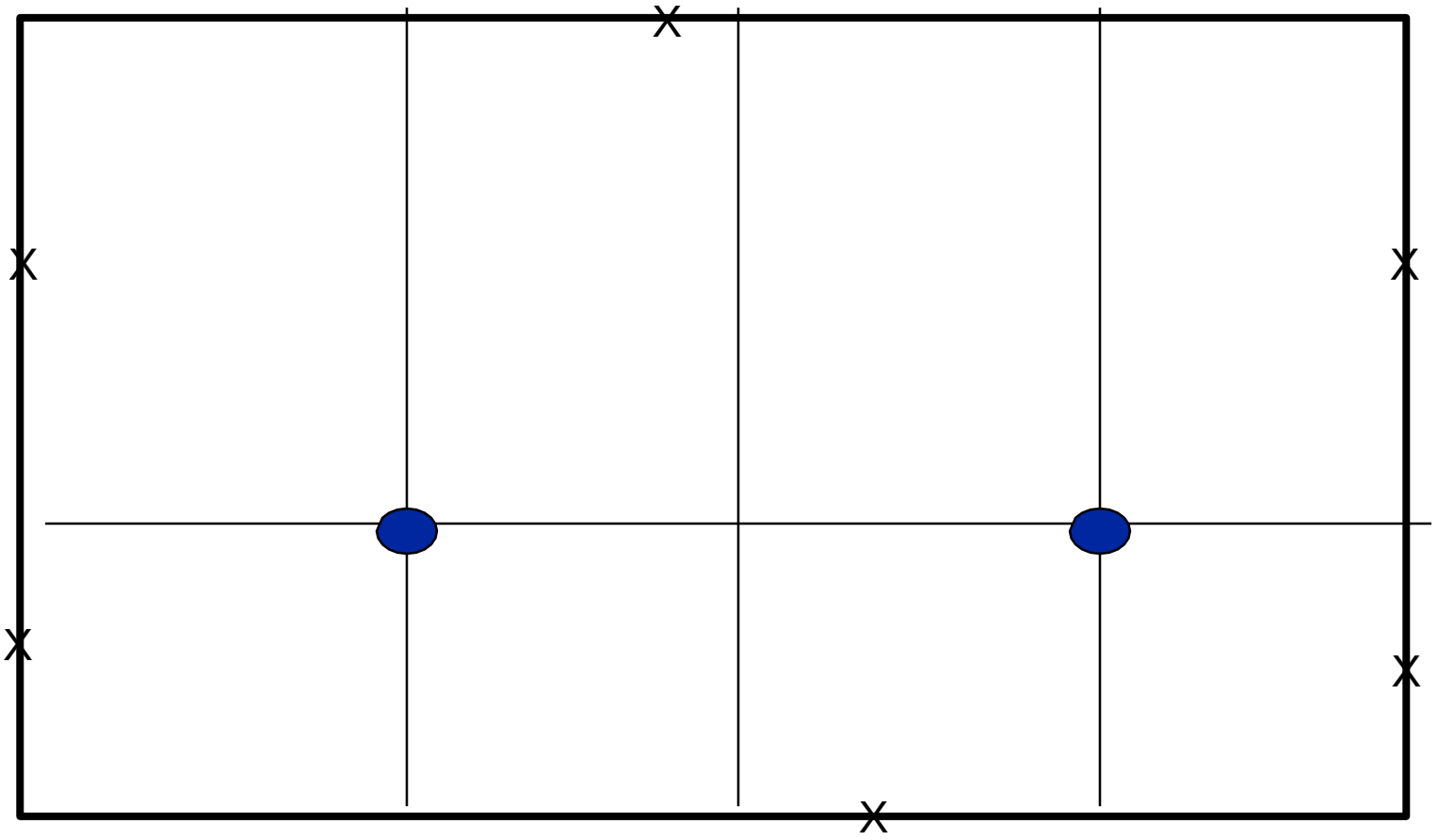
Rotational Grazing



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Which pasture would you like to graze?

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Relative Feed Cost Comparison

• Grazing	1 cent per lb
• Grass Silage	4.5 cent per lb
• Corn Silage	7 cent per lb
• Grass Hay	9 cent per lb

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Pasture Considerations

- Grasses
- Legumes
- Different animals need different types of pastures
- Rotational Grazing

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Optimal rotations

Cow/calf	3-7 days
Stockers	1-3 days
Dairy cow	0.5-1 day
Ewe/lamb	2-5 days
Feeder lambs	1-3 days
Horses	5-7 days

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Nutrition and Health

- Well-fed animals in good condition are healthier and more resistant to disease
- Two categories of disease:
  - Infectious - caused by parasites, fungi, bacteria, viruses, protozoa
  - Noninfectious – results from issues such as nutritional deficiencies, metabolic disorders, trauma, congenital defects & toxic materials

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Animal ID Methods

Tattoo

Leg Bands


Electronic ID Tags

Brands


Retinal Scan

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Preventive healthcare for animals

- Consult a local veterinarian
- Maintain schedules of vaccinations
- Keep complete records
- Quarantine new animals

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What about vaccinations?

- Consult a local veterinarian for advice
- Follow state or local regulations
- Take into account the prevalence of disease in your area
- Consider the effectiveness of the vaccine or bacterin
- Cost of the vaccine
- Adverse reactions

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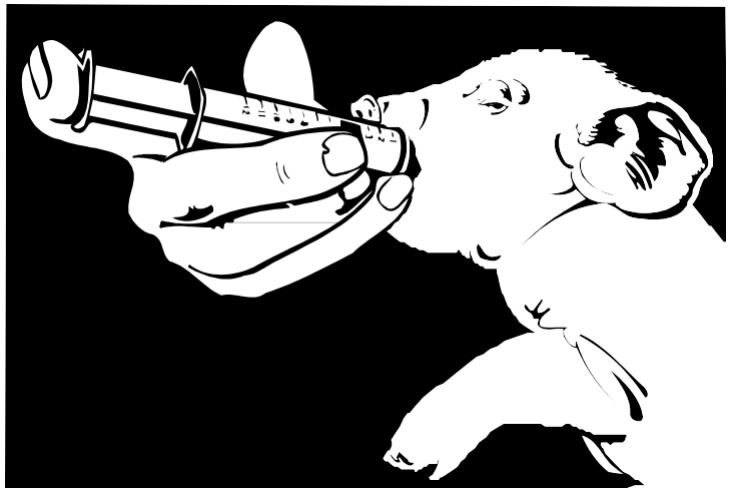
Adherence to drug labels

- Follow veterinarian recommendations
- Follow label requirements
- Make sure drug is species-specific
- Keep records



Animal Ownership

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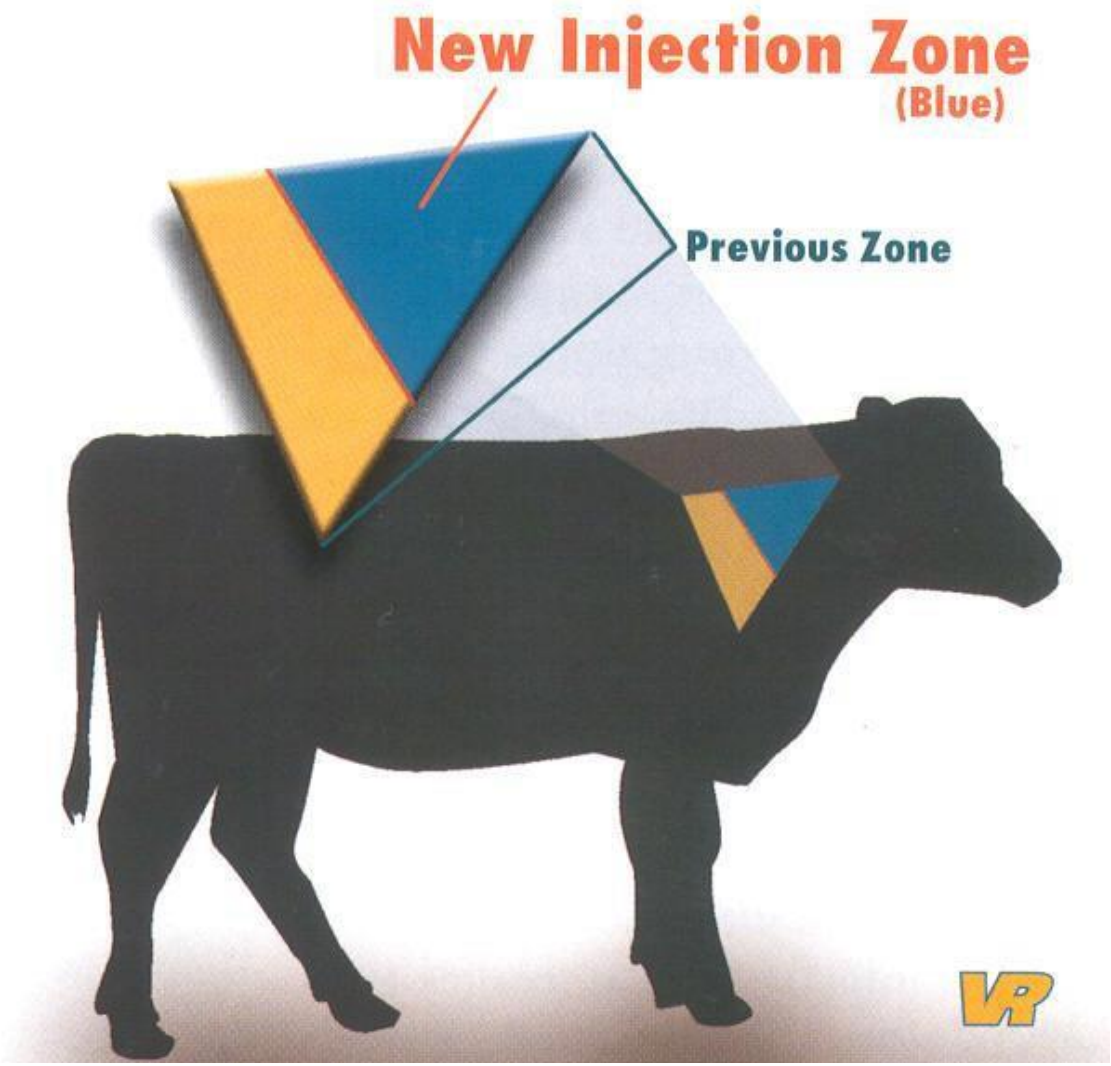
Injection Site



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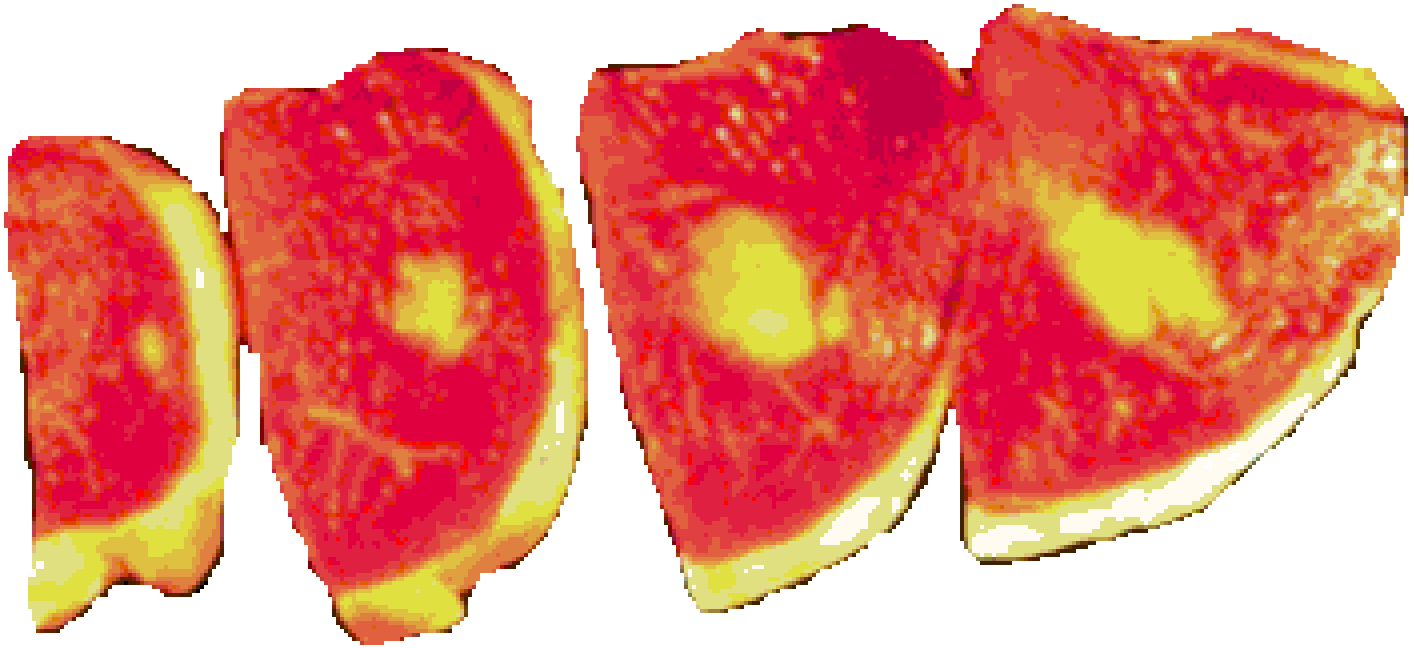
Injection Site Lesion



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What to look for in a Healthy Animal

- Shiny coat
- Bright eyes
- Good breathing
- Body condition
- Sound feet and legs
- Genetics
- Manure consistency

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Bloat

- Problem in Ruminants such as Cattle, Sheep and Goats
- Usually seen in pastures with clover and alfalfa.
- Caused by fermenting very digestible forages
- Gas causes pressure on lungs and heart
- Can kill quickly (less than one hour)

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Bloat

- Never turn a ruminant animal into an area for the first time if there is dew or moisture on the grass.
- Pastures with 50% grass will less likely have a problem.
- Use Bloat Guard blocks (Poloxolene)
- Never turn a hungry animal into a new pasture

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Additional preventive care

- Parasites
  - Internal
  - External

Parasites…beef as an example

	Worms	Lice/Mange	Grubs
Symptoms	Diarrhea Blood in urine Weight loss	Scratching Loss of blood	Look like marbles under the skin on animal's back
How it spreads to other animals	Eggs in manure spread to grass or eggs in drinking water	Direct contact with other animals	Heel fly lays eggs on lower legs
Treatment or control measures	Dewormers: bolus, paste, drenches and injectables	Spray, clips, liquid pour-on dusts, rubbers, injectables	Sprays, dips, liquid pour-on, injections

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Flies

- Bother animal
- Reduce growth
- Feed on blood
- Carry disease “Pink Eye”

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Fly Control

- Pour on
- Sprays
- Back rubs
- Ear tags
- Sanitation

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Deworming

- Parasitic nematodes
- Species variation—cattle worms do not affect sheep
- Make animals anemic

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Parasite resistance to Anthelmintics

- A growing problem
- Worldwide and in the U.S.
- This is a real threat to the small ruminant industries

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What Causes Resistance To Dewormers ???

- Frequent Treatments
  - 3 treatments per year
- Treating and moving to clean pasture
- Under dosing
- Treating when few larvae are on the pasture
- Treating all animals at same time

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Do your animals have access to any of these?

- Toxic plants
- Toxic bedding
- Moldy hay or grain
- Trash
- Lawn clippings
- Pesticides

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Some plants may be toxic

- Some are poisonous in some seasons only
- Some affect certain species and not others
- Most cause specific physiological symptoms

Poison hemlock

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http://cal.vet.upenn.edu

Dispose of dead animals properly

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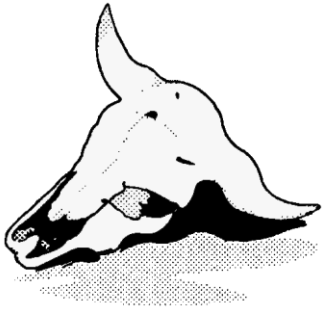
http://defendingfarmanimals



Dead Animal Disposal

No person owning or caring for any animal that has died from any cause shall allow the body to lie about his premises. Any animal body shall be disposed of by such person within twenty-four (24) hours after knowledge of death so as not to produce a nuisance. Disposal must be by one (1) of the following methods:

Burial • Incineration • Composting

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Burial

The animal must be buried the owner's premises,
to such a depth that every part of the animal's body is at least four (4) feet below the natural surface of the ground and every part of the animal's body is covered with at least four (4) feet of earth in addition to any other material that may be used as cover.

Ordinances. No person may bury the body of any animal within the corporate limits of any city or town, where the same is prohibited by law or ordinance.

Check with your local plan commission office to determine your local ordinances!

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Incineration

Thorough and complete incineration according to standards established by an appropriate governmental agency.

In this case, the appropriate governmental agency is the Indiana Department of Environmental Management. For more information call the IDEM Office of Agriculture Relations at 317-232-8587.

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Composting

Obtain a permit if manure will be used in the process through IDEM. Call the IDEM Office of Agriculture Relations.

Cover the carcasses with one to two feet of damp base material.

Maintaining adequate coverage of carcasses is extremely important!

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Culling

- Eyes
- Mouth
- Feet and Legs
- Udders
- Poor Body Score
- Disposition
- Reproduction

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Responsible Culling

- Examine the eyes
- Ocular neoplasia = Cancer eye
- Pink eye

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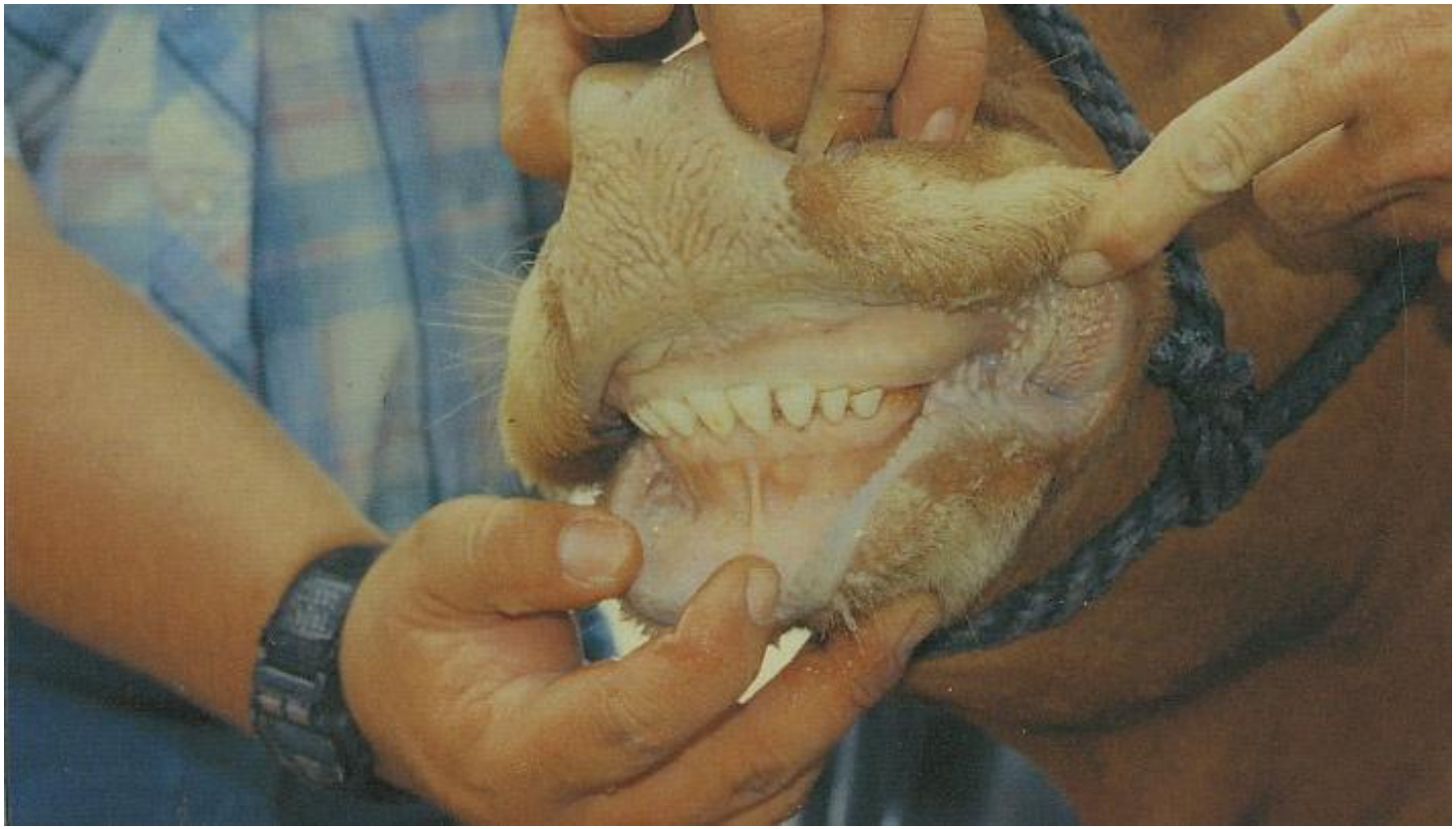
Responsible Culling – Mouths
4 on each side



Responsible Culling - Mouthing

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Responsible Culling –Feet and Legs

- Lameness is a real problem
- Look at the whole leg

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Responsible Culling – Feet and Legs

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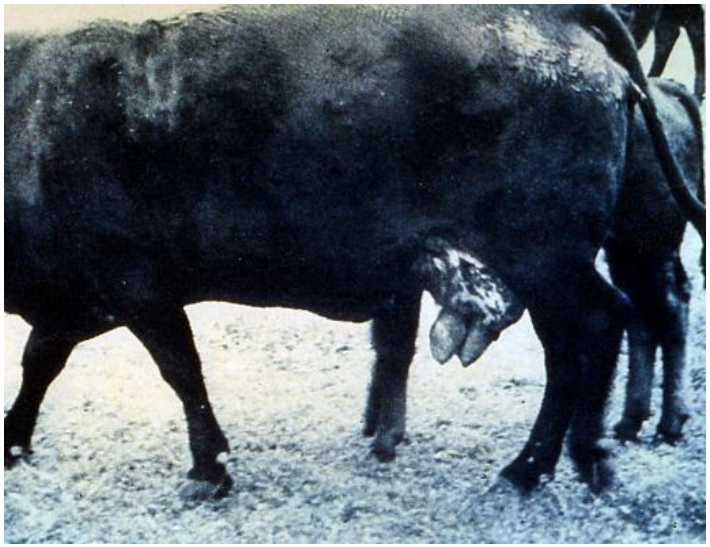
Responsible Culling - Udders

- Good udder = good calf
- Big, long, pendulous teats



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Responsible Culling - BCS

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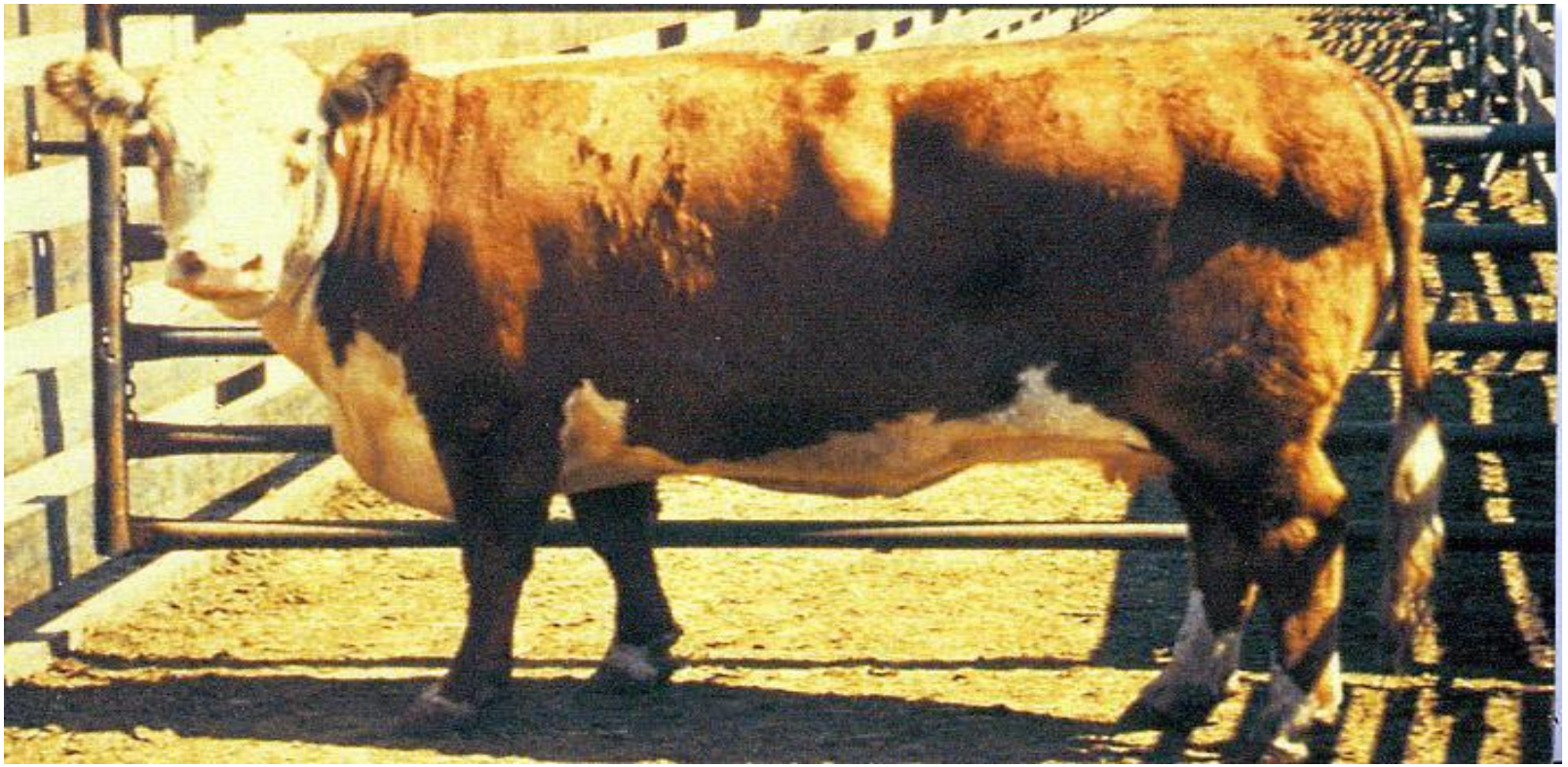
Responsible Culling - BCS



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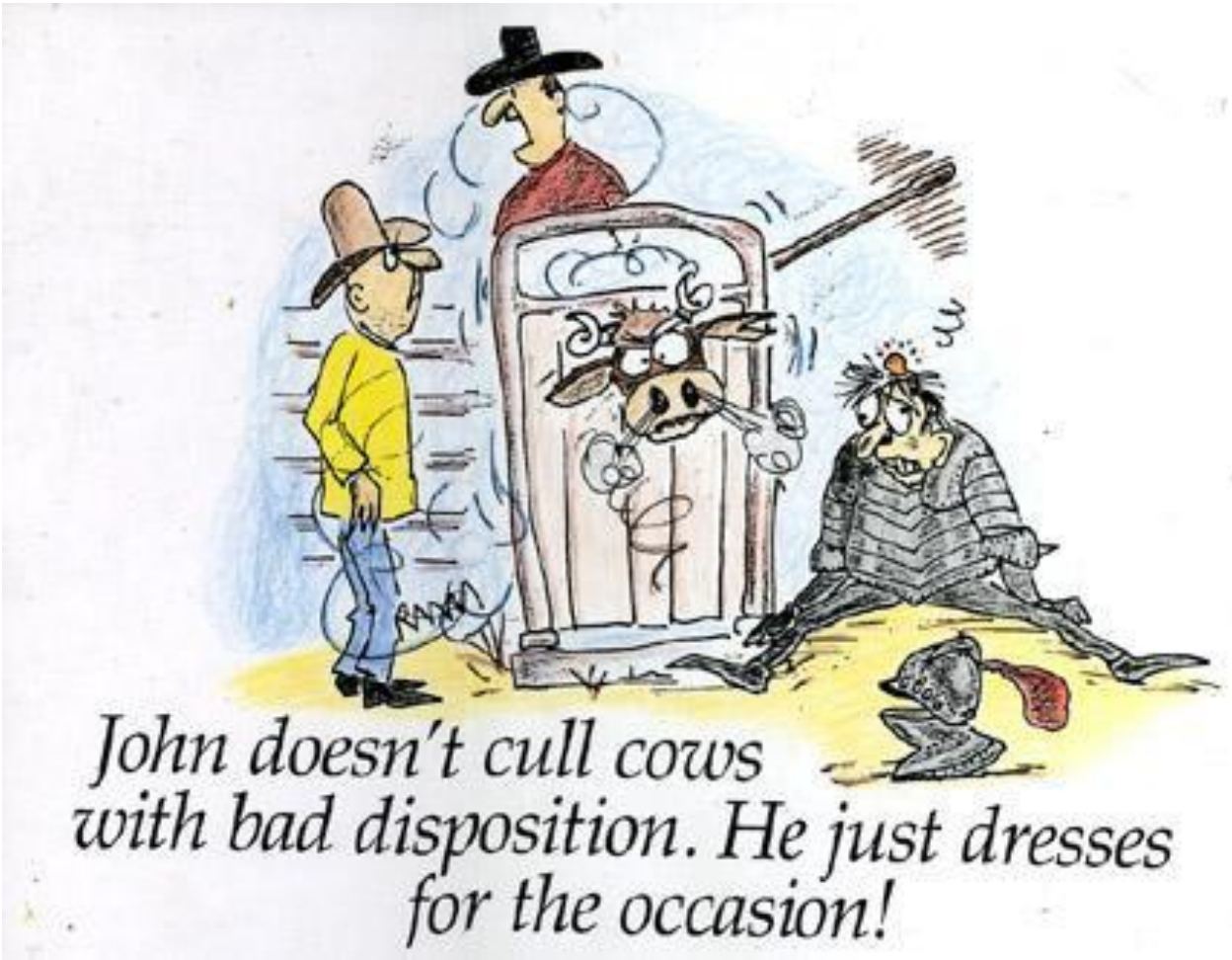
Responsible Culling - Disposition



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Responsible Culling - Pregnancy

- Pregnancy Check your animals
- Open animals over the winter are expensive
- $350 on average for a cow.

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What enviromental impacts can animals cause?

Impacts from mouths

- Overgrazing plants can weaken their root structure; plants don’t recover
- Pasture productivity decreases
- Soil erosion increases

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Impacts from bodies

- Objects in the pasture are damaged
  - Trees, posts, irrigation works, fences
- Weed seeds and pests are transported

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Impact on Woods

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Good manure management

- Keeps livestock healthy
- Returns nutrients to the soil
- Improves pastures and gardens
- Protects the environment

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How much manure do animals produce?

How much manure do you think two horses kept in a small stable for three months in the winter will produce?

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Tons of horse manure!

- 2 horses, 1,000 pounds each
  - WEIGHT: 50 lbs/day X 2 = 100 pounds
  - VOLUME: 0 .81 cubic feet/day
- WEIGHT: 50 lbs/day X 30 days/month x 3 months = 4,500 pounds of manure
- VOLUME: 0.81 cu ft/day X 30 days/month x 3 months = 73 cubic feet of manure

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Nutrient value of manures

Animal	N (lbs/ton)	P_2O_5 (lbs/ton)	K_2O (lbs/ton)
Beef	11.3	8.4	9.5
Chicken	27.3	23.5	13.2
Goat	22.0	5.4	15.1
Horse	12.1	4.6	9.0
Sheep	22.5	7.6	19.5

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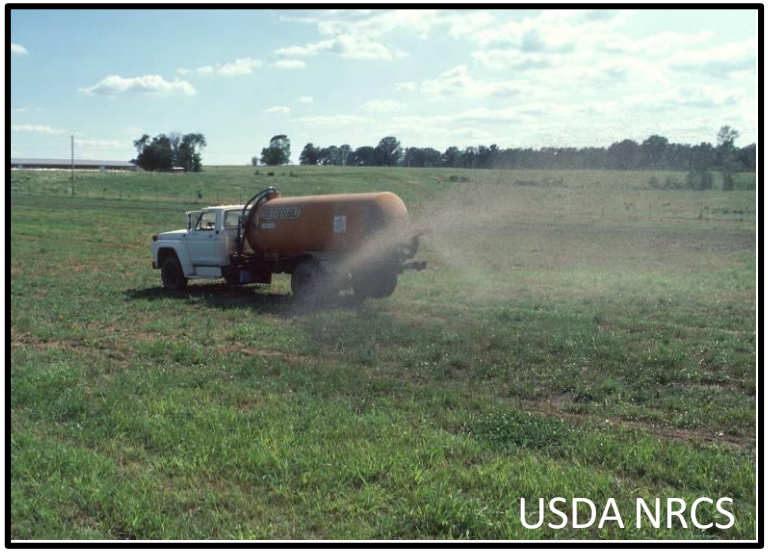
Manure can be a resource

- Livestock remove nutrients from land while grazing
- Returning manure to soil promotes soil fertility and plant growth
- Important nutrients
  - Nitrogen (N)
  - Potassium (K or K_2O)
  - Phosphorus (P_2O_5)



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Can I use all my manure?

- How much will you have?
- Where can you safely store or compost it?
- Where can you safely incorporate it in or on your property?

whatcom.wsu.edu/ag/compost

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Wellbeing

Producer-originated animal suffering :

- **Neglect** -- failing to provide an animal with a vital requirement such as food, water, or shelter.
- **Abuse** -- striking or willfully harming an animal with a club or instrument of harm.

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Safety - Animals to watch

- New moms
- Males
- Scared or cornered
- Separated from the herd
- Animals raised as pets

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Safety Parts to watch

- Cattle Mostly back and some front
- Horse Back and front
- Sheep Front
- Goat Front
- Horse Back and front
- Poultry Pecking, pinching and flopping

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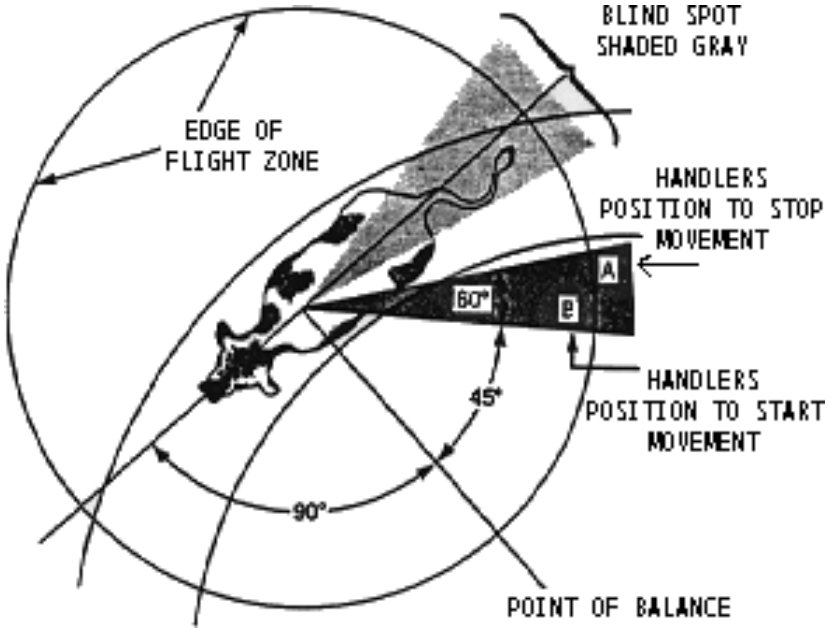
Flight zone



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Breeds

- Within a species different breeds have desirable characteristics.
- In cattle Holstein produce milk and Angus produce meat.
- You need to ask,”What does this breed do for me.”
- Miniature's

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Purebred

- Pure strains that when crossed produce vigorous offspring;
- Cost more and can sell for more
- Registered

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Crossbreeding

- Increases productivity in beef
- Seldom done in dairy
- Advantages seen in meat goats -worm resistance
- Beneficial in sheep and pigs

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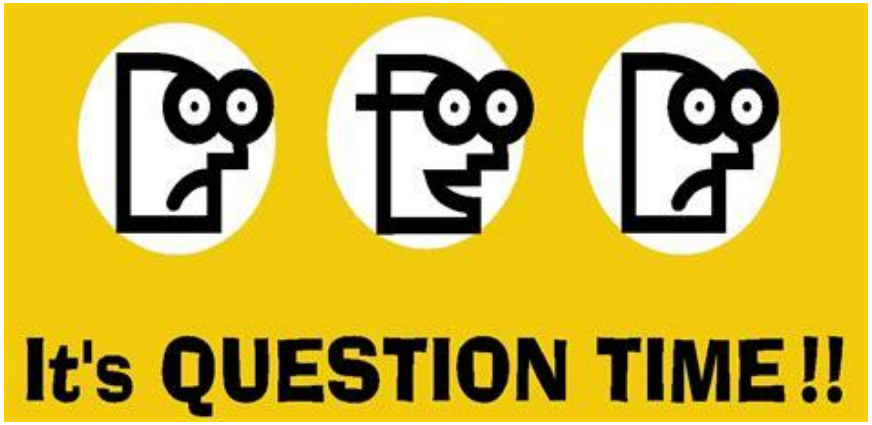

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